Aristotle's De anima

Ronald Polansky

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Aristotle's *De anima* is the first systematic philosophical account of the soul, which serves to explain the functioning of all mortal living things. In his commentary, Ronald Polansky argues that the work is far more structured and systematic than previously supposed. He contends that Aristotle seeks a comprehensive understanding of the soul and its faculties. By closely tracing the unfolding of the many-layered argumentation and the way Aristotle fits his inquiry meticulously within his scheme of the sciences, Polansky answers questions relating to the general definition of soul and the treatment of each of the soul's principal capacities: nutrition, sense perception, *phantasia*, intellect, and locomotion. The commentary sheds new light on every section of the *De anima* and the work as a unit. It offers a challenge to earlier and current interpretations of the relevance and meaning of Aristotle's highly influential treatise.

Ronald Polansky is professor of philosophy at Duquesne University. Editor of the journal *Ancient Philosophy* since founding it in 1979, he is the author of *Philosophy and Knowledge: A Commentary on Plato's Theaetetus* and coeditor of *Bioethics: Ancient Themes in Contemporary Issues*.

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RONALD POLANSKY
Duquesne University

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for Susan

Thus it seems to me, he said, the person not knowing his own power is ignorant of himself. Οὕτως ἔμοιγε δοκεῖ, ἔφη, ὁ μὴ εἰδὼς τὴν αὑτοῦ δύναμιν ἀγνοεῖν ἑαυτόν.

Xenophon *Memorabilia* iv 2.25

Do you think, then, that it is possible to reach a serious understanding of the nature of the soul without understanding the nature of the world as a whole? Ψυχῆς οὖν φύσιν ἀξίως λόγου κατανοῆσαι οἴει δυνατὸν εἶναι ἄνευ τῆς τοῦ ὅλου φύσεως;

Plato *Phaedrus* 270c

His account of the soul is unclear: in three whole books you cannot say clearly what Aristotle thinks about the soul. (Ὁ) δὲ Περὶ ψυχῆς αὐτῷ λόγος ἐστὶν ἀσαφής· ἐν τρισὶ γὰρ συγγράμ<μ>ασιν ὅλοις οὐκ ἔστιν εἰπεῖν σαφῶς ὅ τι φρονεῖ περὶ ψυχῆς Ἀριστοτέλης.

Hippolytus *Refutatio omnium Haeresium* vii 19.5

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Preface

Near the *De anima*'s beginning, after indicating how fine and important inquiry into the soul is, Aristotle comments about the extreme difficulty of the enterprise: "In every way and altogether it is most difficult to gain any conviction concerning it" (402a10–11). If Aristotle then manages to develop a compelling account, we must be impressed and pleased with the accomplishment. But examination of the text may prove unsettling because it seems frequently obscure, and continued study may disclose discouraging tensions and disagreements. What are we to make of this work?

Thinkers prior to Aristotle audaciously sought comprehensive understanding of the world and its prodigious array of phenomena, living beings holding special fascination for them. The tradition of the history of philosophy initiated by Aristotle suggests that philosophy very soon turned its attention from the near at hand to the wider cosmos, and only later with Socrates focused on the human life (see *Metaphysics* 982b11–17 and 987b1–4).[1] In fact, however, the human being and life-bestowing soul were of interest right from the start. The first philosophical fragment, that of Anaximander (DK 12B1), compares the scheme of the universe to the system of human justice, and Anaximenes (DK 13B2) has the human soul unifying us much as the cosmos is unified. Surely Xenophanes and Heraclitus, as well as Parmenides, Empedocles, Anaxagoras, and Democritus, reflect deeply upon human life. With Socrates and Plato the reflection intensifies and perhaps turns in some new directions. Hence considerable previous investigation must be taken into account when Aristotle sets out to produce his treatise on the soul. He continues and expands the project of comprehensive understanding of his predecessors with enhanced

[1] Aristotle invents the history of philosophy, even though he imitates Plato's *Phaedo* 96a ff. in tracing in *Metaphysics* i the thought about causes of the predecessors. Aristotle rather than Plato speaks of the earlier thinkers starting with Thales as philosophizing (e.g., 982b11–12, 983b2, b6). For Plato only those admitting Forms are philosophers, and hence he may view Parmenides as depicted in the *Parmenides* as a philosopher, but he never calls any other of the Presocratics "philosopher." He does ironically speak of Evenus (*Phaedo* 61c) as "philosopher" and the soldiers in *Republic* 375e, but for him the only genuine philosophers accept the Forms.

methodological awareness and sensitivity. He attempts to fit analysis of soul within the entire framework of the sciences that he has elaborated.

Contributing to the difficulty of the *De anima*, then, is not only the recalcitrance of the subject matter itself but also the considerable existing work containing dazzling proposals and Aristotle's preparation for producing a rigorous treatment of his subject. Despite the appearance of and commentators' occasional complaints about untidy, careless, or inconsistent passages, Aristotle's work will be shown to be remarkably systematic and to display meticulous organization. From start to finish he is in control of his material.

Aristotle scrupulously attends in the *De anima* as throughout his corpus to what is appropriate within specific sciences. While living beings may serve as subject matter for theoretical, practical, and productive sciences, the *De anima* is the concentrated theoretical examination of soul and its leading faculties. He first traces perplexities confronting his inquiry and his predecessors' conflicting positions on the soul. This leads to his own "most common account of soul" presupposed for developing acounts of the major powers of soul. The general definition clarifies the relationship of soul to body, demarcates the parts of soul, and illuminates the connections of these parts.

His investigation proceeds typically from what is most widely shared to what is less universal. Hence subsequent to the general account of soul, the soul's most widely shared capacity, nutrition, is analyzed, followed by sense perception and then mind. This pattern takes us from the more readily to the less readily understood faculties, even if these are ultimately more intelligible, and from the more necessary to the more exalted. There are some crucial exceptions. For example, sight is investigated before touch, though contact sense is most widely shared, because Aristotle must introduce the sense medium to oppose the way many predecessors turn all perception into a kind of touch. And mind comes before locomotion because both sense perception and intellection can provide the cognition directing progressive animal motion. The order of treatment is thus always quite deliberate and contributes as well to his manner of treatment. Throughout, he tracks analogy pervading the faculties of soul. This adds lucidity to his analysis and completeness. Functional parts of soul, in accord with the priority in intelligibility of actuality to potentiality, are understood in terms of their operations and these in terms of their objects. Moreover, he focuses on the fundamental operations of the soul in relation to their most basic objects, for example, sense perception of proper sensible objects, as color for vision and sound for hearing, and intellection of the key intelligible objects, essences apart from matter. Thereby he gets to what is most essential and attains greater precision at the suitable level of generality. Design can thus be seen to govern every aspect of Aristotle's treatment of soul.

The exactingly planned treatment holds special interest if it provides a thoroughly worked-out portrait of soul based upon penetrating self-understanding. Might this first fully systematic account of soul and its capacities employ approaches and contain insights that challenge our own lines of reflection, or is it merely a relic of outmoded thought? The continuing pertinence or lack thereof of Aristotle's treatment of soul remains a disputed topic among scholars throughout the intellectual

tradition until the present.[2] The most vexed issues are how to understand his general definition of soul, what sort of account of sense perception he is providing, and how he conceives of mind. This commentary, through persistent attention to Aristotle's exceedingly well-constructed text, strives to resolve these long-running issues in the interpretation of the *De anima*.

The *De anima*, complete and comprehensive as it seeks to be, is remarkably compact. Words are not wasted; lines that seem merely repetitious or summative add something. Phrases initially appearing opaque can be seen to lend themselves to highly structured argumentation. Yet the vital arguments are not always flagged or are barely flagged. The reader often has to formalize the arguments. The Greek text can frequently bear several possible readings, and occasionally a claim appears to contradict something said previously. Such obscurity, inexplicitness, and tension in the text can be viewed as intentional, serving pedagogical and other purposes. Though commentators tend to fasten upon a single correct reading, Aristotle sometimes deliberately utilizes disciplined ambiguity.[3] Key terms with several meanings permit subtle distinctions that skirt apparent contradiction. And a passage sustaining multiple readings may introduce several reinforcing points or come into play in several concurrent arguments. This many-layered argumentation contributes to the exhaustiveness of inquiry and exposition.

This commentary devotes itself to philosophical argumentation and presentation as much as to doctrine. Establishing the argumentative contexts clarifies obscure terms, statements, and passages. Despite his aspirations for comprehensiveness, Aristotle is quite careful about what concepts and methods are suited and employed for each particular context. Caution must therefore be exercised about appealing to other places in Aristotle's corpus, or even relying on later sections of the *De anima* itself for following the argument. One should patiently locate and construe an argument within its immediate surroundings and through its own progressive development. The urge to jump ahead or elsewhere must be resisted so that attention remains upon what the author actually is saying, no easy task. Sometimes when needed, Aristotle himself refers explicitly to other treatises or contexts. In reconstructing the argumentation, we need to follow its unfolding and allow for multiple

[2] Burnyeat 1995a pointedly raises the question whether Aristotle's "philosophy of mind is still credible" and answers no because he claims that Aristotle finds little role for physiological change in his account of sense perception. Burnyeat has followers, such as Broadie 1993 and Johansen 1997, but even more opponents, such as many of the authors in Nussbaum and Rorty eds. 1995, Silverman 1989, Everson 1997, and Caston 2005.

[3] Barnes 1992, 267–270, observes, "The ancient commentators take it for granted that Aristotle is obscure – and they standardly ask *why* he was obscure" (268). Barnes quotes Simplicius for the answer frequently offered by the Neoplatonists, "The ancients did not want vulgar cobblers to lay hands on their wisdom, which they therefore disguised: some used myths, others symbols – and Aristotle preferred obscurity. [He did so] perhaps because he disliked the indeterminate meaning of myths and symbols . . . perhaps because he supposed that such obscurity would exercise our wits" (quoting *In cat.* 7,1–9). While Aristotle may deliberately conceal, the obscurity of the treatises probably has more to do with their function as educational materials and the difficulty of their topics. If ambiguity is deliberately employed and passages are obscure, this may help explain textual variations in manuscripts: ancient readers and copyists have tried to lessen ambiguity and obscurity.

levels of meaning. By such an approach we may access Aristotle's intense effort to secure full understanding of soul. Doing justice to the text enjoins the exhilarating task of capturing the very soul of Aristotle's account of soul.

What I hope emerges is a work that may helpfully be read continuously or consulted for a troubling passage or term. As Aristotle aims for a complete and comprehensive understanding of soul, my goal is comprehensive understanding of Aristotle's text in its pursuit of such fullness. The orderly progression of argument, its manner of articulating its field, and the connection of this treatise with the rest of the treatises are special concerns, along with its endlessly stimulating positions on soul, sense perception, and mind. In producing this work that tries to offer light everywhere and throughout, I have sought to deal fairly with the wealth of existing secondary literature, a large task in itself.

Some years ago Myles Burnyeat led a seminar on Aristotle's *Metaphysics* vii–ix that I was fortunate to attend. In discussing ix 6.1048b18–35, Myles insisted that the passage that introduces the distinction of motion (κίνησις) and activity (ἐνέργεια) does not really belong within the *Metaphysics*. This view is hardly unprecedented because the passage is absent from the best manuscripts. What was surprising, however, was his further insistence that the passage does not belong at all in theoretical contexts in Aristotle but only in practical works. This provoked me to show that the distinction plays a vital role in the *De anima*, obviously a theoretical text. Thus began this commentary. It is my view that this distinction is crucial to Aristotle's thought about the soul, yet he refrains from using it too explicitly since it has no clear place within natural science or physics, the study of movable beings and their natural principles. Since the study of soul seems to belong largely within physics, the distinction will appear infrequently and bashfully. Attention to the distinction does have some basis occasionally in the text itself (e.g., 431a4–7). Yet we can explain why the distinction does not appear often and more explicitly by noting Aristotle's persistent regard for what is contextually appropriate. In tracking the way Aristotle might then have resources to go beyond what fits strictly within physics, even when he does not typically avail himself of them, we need not run afoul of my urging to stick closely to what he says in the order in which he says it. In correspondence Myles has indicated that he agrees with me that in fact Aristotle has the distinction in play in the *De anima* but inexplicitly because it goes beyond physics.[4] Our disagreement regarding the place of the notion of activity in theoretical contexts seeming to have evaporated, my investigations, which had already greatly outgrown the original intention, nevertheless continued. The reader possesses the results.

[4] Myles has provoked considerable controversy with his interpretation of *sense perception* in the *De anima*, and his denial that much takes place in the body when sensing occurs (see Burnyeat 1995a). But he perhaps surprisingly presents his interpretation without introducing the distinction of motion and activity that might seem so central to it. Sense perceiving is activity rather than any sort of motion. It will be a contribution of this commentary to show that distinguishing activity and motion permits Aristotle to have sense-perceiving be psychical activity while also involving some bodily motion.

Along with my gratitude to Myles for provoking this project, and Beatrice Rehl, Sarah McColl, James Dunn, Janis Bolster, and Susan Thornton from Cambridge University Press for seeing the manuscript through to completion, I thank for many sorts of inspiration those involved in the reading group on the *De anima* at the University of Pittsburgh. Participants over the years have included Andrea Falcon, James Lennox, Helen Cullyer, Greg Salmieri, Sebastian Roedl, Jessica Moss, James Allen, Allan Gotthelf, Tiberiu Popa, Kathleen Cook, John Anders, Tony Coumoundouros, Pat Macfarlane, Michael Ivins, Evan Strevell, John Russell, John Harvey, Sasha Newton, Rhett Jenkins, and Tophur Kurphess. Carl Lemke provided assistance regarding signet rings. My graduate students at Duquesne University, especially Michael Ivins, Bay Woods, Mark Brouwer, Tony Coumoundouros, Pat Macfarlane, Emily Katz, David Hoinski, Joseph Cimakasky, Michael Daley, Eric Mohr, Dominic Alvarado, Geoff Bagwell, and Patrick Reider, have also aided me. Andrea, Greg, Tony, Patrick, Geoff, Dominic, and Michael, along with John Sisko, Fred Miller, Ben Schomakers, Allan Bäck, Arnis Redovics-Ritups, and an anonymous reader for Cambridge University Press, offered many constructive suggestions on many parts of the commentary. I am most grateful for their help. Each new effort to read Aristotle's text has disclosed new possibilities.

My debts to my wife, Susan, are greatest of all, and to her I dedicate this book.

Abbreviations

Works of Aristotle

Cat.	*Categories*
DA	*De anima*
DC	*De caelo*
De incessu an.	*De incessu animalium*
De insomn.	*De insomniis*
De int.	*De interpretatione*
De juv.	*De juventute*
De long.	*De longitudine vitae*
De mem.	*De memoria*
De motu	*De motu animalium*
De resp.	*De respiratione*
DI	*De interpretatione*
EE	*Eudemian Ethics*
GA	*Generation of Animals*
GC	*De generatione et corruptione*
HA	*Historia Animalium*
Meta.	*Metaphysics*
Meteor.	*Meteorology*
MM	*Magna Moralia*
NE	*Nicomachean Ethics*
PA	*Parts of Animals*
Phys.	*Physics*
Pol.	*Politics*
Post. An.	*Posterior Analytics*
Rhet.	*Rhetoric*

Other Works

Apol.	Plato *Apology of Socrates*
DK	Diels, H., and W. Kranz. 1951. *Die Fragmente der Vorsokratiker*. 5th edn. Berlin: Weidmannsche.

D.L.	Diogenes Laertius *Lives and Opinions of Eminent Philosophers*
Enn.	Plotinus *Enneads*
Il.	Homer *Iliad*
LSJ	Liddell, H. G., R. Scott, and H. S. Jones. 1940. *A Greek-English Lexicon.* 9th edn. Oxford: Clarendon Press.
Od.	Homer *Odyssey*

Introduction

1. The *De anima* and Self-Knowledge

That which Aristotle investigates systematically in the *De anima* he calls by the name ψυχή (*psyche*), that is, soul. This term appears among a rich vocabulary available to the earlier tradition for related notions. In the earliest Greek literature that we possess, Homer's epic poems, the *psyche* is a kind of breath-soul escaping at death, the eschatological soul flying off to Hades' realm and retaining there merely a pale, shadowy existence.[1] This may help explain why ψυχή could also be used for butterfly or moth (see Aristotle *HA* 551a13–14). Heraclitus and Plato prominently accept *psyche* to stand for the whole soul (see, e.g., DK 22B36, B45, B77, B107, B115, B117, B118, and Plato *Apology* 29d–30b, *Republic* 353d, *Cratylus* 400a, *Laws* 959a). They perhaps delight in suggesting ironically that the afterlife need hardly be shadowy as Homer depicts it and that many persons now upon this earth lead merely shadowy lives.

But why suppose that there is soul at all? The ancients observe or postulate certain operations and functions; for example, animals engage in voluntary motions and have perceptive capacities, and humans seem perhaps to have some capacity for survival after death. Soul is then posited as necessary for explaining such functions

[1] Bremmer 1983, 21–24 discusses the etymology of *psyche* from *psychein*, to blow or to breathe. Following Ernst Arbman, Bremmer suggests that in the earliest thinking about soul there is "a duality where the eschatological and psychological attributes of the soul had not yet merged" (9). There are body souls, often multiple, operating in waking life to give consciousness and life to the body, and the free soul that only appears during unconsciousness such as dreams, swoons, and death. In Homer the free soul is the *psyche*, and the body souls include *thymos*, *noos*, and *menos*. The free soul (*psyche*) did not yet have psychological attributes, but "during the Homeric period the free soul was developing into Arbman's unitary soul" (14). "[A] process in which the original free soul becomes absorbed by the breath soul that, in turn, develops into a unitary soul, can be traced in many different cultures, including archaic Greece" (23). "[T]he Greeks perceived the attributes of their personalities to be structured differently than we perceive ours today. It is only in fifth-century Athens that we start to find the idea that the citizen can determine his own, independent course of action. By the end of that century *psyche* became the center of consciousness, a development not yet fully explained but upon which, most likely, a strong influence was exerted by the rise of literacy and the growth of political consciousness" (68).

as their source or cause. Only that account of soul suffices that manages to handle compellingly the function or functions that soul is introduced to explain.[2]

For just what functions should soul account? Are these only the obvious functions, such as motion and perception, or do such obscure conditions as dreams, trances, and afterlife involve soul? Does each function require its own sort of soul, that is, many functions entail many souls, or can a single soul or one sort of soul account for many functions? And how far does the notion of soul extend? Humans and other animals may have souls, but do plants also have souls? Do the elemental bodies and the bodies composed of them have souls? Do the heavenly bodies have souls? Dreams, thought, or other operations may suggest that souls are somehow separated from embodiment. Do unembodied gods then have souls? Until the extension of the notion of soul is ascertained, the common definition of it cannot be developed. Aristotle will have to determine the functions attributable to soul. In this effort he will also work out the notion of life in its connection with soul.

A treatise devoted to the soul may offer insight into the *self*. The Platonic and other philosophical traditions give special prominence to self-knowledge.[3] Aristotle's *De anima*, the first philosophical text providing a thorough exposition of the soul, has seemed promising for deepening self-understanding.[4] Yet the *De anima*

[2] Modern philosophy has also focused on the soul – though we tend to speak instead of mind or consciousness – for additional reasons: (a) The emergence of natural-mathematical experimental science with its promise of secure results led to concern for the place of philosophy. Reflection upon consciousness could seem the special domain of philosophy, enabling it to ground the rest of the sciences. (b) New ways of thought, whether in natural science or political reflection, produced skepticism regarding traditional thought and especially the sorts of causes upon which it relied. Ascertaining whether knowledge or certainty is possible for humans seemed to require a clarification of the powers and limits of human understanding. Therefore the "epistemological" orientation in philosophy took on central importance, and modern works in philosophy tended to have titles such as *An Essay Concerning Human Understanding*, *A Treatise of Human Nature*, *Critique of Pure Reason*. (c) With the rejection of traditional thought on the causes, a new view of reality emerged. It no longer seemed that being was simply there to be discovered, disclosed, or revealed to humans; instead humans have some role in constituting it. Whether this took the form of nominalism, phenomenalism, idealism, historicity, or whatever, metaphysics began to center on human powers as had epistemology. (d) The success of science has made the notions of life and consciousness problematic. Such contrivances as computers may seem to have mind, consciousness, and life.

[3] In Plato's *Phaedrus* 229e–230a, commenting on rationalistic explanations of myths, Socrates says: "I have no time for such things; and the reason, my friend, is this. I am still unable, as the Delphic inscription orders, to know myself; and it really seems to me ridiculous to look into other things before I have understood that. This is why I do not concern myself with them. I accept what is generally believed, and, as I was just saying, I look not into them but into my own self: Am I a beast more complicated and savage than Typhon, or am I a tamer, simpler animal with a share in a divine and gentle nature?" Heraclitus famously commented upon his own philosophizing, "I searched myself" (ἐδιζησάμην ἐμεωυτόν, DK 22B101).

[4] Wedin 1988, x states regarding Aristotle's originality: "With Aristotle we get, for the first time, theories of sufficient complexity and completeness [regarding the soul] to bear scrutiny on their own." Blumenthal 1996, 5 says about the interest of this treatise for the ancients, "the *De anima* is better provided with commentaries from late antiquity than any other Aristotelian works apart from the *Categories*." He offers several explanations for the appeal to commentators of the *De anima* (3–4): "the soul is the

hardly takes the form of an autobiographical or biographical work about the self. It does not even focus upon humans. Neither does it consider, in a way we might expect from some modern psychology, how to put our lives in order. Can it, then, contribute to our knowledge of the self? Perhaps it can if it clarifies the soul and its faculties.

What is the *self*, and how might it connect with *soul*? Some insight into notions available to Aristotle may be gained by reflection upon Plato. The very first word of the *Phaedo*, the dialogue devoted to Socrates' life and the possibility of its continuance, is αὐτός, the word for self.[5] Phaedo is asked whether he was present him*self* in the prison when Socrates died. Phaedo was in fact there in body and soul in the prison with Socrates – as he is now with Echecrates in Phlius – so that he witnessed firsthand what transpired and did not merely hear about it or imagine it. Such presence of the self is being somewhere in person. The self seems to be the entirety of the person. Yet this hardly exhausts the meaning of self. Soon in the *Phaedo* it is suggested that at death body and soul separate so that each gets away itself by itself (αὐτὸ καθ' αὑτό, 64c6 and αὐτὴν καθ' αὑτήν, 64c7–8; cf. 65d1–2). The self here is what something is when nothing foreign to it is together with it. This seems reinforced when Socrates refers to something as being itself just (τι εἶναι δίκαιον αὐτό, 65d4–5), and he goes on to speak of the Form as the essence that each being is (τῆς οὐσίας ὃ τυγχάνει ἕκαστον ὄν, 65d13–e1) and each thing itself under investigation (αὐτὸ ἕκαστον, 65e3). Here "self," in expressions such as "the *X* itself," means the very being of the thing. What it itself is, its being when considered apart from anything other than or alien to it, is its ownmost self. From this perspective the very self of a human being is the soul – the body being taken merely as something foreign to it – or some essence or Form, such as the Human Being itself, or even one's highest capacity, such as intellect.[6]

There seem, then, at least two ways to think about the self. There are the notion of self as the entirety of the person, and of the self as what is most genuinely what one is. The entirety notion is an expansive self. It may extend to even greater wholes than the individual soul and body. The Greek saying that "the friend is another self" (see *NE* 1170b6–7) suggests that the self may embrace one's circle of

thing closest to us and therefore the most obvious candidate for study"; "one must follow the Delphic injunction to know oneself before one goes on to any other kind of enquiry"; and "the value of studying the soul and the contribution it can make to every kind of knowledge." Blumenthal also observes, "the subject is of particular interest in so far as it comes at the interface of the study of the natural world and the higher entities responsible for its existence and functioning" (5). The opening lines of Simplicius's commentary state, "The primary and most important object of concern is the truth about things themselves, both about other things and concerning the soul, which is the most relevant of all for us" (*In de an.* 1,3–5). Alexander of Aphrodisias speaks about the Delphic injunction "Know thyself" and its relevance to study of soul in the Aristotelian tradition (*In de an.* 1,1–2,9).

[5] The importance of this word in *Phaedo* 57a1 seems emphasized by its reappearance in 57a4. Burnyeat 1997, 9–11 discusses the significance of this first word in this dialogue. He intriguingly notes that this same word appears in relation to Socrates in Aristophanes' *Clouds* 218–219.

[6] In the final argument of the *Phaedo*, the soul becomes indistinguishable from Life itself (106d). In *Alcibiades I* 129b1 and 130d4 Socrates speaks of the Self itself.

friends (cf. the speech of Aristophanes in Plato's *Symposium* and its background in Empedocles).[7] But we might then also identify with larger groups or wholes, such as family, polis, or cosmos, so that the self can be remarkably embracing. The other notion of self, as what is most genuinely the thing itself, heads in the opposite direction: to greater refinement rather than to expansion. The principle or ruling element, and particularly that which has fullest awareness, appears most the thing itself. So in Plato's *Alcibiades I* the soul is said to be the self inasmuch as it uses the body as instrument (cf. *Laws* 959a-b). And more especially that part of the soul by which we think and know ourselves seems most the self. Aristotle in *Metaphysics* 1037a7–8 suggests that Socrates is his soul; in *Nicomachean Ethics* ix 4.1166a16–17 and 8.1168b28–1169a3 he identifies the self with mind, the ruling element of the person, and analogously, the self of the polis is its *politeia* (see *Politics* 1276b1–13).[8]

This reflection upon the self suggests how treatment of the soul can pertain to the self. For Aristotle it will be determined that soul is fundamentally the principle bestowing life upon a body capable of life. Soul and body are for him somehow one, the soul giving unity to the body or matter, enabling the living being to engage in its various functions. The view of soul and body united as form and matter later receives the name "hylomorphic" theory. Generally it is the person or animal, composed of soul and body, rather than merely the soul that does things, such as experiencing emotions, perceiving, and thinking (see *DA* 408b12–15). Thus Aristotle prepares an understanding of soul equipped to account for the typical way that self is used to mean the individual person or living being. As a scientific and theoretical treatise, the *De anima* cannot be about a particular individual, such as Socrates, but it can explore what enables the various individuals to be the individuals that they are. The treatise goes beyond study of the relationship of body and soul, and the ordinary meaning of self, to determine what the soul itself is and what are its several functional capacities. These investigations answer to that more peculiar sense of self where it may refer to the ownmost being or essence of the thing. As Aristotle explicates such capacities as those for nutrition, sense perception, and thought, he gives access to the most characteristic modes of being of the self for different levels of living things. The different capacities of soul support various levels of life. The higher sorts of life constitute richer modes of selfhood inasmuch as they get further from body and have more complete self-involvement.

Even nonliving things have bodies, but humans share with all mortal living beings possession of a body that serves the soul by providing instruments useful for its

[7] "When referring to themselves, the early Greeks, like other Indo-European peoples, did not primarily consider themselves to be independent individuals but rather members of a group" (Bremmer 1983, 67). See *NE* 1094b7–10 about the way the end for the community is greater and more complete than that for the individual.

[8] We may note that the two different lines toward the self tend to have different relationships with temporality. The expansive self may be momentary or lasting through time. The more refined notion of self tends to eternality and to escape time completely. Moreover, both these lines toward the self may end in God. The expansive self might expand out to God, and the more refined notion that seeks the ruler might find God ruling us and close to us; see *Alcibiades I* 124c (and on this dialogue, see Johnson 1999).

functioning. Humans share with plants the nutritive and reproductive capacity. With animals we in addition share sense-perceptive capacity. With sense perception are pleasure, pain, imagination (*phantasia*), desire, self-awareness, and frequently voluntary motion. Distinctive of humans among mortal living things is mind. This enriches the possible self-awareness and voluntary progressive motion. Though mind does not have a specific bodily organ as does each of the senses, humans only think because they have sense perception to open and activate their minds. All the operations of mortal living things, then, involve the entire living being encompassing body and soul, but though the higher living beings have more complexly organized bodies, their operations are somehow less body dependent. Bodies are initially most obvious, supplying organs or tools for soul's utilization, but since they are merely instrumental to soul, they may not ultimately be so fundamentally self and intelligible. As soul in the *De anima* elaborates upon its own capacities of sense and mind, it uses the self-awareness accompanying all cognition to gain self-understanding by elucidating what allows for such self-understanding.

The soul's cognitive powers thus make possible illumination of the self, achieving self-understanding by giving accounts of themselves. Aristotle will say,

> When it [mind] thus becomes each thing as the person knowing according to actuality is said to do (this happens when he is able to exercise the power on his own initiative), its condition is still one of potentiality, but not in the same way prior to learning or discovery; and it is then able to think itself. (429b6–10)

The human or animal engaged in any perceiving or thinking, on Aristotle's view of these, is aware of self because the self now is the perceiving or thinking of what is being perceived or thought. This self-awareness develops into the whole account Aristotle provides of the soul. The account of the soul relies upon self-awareness involved in any perceiving or thinking and deepens to self-understanding of its own capacities and operations. The soul, especially in its highest capacity and operation, mind and thinking, seems the genuine self. The *De anima* can thus be a work about the self and a work of self-knowledge.

The highest capacity of soul, mind, has a peculiar relationship to soul, however. Plato seems to insist mind is only in soul (see *Timaeus* 30b), but Aristotle seems to argue that mind is somehow separate (see 403a10–12, 429a18–27, 430a17–18, a22–23).[9] Since souls are posited as principles explaining the motions and operations of certain sorts of bodies, gods lacking bodies will not need souls. Yet the gods engage in thinking and have life. God, for Aristotle, is a life of thinking, thinking thinking itself (see *Metaphysics* xii 9). For God to be actuality with no potentiality, God is thinking (*noesis*) rather than mind (*nous*), which is merely a capacity for thinking. Self and life in their fullest divine applications, then, ultimately surpass

[9] In fact Plato seems to insist that in relation to *visible things* mind must be in soul, thus leaving open the possibility that any nonembodied God could be mind without soul or more likely something beyond mind. Williams 1986, 190 should not have said so readily, "Aristotle thinks that any living thing can be said to have 'soul'" since for Aristotle God is thinking and living, but without either mind or soul.

soul. Understanding of our own mind prepares us for some grasp of what is divine about our self and the godhead.

All soul bestows life, but since life may surpass soul, life serves as principle of soul even more than the reverse, whereas his predecessors typically give life only very limited attention, and when they do, they settle for a single criterion such as motion, respiration, or awareness to demarcate the living, Aristotle devotes serious attention to life and recognizes that life has many varieties. But he finds that the basic sort of life essential to mortal beings, the condition that suffices for any of them to live and that will also be necessary, is nutrition, growth, and decline. Hence life begins with plants and includes animals, rather than as most predecessors supposed starts with animals. Therefore life and soul are not limited to those beings that can be conscious of having a self. Soul and life take their rise below the level of awareness and self-awareness with plants. Then animals have soul, life, and self-awareness. But subsequently life and self, with the gods, transcend the reach of soul.

What may Aristotle have to say about the possible continued existence of the self of mortal beings following the present life, that is, the immortality of soul? To the extent that soul is posited to account for the functions of mortal living things and only functions with bodily instruments, there is no reason to suppose that it can continue when the body becomes largely dysfunctional, especially so that it cannot support nutritive functioning essential to mortal life. Of course there are temporary dysfunctions, for instance, sleep, drunkenness, fainting, injury, sickness, that permit recovery, but death seems more final. The only way soul could have continued significance is if it could become reincarnated, a view not extended any credence by Aristotle since soul is the principle of life of its own body (see 406b3–5 for reincarnation based upon an impossible assumption). Mind, however, has only limited dependence upon body even when humans are alive. Mind also seems to originate from outside us inasmuch as we learn much from those who already know (see *GA* 736b27–29). If humans always exist, mind seems always in existence. Perhaps therefore mind somehow continues, though not soul, especially inasmuch as mind is "unaffected" and "separate" (see 429a15 and b5). With loss of body, however, sense capacity, *phantasia*, and memory are lost as well. It seems, then, that disembodied and nonensouled mind cannot retain or concern itself with particulars but only the truly intelligible things. Such mind can have no rewards or any liability to punishments. Aristotle no more bothers to consider the way disembodied minds might be individuated, assuming that there are such, than he concerns himself with the individuation of the gods (see *Meta*. xii 8). If mind continues after death, perhaps as universal knowledge in humans, the way in which it continues might seem to us a rather selfless selfhood.

2. Study of Soul in Relation to Physics

Aristotle is very attentive to what scientific field he is working in and keeps closely to what is appropriate within that field. Therefore his division of sciences into theoretical, practical, and productive sciences, as in *Metaphysics* vi 1, has important impact upon what he covers and his methodology. For example, the four causes,

form, matter, mover, end, emphasized in the theoretical works are clearly in play in the practical science ethics; for example, happiness is the end, character the form applied to the matter of the passions, and choice is the moving cause, but Aristotle will not refer explicitly to this demarcation of causes since such theoretical notions are generally out of place in practical science. Similarly, we find Aristotle in *Politics* 1256a40–b32 claiming that all animals are here to serve human needs; that is, nature providentially supports justice and our being political animals, but this is not the way he speaks in his theoretical works, where it seems each natural kind seeks its own end enabling it to be most godlike. We should expect, then, that where the treatment of soul fits among the sciences will greatly influence Aristotle's approach. Soul is a major topic, of course, in practical science (ethics and politics) and productive science (rhetoric and poetics), but the *De anima* is a theoretical treatment of soul undertaken for the sake of knowledge of the truth rather than any practical purpose. Aristotle further divides theoretical science into mathematics, physics, and theology, that is, first philosophy (see *Meta*. 1026a18–19). Study of soul as principle of rest and motion of natural beings fits largely within physics.

Soul belongs primarily within physics because soul is the *nature* of ensouled beings. Natural beings have motion by nature; nature is an inner principle of rest and motion in a natural being (see *Physics* ii 1). Some natural beings are self-movers. Mortal self-movers are ensouled. Animals are most obviously mortal self-movers, but plants as well seem self-movers insofar as they grow under their own power, though lacking progressive motion. It looks, then, as if study of such mortal self-movers belongs within physics (see *Metaphysics* 1025b34–1026a6, *DA* 402a6, and 403a27–28 for soul as studied to some extent in physics). Soul is posited to explain the self-motion of mortal living things. The soul is cause of self-motion, whether this motion is change in quantity (as the growth of a plant or animal), change in place (as the walking, swimming, or flying of an animal), or change in quality (as in animal cognition or emotion). A dead plant or animal, and even more obviously an image of a plant or animal such as a painting or a statue, cannot move itself: the incapacity is explicable by the absence of soul and the capacities it gives (see *PA* 640b29–641a32).

Aristotle complains that his predecessors focus too exclusively upon humans (402b3–5). The study of soul must extend to all ensouled beings if soul and even human soul are to be understood. But this extension makes a science of soul problematic for Aristotle. Plants and animals do not form a single genus, and living things even less form a clear genus. Since science usually pertains to a single genus as its subject matter, study of soul is unlikely to constitute a science and Aristotle does not refer to his project in the *De anima* as the elaboration of a single, self-contained science, though much of it fits within physics. Why then study soul in its full extension and initially seeking the most common account (κοινότατος λόγος) of soul (412a4–6)?

The answer is that for Aristotle to do otherwise than to seek the most common account of soul is to study something other than soul. Merely to study plants, animals, or humans will not provide an account of soul as such and dubiously discloses all of its key faculties. Only through arriving at the most general account of soul

and at the beginning of the presentation of his own positive view is he in position to analyze the soul's faculties because his general account of soul implies what faculties the soul has. His definition of soul develops only through acceptance of nutritive capacity as basic and the further faculties follow as well from this definition. He thus arrives at a very different sort of division of soul from that found for example in Plato with his rational, spirited, and appetitive parts of soul. Were Aristotle instead to start with study of human or animal capabilities he perhaps would become preoccupied with cognition. And launching inquiry with the soul's faculties rather than his most common account, he would have trouble justifying these faculties as all pertaining to soul. Without an embracing account of soul little light can be shed on the connections of the soul's faculties and the relationship of soul and body. Even then if Aristotle might well have arrived at his general account of soul only after much reflection upon the soul's faculties, as book 1 well shows, in his systematic presentation of his investigations he must commence as he does with the most common account. Book 1 surely offers extensive preparation for both the general account of soul and accounts of its faculties.

The soul's faculties, that is, its "parts," will to some extent be studied along the same lines as the parts of the body. In the *Parts of Animals* Aristotle suggests that rather than treat each species of animal separately, in which case parts such as heart, lungs, and stomach will be considered again and again, investigation of animals by the parts shared by many species of animal is most appropriate (639a15–b5 and 644a23–b15). He similarly studies soul by going through shared capacities of soul: nutritive, perceptive, intellective, and locomotive powers. Not only are these capacities generally widely shared, but also they have an order of succession within perishable living beings, the higher functional capacities presupposing and depending upon the lower. This accords with the most common account of soul. The lowest capacity of soul that first bestows life, nutritive power, belongs to all mortal living beings; plants possess it without any higher capacities. Similarly, some simple animals have the contact senses touch and taste without having any of the distance senses, though all the animals having the distant senses will also have the contact senses. Animals having intellect require sense perception as well. Hence, any soul with higher capacities will have the lower capacities. The order of treatment of the faculties mainly follows the order of succession. And since the higher capacities cannot generally be separated from the lower and depend upon them, they may only be understood in connection with them.

In studying the faculties successively, as fits with his most common account of soul, Aristotle traces analogous features so far as possible. Each faculty has its correlated object and most have a bodily organ through which they work. The faculties break up analogously into subfaculties, as sense encompasses five senses; nutrition covers growth, maintenance, and reproduction; and intellection may be theoretical, mathematical, or practical. Hence much is gained by approaching the higher capacities through their striking analogies and partial disanalogies with the lower capacities of soul that are initially easier for us to understand (see *Physics* 184a16–21 about proceeding from what is at first more intelligible to us to what is intelligible in itself). The nutritive capacity not involving awareness is clearer to us than the

higher capacities of soul, yet the less bodily involvement there is in the functioning of a capacity of soul, the more intelligible it is ultimately. Much as the relationship of body and soul is considered in analogy to form and matter and actuality and potentiality, functional capacities allow for extended analogies. A preliminary indication of the significance of reflection upon analogy and disanalogy in the *De anima* appears in Table 1.[10] These analogies discussed in the commentary take us deeply into Aristotle's positions and offer compelling support for their coherence. We might expect that those speaking of something possibly imperceptible like soul are constrained to use examples, models, images, and metaphors based on perceptible things (cf. Plato *Statesman* 277d and 285d–286b). Aristotle will inevitably employ these to clarify the soul and its powers, and these are closely related with analogy. But by especially emphasizing analogy and disanalogy among the several capacities of soul considered, he advantageously avoids having the account go below the level of soul since for Aristotle life cannot be explained exclusively in terms of the nonliving.

The way soul's powers are sequential, going from the most widely shared to the less widely shared capacities, can explain why the heavens and gods are not ensouled so that the study of soul pertains just to mortal living beings. The heavens are self-movers and may have something analogous to soul to account for this, but while rotating endlessly, they do not grow or alter (see *De caelo* i 3), so they must lack nutritive life and sense perception. If all ensouled beings require nutritive capacity to support any other faculties, the heavenly bodies are not ensouled. For similar reasons, God engaged in thinking, living but without nutritive and sense-perceptive life, does not enter within the subject domain of investigation of soul.[11] Plants and animals as self-moving mortal beings are ensouled beings.

Among the animals, however, humans have at least one power of soul, mind, that gets outside the realm of physics. Mind may not need to be embodied, and Aristotle will utilize Anaxagoras's view that mind is "separate" and "unaffected" (*DA* iii 4). To the extent that mind is not so closely mingled with body while its operation is unlikely to be a motion, mind leaves the domain of physics that concentrates upon movable beings and their principles. *Parts of Animals* confirms the place of soul within physics but denies that all of soul, in particular mind and especially theoretical mind that does not as such initiate motion, belongs within physics:

> What has been said suggests the question, whether it is the whole soul or only some part of it, the consideration of which comes within the province of natural science. Now if it be of the whole soul that this should treat, then there is no place for any other philosophy beside

[10] Subcapacities appear under the capacity. The brackets within the organ category are intended to indicate the peculiar status of the organs of thought. The instruments (*organa*) of thought are nonbodily, intelligible forms (see 431b28–432a3). Contemporary cognitive science, largely ignoring Aristotle's cautioning against focusing too exclusively upon humans, does not trace analogies of psychical faculties as does Aristotle. Attention to analogies and disanalogies of the senses is found in Lloyd 1996, ch. 6.

[11] Had study of soul focused on humans, however, there might have been little way to avoid investigating the realm of divine things that seem to share with humans in thinking. Contemporary cognitive science has become increasingly aware of the impact of mortal embodiment upon cognition, i.e., the role of growth, emotions, progressive motion, and sociality (see Thagard 2005).

TABLE I

Capacity and Subcapacities	Object	Medium	Organ	Operation(s)
Nutritive	Food		Heat (*pneuma*)	Nourishing
Growth, decline	"		"	Growing, declining
Life, maintenance	"		"	Living
Reproduction	Seed		Heat, form	Reproducing
Sensitive	Sensible	Medium	Sense organ/sensible form	Sense-perceiving
Sight	Visible	Illumined Transparent	Eye	Seeing
Hearing	Audible	Air (water)	Ear	Hearing
Smell	Odor	Air (water)	Nose	Smelling
Taste	Flavor	Tongue	Inner organ (heart)	Tasting
Touch	Tangible	Flesh	Inner organ (heart)	Touching
Phantasia	*Phantasma*, sensible		Sense organs	Presentation in many operations
Intellective	Intelligible	Agent intellect, *phantasma*	[Knowledge/intelligible form]	Thinking
Theoretical	Essence	"	["]	"
Mathematical	Abstractions	"	["]	"
Practical	Goods	"	["]	"
Locomotive	Desirable	Desire, *phantasma*	Connate *pneuma*, joints	Voluntary motions
Appetite	Pleasant	"	"	"
Spiritedness	Incitement	"	"	"
Wish	Good	Desire, practical thought	"	"

it. For as it belongs in all cases to one and the same science (*theoria*) to deal with correlated subjects – one and the same science, for instance, deals with sensation and with the objects of sense – and as therefore the intelligent soul and the object of intellect, being correlated, must belong to one and the same science, it follows that natural science will have to include everything in its province. But perhaps it is not the whole soul, nor all its parts collectively, that constitutes the source of motion; but there may be one part, identical with that in plants, which is the source of growth, another, namely the sensory part, which is the source of change of quality, while still another, and this not the intellectual part, is the source of locomotion. For other animals than man have the power of locomotion, but in none but him is there intellect (*dianoia*). Thus then it is plain that it is not of the whole soul that we have to treat. For it is not the whole soul that constitutes the animal nature, but only some part or parts of it. (i 1.641a32–b10)

Were physics to encompass mind and its correlated objects, that is, intelligible beings, it would seem to be considering all of being, and physics would be all of philosophy. Since study of soul thus pertains to physics while also going beyond physics, soul's investigation may be difficult and not result in a science of the soul.

The *De anima* sets out the most general account of soul and deals at least with the soul's nutritive, sense-perceptive, intellective, and locomotive powers. It must understand the powers it considers in relation to their basic objects or subject matters. For example, it studies vision in relation to color rather than to green or red, and it explores the locomotive capacity without worrying about flying, swimming, and so on (taken up in *Progression of Animals*). An important reason for avoiding going into this sort of detail is that it might require more attention to body and matter than is appropriate for this treatise. This same explanation gives some reason for restricting the powers of soul requiring investigation. Had Aristotle scrutinized sleep, dreams, memory, and so on, he might have had to get into more consideration of body that would lead him away from focus upon soul. The basis for all of these further faculties treated subsequently in the *Parva Naturalia* is already investigated, however, through accounts of sense perception and *phantasia* in the *De anima*. The further powers more entailing bodily involvement do not so clearly add to the sequence of powers set out in the *De anima* and do not fit so nicely into patterns of analogy. Aristotle is unsure in many cases which animals have some of these faculties, so dealing with them would not add to the completeness of the general treatment of soul.

Since much of the study of soul belongs within physics, we might wonder why the work does not pay more attention to living bodies or get into much detail about them. Aristotle's coyness about bodily motions in connection with soul has provoked considerable dispute in particular about how to understand sense perception. Does much happen in the body when the animal sense-perceives or does the mere availability of sense medium and the sense organ to the sensible object exhaust the bodily contribution to the occurrence of sense perception?[12] Even if Aristotle thinks that there are physiological changes during perceiving, he might

[12] See preface n.2 on those denying much role for the body in sense perception and those holding that physiological change occurs during sense perception.

well avoid speaking of this for such reasons as these. Bodies and the motions within them should not occupy his most general treatment of soul and its capacities that serve as formal, final, and moving cause. Since the same power of soul, such as nutritive and sensitive power, can dwell in various sorts of bodies of plants and animals, and the mind that belongs only to humans has looser ties to matter, close attention to matter is not needed for understanding soul and its powers. The higher the faculty of soul the less bodily involvement it has. Since for Aristotle there is little way to observe closely the motions that occur in conjunction with psychical operations, he can do little more than assume that there are such motions and argue inferentially regarding them.

3. The Cognitive Faculties and Physics

How for Aristotle does motion connect with sense perception? The controversy surrounding the question suggests it is not easy to answer with clear evidence from the text. Surely Aristotle stresses early on in the *De anima* that when an animal experiences the emotions or *pathe* of soul there is bodily involvement (403a3–b19). For example, anger occurs with boiling of the blood around the heart and fear with some chilling of the animal. But does Aristotle suppose that this applies to the other affections of the soul as well? Even if he insists that all affections of soul are "with body" or "not without body" (403a15–17 and 429b4–5), does this demand more than that the sense organs are available for sense perception, for instance, eyes open and turned a certain direction? Need motions be occurring in these sense organs and in the body of the perceiving animal in connection with perceiving?

Aristotle will speak of the percipient animal as being moved by the sensible object and of sense perception as motion of a sort (see 416b33–34, 417a14–18, 419a25–28, 429a13–15). Speaking of perceiving itself in terms of motion may seem apt for reflection upon sense perception. Aristotle's predecessors usually spoke of this as motion, and what alternative vocabulary is there for the animal's being moved by or acted upon by the sensible object (see 417b32–418a3)? Yet for Aristotle all that can truly enter into motion or rest is a bodily magnitude. Soul, not itself a body, cannot strictly undergo rest or motion. Whether sense perception does or does not involve some alteration of the body of the perceiver, it definitely cannot be an alteration of the soul. Nevertheless, Aristotle will speak of sense perception as alteration of a sort (ἀλλοίωσίς τις, 416b34), though he will sometimes caution that it cannot simply be alteration (see, e.g., 417b8–16 and 431a4–7). Nonetheless, all the while he has resources with which to speak more accurately.

In some works Aristotle makes a distinction between motion (*kinesis*) and activity (*energeia*).[13] Since motion is itself a kind of actuality (*energeia*) – the definition

[13] See especially *Meta.* ix 6.1048b18–35 and *NE* x 3.1173a29–b7 and x 4. Whether the *Metaphysics* passage belongs in that text or not has been disputed: the EJ manuscripts lack the passage while only the A^b has it. This vital distinction was called into question in Ackrill 1997 [1965], 142–162. For an attack on Ackrill, and reference to some of the literature, see Polansky 1983. The present comments partially correct and supplement this article.

of motion in *Physics* iii 1 and *Metaphysics* 1065b14–16 is the *actuality* of the potential being as such – the distinction of motion and activity is a further division of actuality. *Energeia* as activity, in contrast to motion, is complete at every moment and continuable. Motion has a termination toward which it is on the way throughout the motion and only complete when it reaches this termination. Locomotion is motion toward a definite place; alteration, motion toward a particular quality; growth and diminution, motion toward some determinate quantity.[14] When the motion is completed, the initial quality, quantity, or place of what has been moved is lost or destroyed since its destruction is precisely the coming to be of the new form in the underlying matter (see 417b2–3 on the destruction of the initial quality in alteration). When the motion, more or less quickly, reaches its termination and is complete, there is no longer motion. This helps explain the definition of motion as actuality of the potential being as such: motion is the actuality of the potential to *be* something, some quality, quantity, or place, so long as the potential to be that is not fully realized.[15] Aristotle elucidates the point that motion is actuality but incomplete (see 417a16–17 and 431a6–7) by noting that for motion the present and perfect tenses cannot be used simultaneously (see *Meta*. 1048b18–35). If we only say we "have walked" or "have built a house" upon the termination of the walking or building, then we cannot at the same time be walking or building and have walked or have built. Of course we can also use the perfect tense retrospectively to mean that so much has been completed as has been completed, and then there is a way in which we can be walking or building while we have walked and have built. Yet this does not suggest completeness and continuability in the way Aristotle means. But there are cases in which we rightly conjoin present and perfect tenses. We rightly say we "are seeing" and "have seen," "are enjoying" and "have enjoyed," or "are thinking" and "have thought." These sorts of cases may receive the name "activity" rather than "motion." The conjoining of present and perfect tenses in these cases indicates that they always have their end in themselves, and so are always complete, whereas motion is on the way toward its end and so incomplete.

The distinction between motion and activity should be vital to the exploration of soul (see, e.g., 431a1–7). Aristotle thereby can demarcate a class of psychical actualities, that is, operations for which the soul may itself be the primary subject, from other actualities that are motions of bodies. Activities that are complete at

[14] A crucial exception is locomotion in a circle that, lacking a determinate end and allowing any end to serve also as a beginning, is limitlessly continuable, though it is not complete at every moment (see *Phys*. viii 8). For Aristotle the heavens can rotate forever because they have this kind of motion.

[15] Aristotle's definition of motion in *Physics* iii 1 has been found problematic or in need of reinterpretation. See, e.g., Kosman 1969 and Graham 1988. Motion for Aristotle is just the actuality of the potentiality to *be X* so long as there is some potentiality still left to be *X*. Hence motion is the *actuality* of the potential being *as potential*, i.e., the actuality of the potentiality so long as the potentiality has not arrived at what it has the potential to be and actuality rather than when it is resting on the way. When all the potentiality to be *X* has been actualized, then the motion ceases and we have the complete *X*, or when it rests at some midpoint on the way there is not the actuality of the potential *as potential*. It is also quite true to say that motion is the actuality of the movable as movable, i.e., the actuality of the potentiality to *become*, but this is not the key *definition* of motion since this would be circular (see, e.g., *Phys*. 201a11–15).

each moment and continuable pertain only to ensouled beings or to higher beings.[16] Locomotion in a circle, since continuable and in a way complete, is the closest that bodily motion approaches to activity. Plants live as a result of their nutritive capacity, this life leading to various motions, but the very living as somehow having its own end and being complete at each point and continuable is activity. Aristotle classes living with activity in *Metaphysics* 1048b27 and 1050a34–b2. And it will be seen in *De anima* ii 4–5 that living is saving itself; that is, the activity of living ceaselessly preserves and continues itself, whereas motion as such is change from what has been to its destruction through the emergence of something new.[17] The living of the plant is the lowest sort of activity as opposed to motion. Life on even the lowest level must be some activity rather than any mere concatenation of motions. The higher sorts of activities that involve awareness, as can be gathered from Aristotle's examples in the *Ethics* and *Metaphysics*, all fall generally into three groups: cognition (e.g., sense-perceiving or thinking), affectivity (e.g., enjoying, being pained, experiencing emotions), or action related (e.g., choosing, acting, being happy). His examples confirm that all activities pertain to living, that is, the psychical or cognitive.

Nutritive life as self-preserving has its end in itself (see *Meta.* 1050a34–b2), and why the higher sorts of activity are complete and continuable at each moment is readily explained. Cognition is the fundamental activity among the higher activities; the others are based upon it.[18] This is so because the various types of affective responses derive from the appearance of something as pleasant, painful, desirable, pitiable, fearful, and so on.[19] Similarly for choice, action, and happiness, there is awareness through deliberation and inquiry of what is being chosen and done. Thus all the higher activities either are cognitive activities or build upon these. Since cognition is for Aristotle by means of the reception of the sensible or intelligible form, as will be argued in the *De anima*, and form has unity and completeness, cognition is basically complete at every moment.[20] Thus being always complete, it

[16] If as Aristotle holds there are beings thinking without having souls – the divine beings that are just thinking of thinking lack body and therefore have no need for soul to animate it – then activity pertains to life generally rather than merely to ensouled life.

[17] Aristotle has a way to characterize life generally as saving itself (see esp. 416b11–20 and 417b2–16). This improves upon Plato's account of soul and life as self-motion, e.g., in *Phaedrus* 245c and *Laws* 895b–c. Nutritive, perceptive, intellective, and locomotive lives are all involved in saving themselves. Saving self avoids being a sort of motion or change since the operation and activity of a vital capacity maintain what the capacity is rather than leading to destruction. In *De resp.* 479a29–30 life is said to be the abiding (μονή) participation of the nutritive soul in the warmth of the living organism.

[18] Compare the way Descartes's inventory in *Meditation* iii finds the thoughts in the mind fall into three sorts, ideas, emotions and volitions, and judgments; the other two sorts of thoughts both are built upon ideas.

[19] Confirmation that Aristotle has cognition preceding desire occurs in *Meta.* xii 7.1072a29–30, where he says "desire is consequent on opinion rather than opinion on desire; for the thinking is the starting-point" (ὀρεγόμεθα δὲ διότι δοκεῖ μᾶλλον ἢ δοκεῖ διότι ὀρεγόμεθα· ἀρχὴ γὰρ ἡ νόησις), and in the accounts of the various passions in *Rhetoric* ii where it is the appearance (*phainomenon*) of something that provokes the passion. Of course once we are in a passionate condition this affects our cognition, but cognition generally initiates affections.

[20] Even in the case of temporally extended objects an animal's cognition of them must somehow pertain to the whole. For example, listening to a concert or watching an animal running can only make some

is not on the way toward any end outside itself, as is motion, and hence activity need not stop at any particular point. Though an animal tires and even dies, and will therefore temporarily or permanently stop its activity, activity has no external terminus, reaching which it must stop as does motion. Because higher activities are based in cognition occurring through reception of form, activities have their ends in themselves, are complete, are continuable, and also are self-aware. Through reception of sensible or intelligible form the cognitive capacity becomes aware of both its object and itself as cognizing this object.

Thus the distinction of activity from motion offers to Aristotle sophisticated conceptual equipment with which to speak most pertinently of the operations of soul. The nutritive and cognitive functions and those functions presupposing cognition should be spoken of in terms of activity, but all nonliving things and operations fall below the level of activity. Despite the availability of his powerful distinction, Aristotle will nonetheless generally refrain from speaking this way in the *De anima* because physics has no role for a distinction of motion and activity. Only motion is strictly within the domain of physics. Hence Aristotle, upholding methodological rigor, will only occasionally suggest this further distinction while often speaking of cognitive operations as if they were motions of a sort and cases of being moved. This exposes a further reason beyond the status of mind and its objects why study of soul does not fall strictly within physics, and yet Aristotle may elect to stay so far as he can within the bounds of physics.

It is not only methodologically appropriate within physics to speak of cognition as motion, but also most useful in many ways. Regarding motion Aristotle holds that there must always be a mover; this is less clear for activity. Objects of a faculty evidently serve as movers if the faculty's operation is motion. And Aristotle's cognitive "realism" – animals perceive or think things just as they are – may depend upon viewing cognition as a case of being moved by its object and assimilated to it such that the cognitive faculty takes on the object's very form. Consider how alteration is the change from being unlike to being like the mover. Talk of cognition as motion also nicely links body and soul. If there is some physiological process in the body occurring during most cognition, speaking of motion serves to unite what transpires in body and in soul both cognitively and as originative of muscular contractions and relaxations that result in locomotion of parts of the animal. Moreover, motions linger and give rise to further motions, so reference to motion in cognition assists with consideration of imagination, memory, dreams, and so on, that require some residual motions from cognition. Finally, speaking of cognition as motion may help with our standard experiences. While cognition is essentially by means of the reception of form, this fits most obviously with the simplest cases

sense through cognition directed at the whole form. Temporally extended objects produce much of the confusion in Ackrill 1997, 142–162, since it seems impossible to say, e.g., I am watching and have watched a dramatic performance at the same moment except where the perfect tense is used retrospectively. That all cognition derives from forms that are wholes alleviates the difficulty. Or at least in the *De anima* Aristotle only has to consider the essential objects of cognition that are grasped through simple forms.

of cognition, such as the seeing of color and thinking of essence, rather than the more complex cases, such as seeing Callias on horseback or the thought about this or any process of reasoning. Motion might help account for rich sense experience and discursive thought.

With the distinction of activity and motion, Aristotle can give a full account of sense-perceiving. Seeing, hearing, smelling, tasting, and touching should be activities rather than motions. These are not alterations of soul at all, but activities. The account of sense as the capacity to receive the sensible forms without the matter (see ii 12) prepares for viewing the operation of sense as activity complete at every moment, continuable, and self-aware. But then what about the possibility of some accompanying physiological change in the body? In *De anima* i 1 it should be clear that activity and motion need not exclude each other. Emotions such as anger and fear are activities including awareness, but they also involve boiling around the heart or cooling. Similarly, action (*praxis*) according to virtue, such as a brave action, is an activity good in itself because of the choice governing it, but it may involve charging or retreating in battle formation, and other such motions. Artistic production generally is productive motion, but since what is produced is determined by choice (see *Meta*. ix 2 and 1047b35–1048a11), activity and justice come into play along with motions even with the crafts. Thus we see that Aristotle in many important contexts allows that activity and motion occur somehow together. In some way more or less strict, the motions are the "matter" of the entire operation, while the activity is the "form." Can something similar apply to sense-perceiving?

The key to answering is determining whether Aristotle believes that there are any motions in the sense media since if there are, and the sense organs are generally a continuation of the sense media, then what happens in the medium should continue in the sense organ.[21] Aristotle takes up the distance senses and particularly vision before the contact senses in *De anima* ii 7–9 to disclose the role of the sense medium and to reject previous accounts of sense that have the sensible object traveling right to the sense organ. On Aristotle's account light does not travel, so vision does not involve effluences or emanations traveling to the eye to cause vision. Instead color acts upon the illumined transparent medium, which in turn acts upon the eye, thus enabling vision to occur. What goes on in the illumined transparent medium does not seem to be any locomotion or even an ordinary alteration – the transparent

[21] Even Burnyeat 1995b, 427, though trying to deny that anything occurs in the medium, agrees since he insists "the effect on the eye is the same as the effect on the medium, as one could already infer from lines 419a13–15." And he goes on to assert quite correctly, "The effect on the eye is a quasi-alteration just like the quasi-alteration in the transparent, because the eye too is actually transparent," without appreciating that this subverts his own position. When he says, "The alteration of the eye by a sensible quality is (i) a quasi-alteration only and (ii) identical with the perceiving of the sensible quality in question" (429), he mistakenly gives too strong a meaning to "identical" through not sufficiently distinguishing the bodily organ, the eye, and the faculty of the soul, vision. He should say that there is (i) a quasi-alteration of the eye, and (ii) the animal is perceiving. There can hardly be disagreement that in the case of contact sense something happens in the medium, i.e., the outer flesh, as when it is heated or cooled in touch and moistened in taste. And the same should apply for the other cases. Even though light does not travel for Aristotle, this hardly prevents there being an alteration of a sort in the illumined transparent and alterations of a sort due to sound and odor in their media.

merely allows color to be seen through it – and hence this paradigmatic case may seem to eliminate any change from perceiving beyond the perceiving itself.

Crucial textual material for the possibility of motion in the sense media and organs is that following the definition of sense in ii 12 (cf. iii 12.434b27–435a10). There Aristotle observes that overintense sensible objects destroy the sense organ through disruption of its arrangement. Presumably, then, the usual less intense sensible objects are moving the sense organs nondestructively. He explicitly raises the issue whether anything happens besides perceiving during perceiving, that is, whether and how sensible objects can affect bodies. One of his observations is that heat and cold, and presumably also dry and wet, the primary tangibles, do clearly affect bodies (424a32–b1 and b12–13). Surely every sublunary body stands in some condition in relation to hot, cold, wet, dry, and is capable of undergoing change in regard to these. Moreover, those bodies that are sentient can feel some of these affective qualities or changes regarding them. Hence, whereas a plant is only heated or cooled bodily, an animal can undergo both bodily heating or cooling and the perceiving of heat or cold. Because the animal body for the sense of touch, or more precisely the flesh or what is analogous to it, serves as the sense medium, clearly some of the sensible objects of touch have to be capable of causing some change in the sense medium and animal body along with giving rise to touch. It should be clear, however, that the whole animal need not be heated or cooled intensely for the animal to perceive great heat or cold. Merely being near a fire or touching a hot object with the tip of a finger could suffice for perceiving intense heat. Thus physiological change accompanies perception, at least for touch, but the way sense works, as shown by the example, allows for considerable disproportion between the actual physiological change and the perception.[22] Without this disproportion the flesh would quickly alter to the condition of its object so that the object could no longer be perceived.

Now what about the cases besides those involving tangibles pertaining to every body as such? Do flavors, odors, sounds, and colors impact upon bodies and especially those that serve as sense media? Surely some bodies have flavor, odor, and color, at least, since they are what make these bodies perceptible in these respects. But what is the case for the sense media? For the distance senses the sense media are generally air and water, and the sense organs continue these because the eye is transparent fluid, the ear is airy, and the nose in respiring animals is airy. The contact sense taste has the tongue as its sense medium. Whereas the flesh in the case of touch has some initial temperature, wetness or dryness, hardness or softness, there is no initial color, sound, odor, or flavor in the sense media or sense organs for the other senses.[23] Air and water are simply as such colorless, soundless, odorless,

[22] Since some have held that perception is fundamentally the percipient's becoming likened to the sensible object, others have countered that the perceiver does not become hard or soft when perceiving these (see, e.g., Burnyeat 1995a, 20–21). But hard objects compress at least a bit of the flesh a little, thus making it more solid and hard, and soft objects leave at least a bit of the flesh loose, so this objection is not nearly so strong as it appears.

[23] Because flesh, as all bodies, must have the tangible properties, ordinary alterations are involved to some extent with touch, as at least some small part such as the tip of the finger is heated or cooled

and tasteless. What happens in the sense medium and sense organ for these other senses, then, when the animal is perceiving? Since the medium and sense organ lack the feature of the sensible object, when the sensible object acts upon the medium and that upon the organ, and necessarily in this order, the medium and organ cannot undergo standard alteration. In the standard case of alteration, as when a body takes on a new color, it originally has some color that is destroyed and replaced in the process. But the illumined transparent has no color of its own to be destroyed, and this is why it serves well as sense medium and sense organ. The other sense media similarly lack initial affective qualities. If something occurs in the medium and subsequently the sense organ, it cannot then be a standard alteration for no original affective quality is destroyed. Hence this is treated in no part of the natural philosophy outside the *De anima* and perhaps the *Parva Naturalia*. For example, light hardly enters as a topic anywhere else in the corpus. But in the discussion in ii 12, Aristotle allows that indeterminate (ἀόριστα) bodies, which are colorless, odorless, and tasteless air and water that serve as sense media, undergo action by sensible objects (424b14–16; cf. 435a3–5). For example, the air can quickly take on odor to cause an animal to smell it.

Within the treatments of the particular senses Aristotle observes that the colorless and soundless are receptive to color and sound (see 418b26–419a1 and 420a7–19). This is his way of indicating that the medium and sense organ undergo nonstandard alterations in sense-perceiving. In fact the medium may undergo such action even when no sentient being whose sense organs can be acted upon is present. Aristotle also comments that both visible and invisible, audible and inaudible, and so on, are perceived (see 421b3–8, 422a20–31, and 424a10–15). It would seem that in the case of imperceptible objects the sense is determining that the sense organ undergoes no action from a sensible object. Again this gives evidence that the sensible object moves the medium and organ in a distinctive way, as indicated through nonstandard alteration. And the way there is retention of the motion of the sensible object in *phantasia* and memory (425b24–25) indicates that the sense organ undergoes a nonstandard alteration in sense perception (see *On Dreams* 459a24–b7).

Some sort of nonstandard alteration takes place in the medium even of sight. Aristotle calls light the "color of the transparent" (418b11). Though for him light does not travel, it is as if the illumined transparent has taken on its own "color," its very illumination. As colored bodies cannot be seen in darkness, but light reveals their colors, light is like color for the transparent body itself. And the very directionality of color vision – we see an object's color when we look at it in the light but not when we look another direction – shows how the medium, the illumined transparent, is affected by the sensible object directionally. Because these are nonstandard alterations, Aristotle leaves it at saying that the sensible object moves the medium and that the medium is affected. What happens in the sense medium and sense

by the external body, or compressed or not by the hard or soft body. When this alteration occurs in the animal body, if only in the tiniest part of it, there is some destruction of the previous condition of the body. Such alteration is treated in the *Physics* and subsequent treatises of Aristotle's natural philosophy.

organ is peculiar to the special features of the sorts of bodies they are, for example, transparent, and Aristotle can only give inferential accounts of what occurs in the sense medium and organ. As perceiving is a transition from the potentiality for perceiving to perceiving in actuality, and this is only an alteration of a sort in the soul (see ii 5), what occurs in the bodies that are the sense medium and sense organ is a different type of alteration of a sort.

In contrast with sense-perceiving, thinking has an unlimited range of objects. Perceiving is an activity engendered by the action of the sensible object upon the medium and sense organ. Each sense has a limited range or in the case of touch several limited ranges of sensible objects, due to involvement with a bodily organ. But mind is capable of thinking everything. Lacking restriction in objects, and without any special organ, mind must be nothing definite in actuality but possibly knowing and thinking anything. Sense perception starts it on the road to real capacity to think. Human association that gives rise to speech and learning helps produce the developed capacity for thinking. When we have knowledge we can think as we wish about what we know. Whereas the external sensible object is the moving cause of perceiving, humans are prompted to thinking in actuality by the conjunction of their acquired knowledge with a *phantasma* originated by sense that provokes and focuses the thinking. Once humans have knowledge they have universals in soul always ready to support thinking (see 417b22–28), so even though the intelligible objects are the moving causes of thinking, why a person thinks some things at particular times is explained by *phantasmata* along with the possessed knowledge. Giving *phantasia* rather than sense-perceiving this role allows thinking flexibility such that it is not restricted to what we presently perceive. Aristotle explains the way thinking originates in the famously obscure chapter iii 5. "Agent intellect" or the producer mind turns out to be mind that already has knowledge. Knowledge identical to its object is the unmoved mover of mind. In conjunction with the *phantasma* this mind gets the human thinking. A knowledgeable mind is like both light for vision and art for engendering thinking: these are the images Aristotle uses for mind as productive in iii 5. The account of mind and thinking fits the pattern of the faculties of soul so far as possible. The commentary develops this most straightforward interpretation following closely the unfolding of the text.

Aristotle's treatment of mind should not have very much to do with God if God is activity and thinking of thinking. God neither has nor needs soul or mind. Mind is a capacity for gaining knowledge and thinking by means of it, but God has no mere potentiality since God is always thinking in actuality. Hence there is no philosophical reason for attributing any mere knowledge or wisdom to God; such talk is anthropomorphic, because knowledge or wisdom is merely a developed capacity for thinking, but God is thinking in actuality.

4. Aristotle's Procedures and the Quest for Thoroughness

Aristotle, as has been indicated, begins with the most common account of soul and then proceeds generally in sequence from the more widely to the less widely shared faculties of soul. In this way he gets at what can be the self in the more inclusive and

expansive way. From a certain perspective, the more embracing capacities applying to more living beings seem those most characteristic of soul. To clarify the higher faculties of the soul, as before suggested, Aristotle traces analogies with lower faculties so far as he can, and he turns to its most fundamental sort of operation. In the case of sense perception, the most fundamental operation is perceiving the proper object of the sense, for instance, color for vision, sound for hearing, and odor for smell. Aristotle supposes that by providing an account of the most fundamental and characteristic operations of the faculty, he gets to its most genuine self, and he prepares for accounts of operations that build upon or depart from these. He will refer to other sorts of cognition, but he does not need a full account of these to ensure completeness and comprehensiveness. We thus see that he seeks to cover all the soul's operations and to deal with them in relation to their primary objects.

His approach of concentrating upon the basic theater of operation of a faculty is a special case of Aristotle's insistence upon the priority of actuality to potentiality (argued in *Metaphysics* ix 8–9) and definition through seeking what is most something's own, most itself. This is hardly peculiar to this treatise since we find similar approaches at work in ethics, politics, first philosophy, and elsewhere. In ethics in describing the moral virtues, Aristotle seeks the special sphere of the virtue. For example, courage has most prominently to do with fear and confidence in battle (*NE* 1115a29–30, 1117b13–15), and temperance especially with pleasures of touch (1118a23–b8). The thought appears to be that the person capable of appropriate action and passion in the basic test situation will also deal appropriately with other circumstances, while the reverse is not necessarily the case.[24] In first philosophy, the investigation of being as being (τὸ ὂν ᾗ ὄν) focuses on substantial being (*ousia*) rather than other sorts of being (see *Meta.* 1003a33–b22 and vii 1), and this leads to form, essence, actuality, and eventually to divine being. Thus Aristotle's typical strategy of concentrating investigation upon the most characteristic theater or operation of a faculty, its actuality, connects with seeking the thing itself, the very being or self.[25]

This seeking of the principal theater of operation of a faculty links closely with Aristotle's awareness of ambiguity in terminology or equivocity, and the centrality of some notion for the others. Nearly all of the important terms used in the *De anima* refer to families of related items. For example, life (ζωή) embraces at least

[24] For example, it is supposed that the person who maintains the position in battle will also do well with a terminal illness, though the reverse is less likely (see the discussion in Welton and Polansky 1995).

[25] Wedin 1988 gives a rather different construal of this feature in Aristotle's corpus. Instead of suggesting that Aristotle aims for comprehensiveness by focusing upon the primary or essential notion, Wedin appeals to modern cognitivism, i.e., the study of complex cognitive capacities through breaking them down into simpler subcapacities. He says, "The explanation is said to be cognitivistic because the target ability or performance is explained by appeal to various internal capacities and operations that are themselves cognitively endowed. An explanatory circle is avoided because the intentional-level performance, say, recognizing a face, is broken down into a number of simpler performances, none of which by itself counts as face recognition but all of which together manage the operation. We are to think of these performances as subroutines that go on at a lower level of the system. Each of these can, in turn, be further decomposed until, ideally, we reach a system description capable of direct realization in some kind of hardware" (1988, 2).

nutritive, sensitive, locomotive, and intellective life. Αἴσθησις (*aisthesis*) extends well beyond sense perception to mean cognition or consciousness generally. And even within the field of sense perception it can refer to sensing, the sense power, or the sense organ. When it refers most basically to the sense power or sensing, there can be proper, common, accidental sense, and the sensing of sensing, with sensing proper sensibles having primacy. Similarly, νοῦς (*nous*) and νοεῖν may refer to several different things, from mind to apprehension of principles to *phantasia*.[26] Aristotle will tend to concentrate upon the primary notion to help account for those that are less fundamental.[27]

By keeping the plurality of possible meanings of terms in view while aiming especially to understand the primary sense of the term, Aristotle furthers his goal of complete and comprehensive understanding since he gets to what is essential while also clarifying related and often confused notions. For both Plato and Aristotle knowledge is not so much certainty about things as thorough understanding.[28]

[26] For some passages showing the wide use of *nous* and *noein* in the *De anima*, see, e.g., 427b16–17, b27–29, 432b26–433a8, 433a9–10. For the more ancient meaning of *noos* and *nous*, see Bremmer 1983, 56–57, with further references. Bremmer says that *noos* is "the mind or an act of mind, a thought or a purpose. . . . The *noos* is always located in the chest (*Il.* IV.309 etc.) but it is never conceived of as something material."

[27] In the literature on Aristotle, the topic here under consideration is variously called "focal meaning," "ambiguity," or "equivocity" (see, e.g., Owens 1963, Owen 1986, and Shields 1999). Owens rightly insists that while Aristotle can speak of the ambiguity or equivocity of words or names, he more crucially considers the things named by the same name but having different definitions of their essence. These things with the same name but different essence are in Greek ὁμώνυμα (equivocals). Yet equivocals are themselves equivocal inasmuch as some things having the same name have nothing else in common, e.g., the bark of a dog and the bark of a tree. Others have the same name because of analogy, e.g., the leg of an animal and the leg of a table. Others have the same name by reference to one primary notion; e.g., all healthy things have some reference to health. Much of the apparent inconsistency of Aristotle's use of terms disappears if the possibility of equivocals is kept always in mind. One must consider the way a term is used in each particular context. The contexts may differ within a single treatise and surely between different treatises of different sciences. This approach already appears within the Pythagoreans. Concerning them Aristotle says, "regarding the question of essence they began to make statements and definitions, but treated the matter too simply. For they both defined superficially and thought that the first subject of which a given definition was predicable was the substance of the thing defined, as if one supposed that 'double' and '2' were the same, because 2 is the first thing of which 'double' is predicable. But surely to be double and to be 2 are not the same" (*Meta.* i 5.987a20–26). The Pythagoreans too readily seek the essence of all things in number, but they rightly aim to locate the primary notion.

[28] Cf. Netz 2001, which contends that throughout the corpus Aristotle is more intent upon his theses than the arguments that can be adduced in their favor. Netz says: "Early Greek science is aimed at persuasion: the readers are envisaged and the authors try to convince them. . . . Aristotle is polemical with his predecessors, and he envisages an audience, but this is an audience which one does not need to impress by compelling proof: he clearly preaches to the converted, and instead of looking for the most persuasive proofs he looks for the most important claims. . . . His methodology is best understood not as a step in the evolution leading to modern science, but as a move whose meaning lies inside Greek culture itself. The background is that of a culture where a dominant mode is that of competitive persuasive argument in favour of theses; this is transformed by Aristotle into the mode of theses, followed by best arguments. Briefly: persuasion, transformed into contemplation" (226). This seems seriously to underestimate the rigor of Aristotle's argumentation.

After all, we can be certain that the sensible object before us appears in such and such a way, yet this is hardly important knowledge. Genuine understanding requires first principles and causes.[29] The way to move to the first principle is to ensure that everything pertinent has been considered and to seek what has primacy. Dialectical engagement with prominent *endoxa* can accomplish this.[30] Dialectic sifts the *endoxa* to see all that has been thought, to become aware of the *aporiai* (perplexities), to determine what the principles are, and to confirm that the principles elicited conform to the *endoxa*.[31] Dealing with the *endoxa* confronts us with all the phenomena and ensures completeness and nonreductionist accounts.

Plato's dialogues illustrate dialectic's effort to determine what *X* is in answer to a "What is *X*?" question or to determine whether *X* is *Y* (such as "Does justice pay?"); the proposals put forward by the interlocutors are *endoxa*. Socratic refutation shows how the *endoxa* lead to conflict and *aporia* or perplexity. A suitable account of *X* might overcome the perplexity and "save the phenomena," by disclosing the truth toward which all point. *Endoxa* thus not only lead to perplexity but also

[29] Frede 1987, ch. 8 has suggested that the ancient understanding of cause differs from the post-Stoic conception because ancient causes are not *active*, i.e., doing something and bringing about an effect. Even the "moving cause" tends not to be the sculptor but the art of sculpture, which seems no more to *do* anything than do the form, matter, or end. So it appears that none of Aristotle's "causes" meets our expectations. But Frede is merely noticing the way that Plato and Aristotle, seeking understanding, look toward the *first* cause rather than the intermediates. Aristotle allows moved movers as well, yet the ultimate mover must be unmoved. When Aristotle says, "It is not necessary that that which moves (other things) itself be moved" (406a3), he is allowing that many movers are themselves acting and in motion but denying that all have to be so. Modern discussion of causes tends to bestow upon them merely priority in time rather than in being. Cause and effect tend for us to be beings of the same sort, but those giving priority to actuality over potentiality must look for higher sorts of beings to serve as principles. For additional critical reflection upon Frede's view, see Everson 1997, 46ff.

[30] Smith 1995, 60 defines dialectic as "argument directed at another person which proceeds by asking questions" rather than making assertions; i.e., it is argument starting from what the interlocutor accepts or believes, viz., the *endoxon*. Smith proposes that Aristotle provides in *Topics* i 1 not a definition of *endoxon* but a list of the kinds of *endoxa*. We should ask questions of the interlocutor based upon what sort of a person he is and what sorts of *endoxa* he is likely to embrace. Smith's view makes dialectic just like the Socratic dialogue's insistence that you as the interlocutor "say what you believe." Recent commentators have stressed the role of *endoxa* in Aristotelian investigations; see Owen 1986, Nussbaum 1982, Pritzl 1994, and Wlodarczyk 2000. For some dispute about the role of *endoxa* in the Socratic elenchus, see Vlastos 1983, Kraut 1983, and Polansky 1985. Since *endoxa* are views that have been accepted, they are "theory laden." Thus the phenomena with which the scientist must deal are more than simple empirical facts – "belief-free facts" or "theory-neutral observation" – but also the way things appear to people as indicated by what they routinely say and believe about them (the terms "belief free" and "theory neutral" are from Nussbaum 1982 and 1986). Owen 1986, 242 emphasizes that the phenomena can go beyond direct sense perceptions and are often the *endoxa*.

[31] In *Topics* i 2.101a34–b4 Aristotle says about dialectic: "For the study of the philosophical sciences it [dialectic] is useful, because the ability to puzzle on both sides of a subject (πρὸς ἀμφότερα διαπορῆσαι) will make us detect more easily the truth and error about the several points that arise. It has a further use in relation to the principles used in the several sciences. For it is impossible to discuss them at all from the principles proper to the particular science in hand, seeing that the principles are primitive in relation to everything else: it is through reputable opinions (*endoxa*) about them that these have to be discussed, and this task belongs properly, or most appropriately, to dialectic; for dialectic is a process of criticism wherein lies the path to the principles of all inquiries."

to eliciting principles. Why other thinkers have supposed things to be a certain way guides to the correct understanding and explains shortcomings in their understanding. The adequacy of the principles secured depends upon the wealth of *endoxa* handled.[32]

Aristotle's dealing with the *endoxa* with the aim of comprehensive understanding often has him reflecting upon key experiences. For example, Aristotle observes that little is needed to excite fearful persons and that we are hot when angry (403a18–b1), to show that the body enters into psychical operations. That plants and some animals survive division into parts (409a9–10 and 413b16–21) discloses that though bodies can be divided into parts, souls can only be divided into additional whole souls. He notes that we do not perceive well things too like our own condition, such as things that are the same temperature as our flesh or the same hardness, and that point raises questions about whether like can affect like and supports viewing sense as a critical faculty discerning differences (410a23–25). He observes that plants grow in all directions without simply coming apart, and that observation suggests soul as cause controlling the process (413a25–31 and 416a6–9). He denies that we perceive objects placed right upon sense organs (419a11–13); that denial argues for the role of media in sense perception. He contends that were an aged person to receive a new eye, vision would be fully restored (408b20–22), thereby suggesting that the soul does not change as the body does. Overly intense sensible objects impair the ability to sense (421b3–8, 422a20–33, 424a28–32, 429a31–b3), thereby displaying that sense pertains more to body than does mind. That our senses are observed to have limited ranges, while mind seems able to think all things, indicates greater separability for mind. There are also experiences, or nonexperiences, that permit negative conclusions. For example, animals that perceive stones do not seem to have actual stones in their souls (see 410a10–11), and we do not observe light in motion across the entire expanse of the sky (418b20–26). Some of these reflections resemble "thought experiments" since Aristotle did not or could not perform them. Yet our observations fit with them and he could approximate to them, for instance, taking recovery from disease as an approximation to an organ transplant, and hence they constitute convincing experiences. Obviously there is a wealth of experience pertinent to understanding the soul and its various features. Comprehensiveness requires taking this wealth into account, but developing causal understanding requires focusing upon those experiences that are most revealing of primary principles.

The Platonic and Aristotelian search for first principles gives priority to the essence or form, that is, *what* the thing studied is. Before this effort to determine what the thing is gets started, the investigator must have established *that* there

[32] Sciences such as the mathematical sciences and logical sciences, where *endoxa* are less clearly the starting points since people have fewer or no special views and the objects may only seem to enter into existence with the invention of the science, may simply begin from postulations, definitions, and axioms to develop an axiomatic presentation of the science. These nonetheless are *endoxa*. Other sciences will tend to arrive at their first principles through a more extended effort. On mathematics and logic, see Burnyeat 2001a, ch. 5.

is something to investigate.[33] Some of the *endoxa* under consideration concern whether or not there is a subject matter for investigation. Aristotle in his treatment of the soul and its faculties will most insistently follow this order of first establishing *that* he has a subject matter to explore and then proceed to inquire *what* exactly it is. Establishing *that* it is sometimes requires distinguishing it from other faculties with which it can be confused. Experience and *endoxa* come into play in determining that there is a subject matter and in pointing to just what it is.

Aristotle thus proceeds meticulously toward complete and comprehensive understanding of soul through his methodical approach in the *De anima*. He considers all the likely accounts of soul and its faculties offered by his predecessors. He extends his reflection to all that may be ensouled rather than limiting himself to humans. He establishes that there is soul and that it has certain fundamental capacities. Assured that soul is and that it has special capacities, he can elucidate what the soul is and what are its essential faculties. In his inquiry into the nature of the faculties, he goes generally from the most widely shared to the more narrowly possessed faculties, and he focuses upon the basic objects and operations of the faculties. Tracing analogies and disanalogies and some key experiences proves most revealing. He follows out the articulation of the major faculties by delineating their subfaculties and relating these to the faculty. By these means he intends to deal appropriately with the whole of soul and its parts. He avoids calling his undertaking a science since while much of his effort can fit within physics, some of it does not, so he must keep carefully to notions only as they fit the present context of investigation.

5. Background Assumptions for Study of the Soul

Because study of soul belongs largely within physics, Aristotle presumes that those investigating the soul will have familiarity with the principal notions of physics. These are the four causes, motion, change, nature, form, and matter. Of course as background for any theoretical inquiry, he supposes some familiarity with notions from the works constituting the *Organon*. From these logical treatises arises the thought of equivocals. Also important are the categories of beings insofar as Aristotle will be concerned to show that soul is somehow substantial being rather than a quality, quantity, and so on, that is accidental to or accompanies substantial being.

[33] The classic presentation of the distinction of "if it is"–"what it is" and "that it is"–"on account of what it is" appears in *Posterior Analytics* ii 1. These four can often be collapsed into two: "that it is" and "what it is." We may look to Plato as already utilizing these: e.g., Socrates preliminarily gets the interlocutor's agreement to the existence of death in *Phaedo* 64c and of Forms in *Phaedo* 65d; in *Protagoras* 329d Socrates first secures Protagoras's agreement that virtue is some whole with the several virtues as its parts before investigating these further; and in *Gorgias* 450c4–5 Socrates first gets Gorgias to agree that there are crafts and in *Gorgias* 464a Polus accepts that body and soul both are. After securing the interlocutor's agreement Socrates pushes on to explore just what the subject is. Where the interlocutor claims expertise in regard to something (e.g., a general is brave [as in *Laches*] or an orator knows rhetoric [as in *Gorgias*]), Socrates may proceed to investigate the subject matter without first explicitly securing agreement about its being.

From the *Organon* he further supposes familiarity with the leading issues of any study: "that it is" and "what it is." Also he assumes acquaintance with dialectic so far as investigation depends upon working through *aporiai* and the *endoxa*. The role of definition and the aim to demonstrate essential accidents of the subject matter through syllogisms are background understanding as well. Though notions from first philosophy are also referred to in *De anima*, Aristotle tends not to go beyond a setting within physics, and when he needs further elaboration, as with distinctions in actuality and potentiality in *De anima* ii 5, he develops what is called for without reliance upon the *Metaphysics*.

Because the study of soul falls largely within his physics, Aristotle can make the various sorts of assumptions that have been set out. Yet insofar as he initially prepares for his own account of soul by reviewing the conceptions of his predecessors, he should not simply force those approaching this work to make numerous troubling assumptions. In entertaining the possibility that any of the predecessors might have the correct understanding of soul and life, he holds open the possibility that an approach to nature other than his own might allow for a compelling account of soul. In this way Aristotle fits his treatment of the soul rather tightly within his own physics but without merely begging important questions.

Aristotle surely recognizes the difficulty of his treatise (see 402a10–11). The manuscript was unlikely to be suited for direct lecture but probably served as material for copying, reading, and discussing.[34] The text's subject matter, comprehensiveness, and compression place great demands upon the student. The style of writing makes the treatise good for learning because the student has to fight through the text. The very form stimulates the effort to unpack the meaning and to give commentary. Without being artful dialogue quite like Plato's, it manages to be a similarly stimulating pedagogical instrument forcing confrontation of the student's own self-understanding with the author's treatment of its themes.[35]

During the twentieth century chronological interpretation of Aristotle's texts was frequently attempted; psychological treatises entered prominently into these attempts.[36] No authors in antiquity refer to such possibilities of interpretation,

[34] See for confirmation on this point, Netz 2001, 227–228 and Burnyeat 2001a, 115–116.

[35] That Aristotle gave some literary polish to his treatises, in addition to organizing them most carefully, can be gathered from these comments in Burnyeat 2001a, 141–142: "Hiatus is the gap that occurs when a word ending in a vowel is immediately followed by a word beginning with a vowel. This is a perfectly normal occurrence in Greek. Its absence (subject to certain allowable exceptions) is abnormal, the result of effort and artifice, sometimes extreme artifice. . . . Thus hiatus-avoidance marks a consciously literary style. Now Aristotle is capable of consistent hiatus-avoidance, as in *Politics* VII–VIII. But more commonly he will begin a treatise with a page or two where hiatus is avoided, to soften up the audience, and then return to his normal, rather dry and technical prose. Examples are the beginning of the *De Anima* and *Metaphysics* A, where the writing is more literary than it is later. Sometimes hiatus-avoidance will reappear for a while, without obvious motivation. . . . Pamela Huby kindly shared with me her analysis of *DA*. Hiatus starts already at I 1.402a23, but is avoided in much of the historical discussion beginning at I 2.403b20. Book II avoids hiatus until 1.412a15, then on and off, but from II 4.416a19, hiatus is frequent. In Book III only 9.432a15–433a30 (the beginning of a new section of the discussion) is hiatus-avoiding." Regarding Aristotle's way of writing, see Netz 2001.

[36] See, e.g., Jaeger 1948, Nuyens 1948, and Wians ed. 1996.

however, and it has been argued that Aristotle's manner of composition of the treatises, and his revising at will, make it plausible that we must read all his works as contemporaneous.[37] Whenever Aristotle began his authorship, since the treatises were unpublished, it was always open to him to make additions and changes. All the numerous internal references within the works, even when they might seem to be temporal, as when Aristotle says that something has already been discussed or will be discussed later, may refer to an idealized order of reading of the texts rather than to an order of their composition. We should be suspicious of chronological readings of texts as approaching too close to our own historical prejudices. It seems more promising that equivocity of all key terms, Aristotle's scrupulous attention to what is pertinent to the particular science under consideration, and a pedagogical order of development of thought within a treatise explain most apparent contradictions or conflicts.

6. The Truth and Interest of the *De anima*

What the *De anima* treats, the context within which it treats it, and the way it goes about treating it have so far been considered preliminarily. It remains to ask whether Aristotle achieves much understanding of his topic and why we might still be concerned with what he has to say. The question of the relationship of body and soul (or mind) exercises us at least as much as it did antiquity. Cartesianism and scientific developments have put this close to the center of reflection. Some of the interest in Aristotle may derive from his position outside Cartesian and modern assumptions. Some contemporaries have supposed that Aristotle presents views that are right in line with current philosophies of mind.[38] Others, with considerable justification on their side, dispute such identifications of Aristotle's views with recent theories, and some go on to deny that his philosophy of mind still has any credibility.[39] If his view accords with our views, then it may offer us little additional enlightenment,

[37] See Burnyeat 2001a for development of this case.

[38] Aristotle seems to some to be a "dualist," "materialist-physicalist," "functionalist," or "cognitivist." Dualism has the soul and body as somehow separate substances. Materialism or physicalism has cognition somehow reducible to or dependent upon physiological, bodily processes and states. Functionalism allows that whatever achieves the same functional outcomes, whatever the matter within which it is realized, is equivalent to it. A computer might functionally be a mind. Cognitivism resists reducing cognitive functions below the cognitional or intentional level, but the higher-order cognitive functions are to be explained by lower-order subroutines. On these positions and their various supporters, see Shields 1993.

[39] Again see Shields 1993 for objections to contemporary interpretations. Burnyeat 1995a, 16 has notoriously called Aristotle's whole approach into question: "Aristotle's solution to the mind-body problem sounds attractive when it is stated in general outline as the view that the mind or soul is a set of functional capacities of the animal body. It becomes less attractive when we find that it is worked out in terms of, and cannot be understood apart from, various physical assumptions which we can no longer share: assumptions, indeed, of such a kind that we can scarcely even imagine what it would be like to take them seriously. Aristotle's philosophy of mind is no longer credible because Aristotelian physics is no longer credible, and the fact of that physics being incredible has quite a lot to do with there being such a thing as the mind-body problem as we face it today."

and if it does not resemble ours, what relevance can it have? Most problematically, to the extent that Aristotle's account of soul fits within his physics, and his physics no longer seems scientifically acceptable, we wonder what could be salvageable.

Though Aristotle worries much about the relationship of soul and body, his primary attention in the *De anima* is on the soul and its capacities. Since this is his focus, and not metaphysical issues, he largely works outside the sorts of competing theories that dominate our philosophy of mind. Perhaps this is why he can be claimed by opposed interpreters: he does not come down too decisively on the questions these interpreters seek to answer. Yet Aristotle's efforts to distinguish soul from body and any bodily magnitude make clear that he is not any ordinary sort of materialist or physicalist. But since this demarcation of soul and body hardly makes them two distinct substances, he is not any easy sort of dualist. It looks as if his scruples about avoiding metaphysics in this treatise prevent him from developing a view that fits simply into any of our classifications. This may not be to his disadvantage or decrease the interest of his views.

When we avoid anachronistically modernizing Aristotle, his position need not be as incredible as has sometimes been suggested. Despite the fact that we are more knowledgeable than he was about the physiological processes of living things, the soul and its functions and operations that form his subject matter in the *De anima* can perhaps be understood along the lines he understood them. Though his psychology fits within his physics, much of what it depends upon in his physics is largely unobjectionable in the way in which it is put to use within this treatise. Thus his antique physics is not such a liability. By dealing with soul generally rather than merely human soul and building his accounts of higher psychical capacities through analogy with lower capacities, Aristotle stays close to the phenomena and calls into question some of our approaches. Moreover, since much discussion of psychical things must inevitably be conducted through models, images, or metaphors, we have further reason to see possible pertinence to his accounts.[40] And since he may distinguish levels of explanations – that is, there is the account in terms of material components in motion, accounts largely outside the scope of the *De anima*, and also a higher account in terms of forms and activities that are the focus of this treatise – much again may be saved. Distinction of motion and activity only quietly introduced into the *De anima*, as discussed previously, while a background pattern of thought available to him, prevents his account of soul from simply fitting into his physics, and thus again his framework may have more viability than we might initially suppose. By having motion, or at least motion of a sort, within the body and sense organs while there is activity of the soul, sense, or the ensouled being, and neither the motion nor activity is reducible to the other, and the causality can go in either direction, for instance, we can have bodily stirring without emotional reaction or emotional reaction can give rise to bodily stirring (see 403a3–28), Aristotle

[40] Plato's observation in *Statesman* 277d and 285d–286b that in speaking of imperceptible things such as soul we are forced to use images or examples holds true for us as well. The stock of plausible images or examples may be somewhat limited so that Aristotle's models and images have something inescapable about them.

has a position that challengingly escapes or avoids easy classification and hence standard objections.

A line of his thinking that holds great interest is his effort to understand the notion of *life*. He is the first to tackle in earnest the project of clarifying what life is and whether it is reducible to some single manner of being or there are various sorts of lives forming a kind of family concept. Unlike many of his predecessors who limit life to animals, and thus restrict it to beings that have awareness, Aristotle extends life to plants. The self-motion involved in growth and nutrition, and even better the self-preservation of such beings, suffices for life. Hence there are living things without any awareness, namely, plants, and other living things with the awareness provided by sense perception and even thought. Ultimately there are divine living beings that lead just the life of thinking. Whether a living thing has awareness of itself or not, for Aristotle, all forms of life aim at saving or preserving themselves (see 411b22–24, 416b14–17, 417b2–7, 434b16–27). Even if we find talk of "soul" troubling and uncomfortable, perhaps we can respect linking soul so closely with life, including plants and animals among living things, and having all forms of life seeking to save themselves. The soul's operation of saving its own form of life accounts for its being the source of self-motion for living beings while itself not undergoing motion. This account of life that comprehends quite disparate sorts of life including those with and without awareness seems impressive inasmuch as modern science still struggles to gain insight into the concept of life.

Nearly all, if not all, of what Aristotle says about the soul is deeply powerful, remarkably consistent, and tightly argued. It is based upon such a wealth of earlier reflection that it has the possibility of being comprehensive and complete. Anyone unconvinced by his investigations should nevertheless find them intriguing and provocative. Not only do they have the charm of historical resonance – having entered for long periods into reflection upon its topics – but they also force us to seek greater clarity about how the fundamental conceptions about soul and life are formed and justified. It seems likely that Aristotle's reflections can continue to challenge thought so long as its topics remain of interest. His work still perhaps offers a compelling path toward self-understanding.

7. The Text of the *De anima*

The remaining manuscripts of the *De anima* go back perhaps only to the tenth century CE. The ancient commentaries on the text can offer some evidence about the textual tradition, but these themselves do not go back much earlier than the textual manuscripts. Thus establishing the text depends upon consideration of the manuscripts and assessing which are generally the better manuscripts or those seeming the more careful.[41]

[41] For discussion of the text of the *De anima*, see Ross 1961, 1–7; Jannone 1966, xxiv–xliv; and Nussbaum 1995, 1–2. Nussbaum says, "Since the text of the *De Anima* is unusually corrupt – above all, in the third book, which is in as bad a condition as any extant work of Aristotle – any text one uses will be bound to contain a fairly large number not only of difficult judgement-calls but also of conjectural

Since at least sixteen manuscripts exist giving all or part of the text of the *De anima*, there are variations in the readings of passages. The apparatus contained in many editions indicates the possibility of different readings. But editors have also made their own proposals for emending the text by adding or deleting words or phrases or rearranging lines. The principle governing the choice of text in this commentary is to stick with the best attested text of the various manuscripts. In nearly all cases the emendations proposed by editors have been ignored or rejected as unnecessary, misleading, and reflecting misunderstanding of the text. It has been insufficiently appreciated by editors that Aristotle deliberately states his thoughts so that they appear to contradict things that he says elsewhere or that he does not shy away from difficult formulations. He builds his argument carefully and sequentially context by context, so that it must always be established what his words mean in their present location. Rather than emending to produce jejune uniformity and to undermine his meticulous argumentation, it is better to seek to appreciate the reasons for the unexpected turns of thought.[42]

The text of Jannone 1966 is the starting point. Jannone's is superior to Ross 1961 as more conservative, and all line numbers are taken from Jannone's text (they sometimes differ by a line from other texts). Ross 1961 is quite helpful, ironically, because he tampers with the text frequently. Everywhere the apparatus indicates that the manuscripts have a reading different from what Ross prints – these are often flagged by "codd." and "codices" in the apparatus – the manuscript readings usually preserved by Jannone can be embraced as allowing for good sense. There are sometimes several instances per page of this tampering with the text. These signal the need for great effort to elucidate the manuscript readings. Making sense of the manuscript readings considerably enriches the power of what Aristotle says. Therefore, this commentary serves the unanticipated purpose of restoring the dignity of the better manuscripts and discouraging too-ready acceptance of editors' emendations of the text.

The commentary follows the usual division of the treatise into books and chapters. In the case of the divisions of the three books, these are likely due to Aristotle himself. But the divisions into chapters are generally acknowledged not to go back further than the Renaissance.[43] What is usually agreed, however, is that whoever

emendations. . . . The philosopher/scholar should be especially attentive to the critical apparatus when working on *De Anima*, and should think with more than usual care about the alternatives that have been proposed, using if possible, more than one edition" (p. 2). This commentary agrees that care is needed in dealing with the text, but against Nussbaum the case will be made that the best manuscripts give a very plausible, if exceedingly difficult, sense, and that little or no conjectural textual emendation is required.

[42] When a commentator points to Aristotle's carelessness in connection with some difficult passage, this should rather be an indication to the reader that the commentator is exasperated with being storm-tossed at sea and that extreme caution is needed to arrive at appropriate understanding.

[43] Burnyeat 2001a, 11 comments on the chapter divisions in the *Metaphysics*, "Our current chapter divisions have no ancient (or medieval) authority. They first appear with a Greek text in 1550, borrowed from an earlier printing of Cardinal Bessarion's 15th century Latin translation of the *Metaphysics*. But over the years they have established themselves with readers and translators as, for the most part, a fairly helpful way to articulate Aristotle's text."

divided the books of the corpus into chapters did an impressive job based on well-developed understanding of the text. It will be necessary occasionally to defend the order and divisions of the present treatise as received. Hence, while the ancient reader would not have had many of the helpful divisions, we may take advantage of them, and the order of the treatise as we have it can and will be persistently defended as well justified by the treatise's content and aims.[44]

[44] Translations of the *De anima* are my own, though sometimes derived from Barnes ed. 1984 or Hicks 1907 freely modified. Translations of other works of Aristotle are from Barnes ed. 1984; translations of Plato generally from Cooper ed. 1997; and translations of the Presocratics from McKirahan 1994.

COMMENTARY ON *DE ANIMA*

BOOK I

I

The Nobility and Difficulty of Study of Soul; Its Connection with Body

De anima i may be offputting because it jumps quickly into consideration of the difficulties of the investigation and because it reflects upon Aristotle's predecessors of long ago. It may help to view this first book, and even the whole *De anima*, as a variation upon Socratic dialogue. Aristotle's treatment of soul is calculated and contrived as the written Socratic dialogues, as befits a systematic investigation. Such dialogues as Plato's *Charmides*, *Laches*, *Euthyphro*, and *Meno* start with scene setting leading to the classic "What is *X*?" question. Aristotle's first chapter sets the scene by preliminary inquiry into the location of the investigation and its aim (402a1–7); these opening remarks lead to the central question of the work: what is the soul (a7–10)? In the Socratic dialogue the interlocutor's opening answer to the "What is *X*?" question may be of the wrong sort, and Socrates must argumentatively expound upon how to go about defining *X*. Comparably Aristotle's first chapter considers issues surrounding definition of the soul. In Socratic dialogue the interlocutor offers a series of accounts of *X*, accounts delineating all the really likely answers, that Socrates defeats through elenctic argument; Aristotle in the rest of book 1 restates the philosophical tradition's prominent answers to what the soul is and its basic features, and their reasons for supposing so. He takes these promising lines of previous thought, these plausible *endoxa* regarding soul, as interlocutors and refutes them. These refutations do not just clear the field, but because of the care taken, the way is charted toward a satisfactory view. In Socratic dialogue, after the interlocutor has been reduced to *aporia* through refutation of all the proposed definitions, Socrates may join with the interlocutor to seek a new, more adequate answer, seemingly unsuccessfully. After the testing of the tradition's accounts of soul in book 1, Aristotle goes on in books 2 and 3 to the more adequate account that benefits from and also justifies most of the *endoxa*. Thus Aristotle's treatise traces a Socratic pattern with possibly more satisfying results.

Aristotle's careful organization of the *De anima*, as does Plato's complex construction of Socratic dialogue, deals with its announced topic while reflecting constantly on how it does so. What soul is and its basic functions are illuminated such that we are attaining enhanced self-understanding. What allows the sort of thought

involved in the composition of the treatise in the indicated Socratic pattern should ultimately be comprehended.

In book 1 Aristotle goes through perplexities pertaining to soul and its faculties and his predecessors' views in order to point to his own conception of soul as a substantial being. Soul will not be a substantial being as something existing completely independently, but instead the soul will be the substantial form of the living body. Thus soul is in no other category of being but substance, and yet it is substance of a peculiar sort. However the predecessors approach soul, whether as substantial being or in some other category, they typically assume that it is in motion in order to explain such obvious operations as progressive motion and sense awareness. While Aristotle will allow that bodies can be in motion, the soul as principle of the body and not a magnitude will not itself enter into motion. Hence the study of soul will be problematic from the standpoint of his physics that studies natural beings capable of rest and motion. The limitations of previous attempts to account for soul call for a new way to think of life other than as motion and to relate soul to it.

402a1–7 The first chapter about the understanding at issue in this treatise considers (a) the place of the study of soul within learning and its value (402a1–7), (b) what is to be understood about the soul (402a7–10), and (c) what makes the study difficult and the requisite method of investigation (402a10–403b19).[1]

In dealing with (a), the place of the study of soul, the *De anima* aptly opens with attention to the very understanding that is sought:

> Supposing knowing among the fine and prized things, and another more than another either in virtue of precision or by being of better and more wonderful objects, on account of both these the investigation of soul would reasonably be put among the first things. τῶν καλῶν καὶ τιμίων τὴν εἴδησιν ὑπολαμβάνοντες, μᾶλλον δ' ἑτέραν ἑτέρας ἢ κατ' ἀκρίβειαν ἢ τῷ βελτιόνων τε καὶ θαυμασιωτέρων εἶναι, δι' ἀμφότερα ταῦτα τὴν τῆς ψυχῆς ἱστορίαν εὐλόγως ἂν ἐν πρώτοις τιθείημεν. (402a1–4)

Aristotle regularly begins a treatise with such reflection upon its place (cf., e.g., the *Topics*, *Physics*, *Metaphysics*, *Nicomachean Ethics*, *Rhetoric*), and it seems appropriate to commence investigation with some clarity about the investigation. We may well doubt that anyone could know much about some study without already having completed it or gone far into it, and this makes it likely, as comparison with Socratic dialogue would suggest, that when Aristotle unfolds his thinking about the soul, it has already attained a high level. Socrates was always suspected of knowing that about which he refuted others (see Plato *Apology* 23a); we should hardly expect that we observe Aristotle's first groping inquiries into soul but rather a considered and confident presentation of work he has engaged in extensively beforehand. If knowledge generally stands upon previous knowledge (see *Posterior Analytics* i 1), Aristotle could only give these opening reflections as a result of refined

[1] Aquinas *In de an*. §2 explains these three parts of chapter 1 as, respectively, (a) gaining the reader's goodwill by showing the value and utility of the science, (b) disposing the reader to learn by indicating the plan of the treatise, and (c) getting the reader's attention by pointing out the difficulties. He thus supposes that Aristotle produces a *science* of soul.

understanding of the field. Hence we do not expect the *De anima* to be faltering probes but a systematic presentation of investigations into the soul.

Yet is what Aristotle presents a *science* (*episteme*) of the soul? In fact he does not assert this at all. His various terms for what he engages in and seeks, "knowing" (εἴδησιν, 402a1), "investigation" (ἱστορίαν, a4), "insight" (γνῶσις, a5), "consideration" (θεωρῆσαι, a7), "familiarity" (γνῶναι, a7), "conviction" (πίστιν, a11), suggest special reluctance to claim knowledge or science as his achievement.[2] Soul may not provide the subject matter for a science because ensouled beings, including plants and animals, do not fit conveniently into a genus, and some capacities of the soul not requiring embodiment, particularly intellect, perhaps go outside physics. Moreover, there is some question whether there is any fixity of division of the soul's capacities, so that any comprehensive analysis is possible (see 432a22–b7). Nonetheless, the dignity and importance of his investigation are strongly argued; Aristotle's systematization emerges in his awareness of the status of investigation of the soul in relation to science.

Though knowing (τὴν εἴδησιν) is included generally among fine and prized things (τῶν καλῶν καὶ τιμίων), types of knowing differ in rank, Aristotle proposes, by their precision (κατ' ἀκρίβειαν) and by their objects' being better and more wonderful (τῷ βελτιόνων τε καὶ θαυμασιωτέρων εἶναι, 402b1–3). The study of soul seems in the front rank in regard to both its precision and the worth of its subject matter. He has used "fine and prized things" to start the treatise to intimate the majesty of his enterprise. Perhaps the use of τιμίων (prized) in 402a1, which suggests good for its own sake (see *NE* i 12 esp. 1101b35–1102a4),[3] indicates that Aristotle thinks especially of theoretical science, which alone would be good simply in this way, and consequently claims that among the theoretical sciences – namely, first philosophy (theology), physics, and mathematics, as specified in *Metaphysics* vi 1.1026a18–19 – study of soul has precision and dignity of objects.[4] Or he could more widely assert

[2] Aristotle may be coining the term εἴδησις to cover all cognitive activities and results and to avoid introducing *episteme*, which would indicate that we should eventually arrive at a science of soul. Εἴδησις may connect with the use of εἰδέναι in *Meta.* 980a21. Bolton 2005, 209 argues, however, that "what he [Aristotle] expects to do there [in the *De anima*] is not only genuine science but also genuine *natural science*." Aristotle refers to what he is engaged in as investigation (ἱστορίαν) concerning soul, rather than a science, either modestly to suggest that his researches only prepare for an eventual science, as his animal investigations may serve as the basis for a future science (cf. Hicks 1907, 175), or, more likely, since he speaks of precision of his inquiry, to call into question that study of soul and what connects with it can readily fit within a single science.

[3] Simplicius *In de an.* 6,26–30 says fine (καλόν) and prized (τίμιον) are coimplicatory but differ in account. He claims that the fine "is that which is loved and chosen for itself, the precious [prized] is what is exalted and transcendent, while other things to which it is precious submit to it." On *to kalon* as desirable in itself, see, e.g., *Meta.* 1072a34–35, and for its not necessarily being practical, see 1078a31–34. For the notion of "better" (βελτιόνων) as applying to what is more an end, cf. *NE* 1094a5–6.

[4] Themistius *In de an.* 1,11–24 observes that geometry is more precise than astronomy whereas astronomy surpasses geometry in the dignity of its subject matter, but "only in knowledge about the soul do both these [features] necessarily coincide, and *it* triumphs in precision, since precision comes from the soul for other [bodies of] knowledge too, and in fascination because the nature of the soul permeates amost everything that exists, starting with the lowest vegetative soul up to the first, meaning the intellect."

that among all sorts of knowledge the study of soul has special precision and dignity of objects, any of the sciences seeming somehow fine and prized.

To rank types of knowing, Aristotle refers to the criteria of precision and better and more wonderful subject matters. Precision in science might seem to apply especially to mathematics (see, e.g., *NE* 1094b22–27 and *Meta*. 995a14–16). Where no perceptible matter comes into play, there is little variation with consequent imprecision. Hence mathematics will be more precise for Aristotle than natural science, and those practical sciences involving more mathematics will be more precise. But even among mathematical sciences there is a ranking in terms of precision. Having fewer assumptions among the principles makes for more precision, so that geometry will be less precise than arithmetic because geometry includes all the assumptions of arithmetic (see, e.g., *Meta*. 982a25–28). Perhaps we can say, then, that for Aristotle precision has to do with the principles, either as they include fewer assumptions or as what they serve as principles for has less variation.[5] The subject matters of science might be better or more wonderful in various ways, for instance, with respect to us or in themselves. What is initially better and more wonderful to us may subsequently pale before what is intrisically better and more wonderful.[6] Most likely things with higher and more intelligible principles will be better and more wonderful, so the investigations concerning these will be finer and more prized. More precise studies will also tend to have better and more wonderful subject matters. Soul permits precision in investigation since it is not itself matter, and as first principle inquiry into it does not involve too many assumptions or depend upon too many sciences, and soul as principle, if not the best thing, seems among the better and more wonderful things.

Aristotle further strengthens the claim of his present investigation to attention: "It seems indeed the insight into it [soul] contributes greatly with respect to all truth, but especially with respect to nature; for it is as principle of the living things" (δοκεῖ δὲ καὶ πρὸς ἀλήθειαν ἅπασαν ἡ γνῶσις αὐτῆς μεγάλα συμβάλλεσθαι, μάλιστα δὲ πρὸς τὴν φύσιν· ἔστι γὰρ οἷον ἀρχὴ τῶν ζῴων, 402a4–7). Many different sciences consider the soul. These include practical sciences, such as ethics and politics, and productive sciences, such as rhetoric, poetics, and medicine, as well as theoretical sciences, such as investigations of plants and animals. Hence study of soul seems to contribute to all truth, and faulty views of soul may therefore distort the understanding of nearly everything. Yet Aristotle's focus on soul's contribution to the truth about nature (*physis*) indicates that his present investigations pertain especially to physics. He suggests right from the start that as much as possible he will try to study soul as

[5] See *Post. An*. i 27 for a discussion of one science as more precise and prior to another. In order to avoid mention of precision in 402a2, Alexander is reported by Philoponus *In de an*. 24,7–13 to have deleted as spurious μᾶλλον . . . εἶναι (402a1–3) for fear that attributing precision to its study would mean that the soul is something free from matter so that it would have to be immortal. Ross 1961, 165 doubts Alexander could have held so "foolish a view" unmentioned by Simplicius. Ross himself observes that "it is not very clear why A. assigns a high degree of ἀκρίβεια to psychology; Philoponus is probably right in thinking that it is because soul is a pure form, not a complex of form and matter."

[6] Aristotle probably conjoins more wonderful with better in 402a2–3 because he and Plato like to say that philosophy begins in wonder. See Plato *Theaetetus* 155d2–4 and Aristotle *Metaphysics* 982b11–21.

natural scientist. He even justifies this approach: the soul is as principle of living things or animals, and the nature of a natural being is its internal principle of rest and motion (see *Physics* ii 1).

In saying that soul is principle of τῶν ζῴων, Aristotle's usual term for animals (see 403b18 and subsequently) where we might expect him to say living things, Aristotle leaves us in some perplexity regarding his meaning. Is he perhaps arguing that soul is the principle of all living things, possibly extending to divine being (cf. 402b6–7)? Plato's *Timaeus* surely uses ζῷον even of plants (77b) and of the divine (30b–31a). Aristotle here seems to be allowing the widest possible scope for the study of soul. He might now use the word for animals because his predecessors tend to restrict soul to animals or because the demarcations among living or ensouled beings are obscure. The linking of soul to life more generally is not an obvious point, and it will be one of Aristotle's contributions to secure this connection of life and soul. Only with Democritus (see 404a9) does life become a subject of study and solely in relation to animal respiration. Plato attributes soul and life to plants but yet denies them self-motion, which he typically supposes characteristic of soul (see *Timaeus* 77c). Thus use of the term ζῷον may highlight the imprecision of the understanding of soul preceding Aristotle. Whether animals or living beings generally are at issue, soul as principle will be the nature of the ensouled being and have special dignity. Reasonably, then, study of soul might belong within natural science.

Now if living things or animals are the only beings with cognitive access to truth, study of soul should illuminate the way to the truth.[7] The contribution to truth will be greater still if gods as principles of all being and truth are somehow included within the investigation. As evidence of the contribution study of soul can make to truth, consider how Aristotle is shedding light on the precision of the study of the soul and the dignity of its subject matter. Living things or animals, having self-motion and cognitive powers, surely surpass nonliving things in dignity and are the most important parts of nature. Study of such a fundamental and widespread principle as soul has precision because investigations of more universal principles involve fewer assumptions than investigations of what derives from them. Study of the general principle of all living things or animals will be more precise than the exploration, for instance, of sanguineous animals. Study of soul also has precision by dealing with what is formal rather than material, if soul turns out a formal principle, nature as form, removed from the variability due to matter.

Study of soul belongs primarily, then, to the study of nature, physics or natural science.[8] When Aristotle says that the soul is the principle of living beings or animals (402a6–7), besides disclosing why its study will contribute to all truth and in particular the truth about natural and animate things, he has begun to handle a

[7] Themistius *In de an*. 2,5–6 urges that study of soul contributes to self-knowledge: "So if [the soul] knows itself, it is credible on other [matters] too; but if misled about itself, on what else could it be considered credible?"

[8] The issue of soul's place within the sciences reappears prominently in *PA* i 1.641a17–b10. We there find: "it will come within the province of the natural scientist to inform himself concerning the soul, and to treat of it, either in its entirety, or, at any rate, of that part of it which constitutes the essential character of an animal. . . ."

scientific requirement. Before a science can determine *what* its subject matter is (i.e., provide an account or definition), it must establish *that it is* (see *Post. An.* ii 1).[9] We shall find constantly throughout the *De anima* that Aristotle conscientiously ascertains *that* and then *what* are the subject matters that he considers. Inquiry may be pointless if soul's existence is dubious. Aristotle has preliminarily secured soul as a subject matter for study: soul is whatever provides the principle of living things or animals. So long as there is agreement that there are living beings or animals having principles, distinguishable from other beings, there is acceptance *that* soul *is something*, namely, the principle of these beings. Investigation can proceed to determine just what sort of principle soul is. Such ready establishing of the existence of soul suffices for the present.[10] Generally, wherever soul's existence is posited, it is assumed in order to account as here for some or all of the functions of animate things.[11]

402a7–10 Regarding (b), what the current study of soul aims to know, Aristotle states, "We seek to consider and to be familiar with both the nature of it and its being, then so many things as have come along with it; of which some seem to be affections proper to the soul, but others on account of that belong to the living things" (ἐπιζητοῦμεν δὲ θεωρῆσαι καὶ γνῶναι τήν τε φύσιν αὐτῆς καὶ τὴν οὐσίαν, εἶθ' ὅσα συμβέβηκε περὶ αὐτήν· ὧν τὰ μὲν ἴδια πάθη τῆς ψυχῆς εἶναι δοκεῖ, τὰ δὲ δι' ἐκείνην καὶ τοῖς ζῴοις ὑπάρχειν, 402a7–10). He seeks *what* the soul is, its very nature and being, and also what follows from it, that is, what is accidental to it.[12] When Aristotle

[9] Aristotle takes over the questions of *Posterior Analytics* ii 1 from Plato (see introduction n. 33).

[10] Especially in regard to nutritive soul, Aristotle will argue that soul is needed for explaining nutritive functioning (see 416a9–18). In fact, since soul is itself a first principle, we expect that establishing *that it is* is hardly distinguished from establishing *what it is*. Hence *Post. An.* i 27.87a31–33 says that the more precise science is that for which knowledge of the that and on account of what (τοῦ ὅτι καὶ διότι) is the same (cf. *Meta.* vi 1.1025b16–18). This applies to study of soul, and hence it is a very precise investigation.

[11] See, e.g., Plato's *Phaedo* 64c2–8 and *Republic* 353d. Some Presocratic suggestions along these lines are DK 13B2, 22B96, 22B117–118, and in Aristotle's review of his predecessors in book 1.

[12] The Oxford translation has "properties" here, though "accidents" is a more standard translation. "Properties" is more appropriate for ἴδια, which Aristotle discusses in *Topics* i 5 and which appears just below in 402a9. A property is something possessed only by that kind of thing, without being the thing's essence, so that it is convertible with the thing: e.g., a triangle is a figure the angles of which sum to two right angles, or a figure the angles of which sum to two right angles is a triangle. "Accidents" (συμβεβηκότα), things that go along with something else, applies more widely (see, e.g., *Meta.* v 30). In the case of predications of the form *A* is *B*, e.g., "Socrates is pale" or "The doctor is a house builder," being pale or being a house builder seems merely to happen to go together with Socrates or being a doctor. It would neither always nor for the most part be the case that Socrates is pale or that a doctor can construct a house. Modern usage of "accident" retains some of this sense since the accident is what happens to something out of the ordinary and unintentionally, e.g., stubbing our toe or finding treasure. Now things that go along with something else may be more or less "accidental." That Socrates is biped (two-legged) goes along with his being human. This seems a different type of attribute from being pale, since Socrates is always or for the most part a biped being, whereas he is only sometimes a pale being (yet biped is not a "property" since birds are also biped). Both kinds of attributes may be called accidents, though the attributes that always or for the most part go along with certain classes of beings may be called "essential accidents" (τὰ καθ' αὑτὰ συμβεβηκότα). Such attributes do not belong

says that we aim for the nature (*physis*) and being (*ousia*) of soul, he speaks in such a way that he is not prejudging that soul itself is the nature of living things and that it is categorially substantial being (*ousia*). Platonists and others could understand this way of speaking as the effort to get at the essence of soul, since *physis* and *ousia* can be used widely. It will turn out eventually, however, that soul is itself the nature of living beings and their very substantial being.

Aristotle may speak inclusively of what comes along in relation to soul (ὅσα συμβέβηκε περὶ αὐτήν). Included could be all those operations and functions of living things that the soul is introduced to account for (such as voluntary motions, perceiving, and thinking), the various faculties of soul that explain these operations and functions (sensory capacity, mind, etc.), and those bodily organs that support these (eyes, ears, etc.). When Aristotle adds in 402a9–10, "some [of these things that come along with the soul] seem to be affections proper (ἴδια πάθη) to the soul itself, but others on account of that belong to the living things," he seems to speak especially of the operations involving the soul, seeing, thinking, being angry, and so on (see 403a3–8 and 409b14–17). The question whether there are affections proper to the soul itself, so that soul serves as their substratum, or all the affections really have the living thing or animal as their substratum is crucial to the treatise's account of soul. Certain operations, perhaps thinking or dreaming, might not require bodily organs and so belong to soul alone, along with the capacities for them, but many operations and faculties most likely pertain to the ensouled being. If plants are living beings with souls it might seem quite doubtful that their souls have affections completely apart from their body, but if incorporeal gods are souls, surely their souls must. If some affections of soul can take place without bodily involvement, soul may be separate from body and capable of a life on its own that will vitally impact the definition of soul. The usual interpretation of such works of Plato as the *Phaedo* is that the soul bestows life on the body when embodied but that the soul is capable of its own independent life. Confidence in any account of soul and the soul's relationship with the body awaits clarity about the status of the affections of soul and whether they can pertain just to the soul or always to the ensouled bodily being.

Whether study of soul is strictly a science or not, in seeking what the soul is and what goes along with it, Aristotle conforms to his general understanding of the components of science. A science should have subject matter, principles, and attributes (essential accidents). For instance, geometry is about figures, has principles (definitions, axioms, postulates), and demonstrates the attributes of the figures (e.g., that the angles of a triangle sum to two right angles) by means of the principles.[13] In

in the essence of the being, but they are what a science is able to demonstrate or elucidate in terms of the essence.

[13] The productive sciences also have such constituents. There is a subject matter, e.g., shoes for shoemaking. The principles of shoes are presumably the form and matter of the shoe. The science enables the shoemaker to calculate from the end of producing shoes the means for actually putting together form and matter in order to generate a type of shoe. The means to producing the shoe are what follows as essential accidents to the end aimed at as principle. A practical science such as ethics similarly has a subject matter, good human life, and its principles are happiness and the general accounts of the

the case of the study of soul, the soul that is subject matter for the investigation is already a principle of living beings. The principle for this inquiry will be the definition of soul or the account of what soul is. Developing this definition of soul will be especially problematic, however, since as a principle or form the soul may have as "parts," faculties, or accidents types of soul or formal parts that somehow enter into the very definition of soul (e.g., nutritive soul) yet they should also be what follows from the definition. The demonstration of attributes of the soul has the additional problem that if every part of soul requires bodily involvement for its operation, any accident of soul in fact pertains to the whole living being, and therefore cannot be demonstrated simply in terms of the definition of soul but requires introducing further bodily principles.[14]

In the *De anima* Aristotle gives broad accounts of the soul, the types of soul (nutritive, perceptive, intellective, locomotive), the ways of life attributable to them, and requisite bodily organs. The *Parva Naturalia* and biological works continue investigating what goes along with these main types of soul and life. The account of soul only proves itself if the further accounts of the soul's faculties, operations, and bodily supports derive suitably from and accord with the general definition. The whole structure of the treatise has been outlined. We are to determine what the soul is, and what follows from it, considering whether the subject for the soul's operations is the soul itself or the ensouled, bodily living thing.

402a10–22 Aristotle now insists upon his third point, (c) the study of soul is especially taxing: "In every way and altogether it is most difficult to gain any conviction concerning it" (πάντῃ δὲ καὶ πάντως ἐστὶ χαλεπωτάτων λαβεῖν τινὰ πίστιν περὶ αὐτῆς, 402a10–11). To give a compelling account of soul and what follows from it presents supreme difficulty. The rest of chapter 1 reviews the challenges to securing anything trustworthy regarding the soul, thereby charting in more detail the course of the investigation. A standard procedure for Aristotle is laying out the difficulties or perplexities (ἀπορίαι, *aporiai*) confronting an investigation, the most prominent instance of which is *Metaphysics* iii.[15] Loosening the perplexity opens the way to

virtues. The science considers the role of the various constituents of the good life and enables one to calculate what ought to be done to realize such a life. Thus every science must have a process of apprehending principles (this is *nous* in theoretical science [see *NE* vi 6] and something analogous in the others, such as practice, character, and instruction) and a process of deriving the accidents of the subject matter from the principles (this is demonstration through syllogism in the theoretical sciences and analogous deliberation and calculation in other sorts of science).

[14] For the mathematical sciences, the subject matter of which is by abstraction, i.e., by ignoring everything but quantity, the essential accidents are often demonstrable simply in terms of a few abstract principles (e.g., demonstration that the angles of a triangle sum to two right angles depends upon the account of triangle, the straight, and a few such principles and no material principles). In natural science, however, the essential accidents generally pertain to the whole natural being, not merely to the nature (form), and hence they cannot be demonstrated simply from the definition of the nature but principles pertaining to matter must also be introduced.

[15] See *Topics* i 2 and Owens 1963, ch. 6 for the role of *aporia* in Aristotle. Socratic cross-examination aims to produce *aporia*. Socrates assumes that if someone knows something, then the person can give an account of it; inability to provide such a satisfying account means lack of knowledge. The interlocutor,

understanding; the *aporiai* guide to appropriate lines of thought.[16] If any *aporiai* are overlooked, the investigation may not be sufficiently comprehensive to bestow understanding. By beginning with *endoxa* and the *aporiai* to which they give rise, Aristotle starts from what seems initially knowable to us. By clearing up the difficulties, he progresses to what is more knowable by nature. Difficulties confront the entire inquiry: both regarding the procedures it should use and the various accounts sought of the soul and its accidents.

Defining the being of soul shares the difficulties of any investigative effort to arrive at definition. There is no single way to seek definition of being (οὐσίαν) and what it is (τὸ τί ἐστι, 402a11–13), for instance, by division, though some suppose there is some single way, since demonstration (ἀπόδειξις) based upon definition applies to the properties accompanying the being (τῶν κατὰ συμβεβηκὸς ἰδίων, a13–16). But if definition is the starting-point for demonstration, it cannot itself be demonstrated without getting into an infinite regress of demonstration (cf. *Post. An*. ii 3). Consequently, in studying the soul we must determine not only the being of the soul but also the method for seeking it; hence, search for definition, lacking a single method, has extra difficulty (402a16–19). Furthermore, in the case of soul, even were the method to utilize in seeking its account clear, for example, demonstration (ἀπόδειξίς), division (διαίρεσις), or some other, there are still many perplexities (ἀπορίας) and much wavering (πλάνας) about the sorts of principles

who initially supposes that providing an account will be easy, makes the attempt only to have Socrates elicit from him other beliefs that he holds to even more strongly that are inconsistent with the proposed account (see Vlastos 1983 and Polansky 1985). This happens several times, as the interlocutor is forced by his own beliefs repeatedly to relinquish the accounts he himself has proposed. Thus the *endoxa* that the interlocutor proposes and those that Socrates shows that he accepts appear inconsistent. When all the accounts he has to offer are exhausted, the interlocutor arrives at the sought *aporia*. Perhaps then the interlocutor will be ready for renewed investigation. Aristotle's dialectical or aporematic approach surely has this Socratic background.

[16] Aristotle's aporematic method, beginning from the *aporiai* to point the way to the issues that must be resolved, confirms that he is not groping his way in his treatises. His careful and condensed presentation follows rather than precedes his own study. Just as Socrates must have much experience in discussing moral notions so that he can produce the series of refutations – and consequently the interlocutor suspects that Socrates all along has knowledge – Aristotle can only give a science aporematic presentation once he has worked out the *aporiai*. While perplexity may contribute to initial discovery, the amazing tightness of Aristotle's presentation of the *aporiai* marks it as a pedagogical device. Hicks 1907, 182 comments that "contrary to his usual custom, he [Aristotle] omits the arguments for and against" in laying out the *aporiai*. In fact subsequent to Aristotle's initial presentation of the *aporiai* in 402a23–b16, the rest of book 1 combines some argument for the perplexities with the review of predecessors' positions (and the additional *aporia* raised in 403a3–5 is immediately given much consideration). We should observe that even *Metaphysics* iii, which Hicks most has in mind, first lays out the *aporiai* in ch. 1 and only subsequently argues for them in the remaining chapters of the book. The treatment of the *aporiai* in *De anima* is somewhat less searching than that in *Metaphysics* iii because fuller explication would take Aristotle into metaphysical issues inappropriate to this treatise. Yet Themistius *In de an*. 1,5–9 attributes the greatness of the *De anima* to its assured dealing with the perplexities: "The treatise *On the Soul* in fact merits more respect than all of Aristotle's numerous and remarkable compositions for the quantity of problems that his predecessors had not even managed to enumerate, for the ease with which he supplied their foundations, and for the methods with which he endowed the investigation of them."

or beginnings from which to launch the quest for definition (a19–22). Different subject matters require different principles. Much as mathematical numbers and planes involve different principles, since the former are discrete quantities and the latter continuous quantities, soul differs from other things and may then direct us toward different sorts of principles. Referring to these mathematical entities hints at the difficulties of the beginning points for definition because some even suppose that the soul is a kind of number or circle, that is, a mathematical entity, whereas others take it to be fire atoms or some sort of subtle body. Such variety in conceiving soul gives rise to much confusion and makes providing its account problematic.

Soul is posited to account for observed functions and operations especially of animals. While this approach may permit us to conclude that soul exists, it provides rather little initial guidance regarding what soul is, except that it is some sort of cause or principle of these operations. In many investigations where the determination that there is a subject matter for investigation derives from direct perception of subject matter – for instance, we see eclipses of heavenly bodies – and the causes explaining the subject matter are rather observable, there is clear direction for seeking what the thing is. But while the functions and operations that the soul must account for are obvious, what the soul must be to account for these functions and operations is most obscure and disputed.

402a22–b1 Aristotle proceeds to lay out the special perplexities for defining and studying the soul. These perplexities divide into two groups suggested by these general reflections: what principles should be used for defining soul and what approach should be taken to investigating soul. The number of the perplexities elicited here in the *De anima*, perhaps only surpassed in Aristotle's treatises by the mass of perplexities in *Metaphysics* iii, indicates the difficulty of the investigation.[17] That what Aristotle goes through are perplexities is indicated by his presenting alternatives: is the soul this or that, and should it be investigated this way or that way? Alternatives suggest persuasive arguments for each side, thus giving rise to perplexity. The alternatives are each enticing because they reflect *endoxa* drawing us in different directions.

Perplexities about what principles to use in definition of soul are first. (1) Aristotle raises the issue of the soul's category of being. Definition typically involves genus and difference, so that soul's genus must be ascertained. The categories of being, that is, substance, quality, quantity, and so on, are the ultimate genera. Placing soul in one of these categories provides its genus and discloses what kind of thing the soul is (402a22–25).[18] It will turn out that soul is categorially substantial

[17] Ross 1961, 166 observes, "A. enumerates here [402a23–b16] nine problems which he proposes to attack. It is a formidable programme, but one which he carries out, explicitly or implicitly, in the course of the work."

[18] Simplicius *In de an.* 10,31–34 notes that Pythagoreans and Plato suppose the soul a substance, but those who consider it a *harmonia* or mixture place it in the category of quality, while Xenocrates, supposing it is a number, puts it in the category of quantity. Hence Aristotle names these three categories as most likely for the soul. But of course these are also the first three categories usually listed, and *harmonia* seems more likely to be a relation than a quality.

being, since soul is primary (cf. *Physics* 192b33–34 about nature as substance). The ensouled being might seem more evidently a substance, because it has independent existence. Yet, as principle of the ensouled substantial being, and prior to it in being, soul must itself be substantial being, or nonsubstance will be prior to substance. Those rejecting the soul itself as substantial being and "a this" (τόδε τι), since this might make two substances in one, may have soul merely as an accident of substance, and accidental prior to substantial being. Such reflections form the background for Aristotle's definition of soul at the start of book 2, though he cannot take up the topic of substance in earnest, and how substantial being can be "a this" (see, e.g., *Meta*. v 8), since doing so would lead outside the bounds of study of soul into first philosophy.

(2) Is the soul something that has its being in potentiality, or is it some sort of actuality (ἐντελέχειά τις, 402a25–26)? The previous question about the *genus* of the soul pertained to its general definition, as does this question as well, since potentiality or actuality belongs in the *difference* for the definition. Notice that Aristotle allows here that the soul might be some special sort of actuality, as ultimately proves to be the case. The soul will be defined in ii 1 as substance in the sense of a kind of actuality of a certain sort of body. Thus these first two perplexities cover both parts of the definition of soul, genus and difference. Aristotle rightly emphasizes that whether soul is actuality or potentiality "differs not a little" (διαφέρει γὰρ οὐ τι μικρόν, a26–b1), since it is the very difference within the definition. Beyond the definition of soul, questions of potentiality and actuality arise throughout the reflection upon the soul's faculties and operations (see esp. ii 5). Aristotle will have to refine the conceptual understanding of actuality and potentiality to handle these topics, yet here again he cannot delve into them too fully without straying into first philosophy. Actuality and potentiality receive thorough thematic treatment in *Metaphysics* ix.

402b1–10 The two perplexities so far raised consider the principles needed for defining soul. The next group of perplexities takes up how to go about giving an account of soul. Aristotle is here not so concerned with whether the approach should be demonstration, division, or some other, but with issues in play no matter what approach is taken. Is a general account of soul possible at all, or should accounts only be given of a more limited sort since soul breaks into parts or is nonhomogeneous? Hence he raises these sorts of perplexities. (3) Does soul have parts or is it partless? (4) Is all soul homogeneous (ὁμοειδής) or not? And (5) if soul is not homogeneous, then does it differ in genus or form (εἴδει διαφέρουσα ἢ γένει, 402b1–3)?

This cluster of issues opens up a wealth of possibilities, to which Aristotle will respond with his supposition that a living thing has its own soul with parts, these parts being homogeneous across the kinds of living beings. The soul has parts since the living being may have many functions and different parts of the soul can explain these functions. If there are multiple parts within one soul accounting for diverse functions, these parts should not themselves be homogeneous, even if analogous in relation to their functions and other aspects. The nonhomogeneous parts will differ both in genus and in form; for instance, sense-perceptive capacity differs

from nutritive in genus, while vision differs from hearing in form. Yet there will be homogeneity of the nutritive capacities of the various sorts of living beings, as there will be homogeneity of sensitive capacities. Hence a common account of soul for all the mortal living beings and general accounts of the faculties will be possible and valuable. This is the path Aristotle may take on his own views, but at the initial stage before anything has been clarified, many more possibilities are open.

Perhaps all living things or different types of them share in one soul. There might, then, be no parts at all, or perhaps the parts of the soul are merely the pieces of the soul that the particular living beings have. The individual living being could have a partless soul, or instead of supposing parts of soul to account for diverse functions, any living thing could have multiple partless souls, each of these explaining a distinct function.[19] Whether souls have parts or not, we may ask whether soul is homogeneous or nonhomogeneous.[20] Partless souls probably differ considerably – are nonhomogeneous – in different sorts of living things. And if soul has parts, are the parts within a single soul homogeneous or not, and are the parts from different souls, whether members of the same species or different ones, homogeneous or not? Suppose that all plants and animals have a nutritive part of soul; this may be homogeneous throughout, or perhaps not, inasmuch as there is much variety of kinds of plants and animals. Materialistic accounts of soul, such as that soul is air or fire, tend toward homogeneity (see 411a16–23). Nonhomogeneous soul may differ in form (εἴδει) or in genus (γένει). If souls or parts of soul are nonhomogeneous and they only differ in form, they belong to the same genus. Perhaps the various nutritive parts of soul are nonhomogeneous in form – plants may have just this kind of soul that must therefore differ in form to explain the different types of plants – whereas nutritive and perceptive parts are nonhomogeneous in genus. Might nonhomogeneous soul differing in genus possibly differ so widely as not to share in definition at all, or does there always remain sufficient analogy that all kinds of soul lend themselves to unified study? How soul with plurality of parts and even nonhomogeneous parts can be unified, presumably through arrangement of the parts and dominance of the highest part, might be a primary concern.

Other thinkers, Aristotle asserts, neglect questions about parts of soul, homogeneity, and unity and diversity by investigating merely human soul: "For now (νῦν) those speaking and seeking concerning the soul have seemed to consider only the human soul" (402b3–5). In this way they may ignore a general definition covering all soul and avoid taking up seriously issues of diversity or unity of soul within the single living being or among the variety of beings. But understanding even human soul, a soul displaying all the faculties of soul, could presuppose understanding soul

[19] Evidence that Aristotle sees the possibility of many souls operating within a single living being rather than just parts of a single soul appears in 402b9: "if there are not many souls but parts [of one soul]" (see also 408a13–18). How the soul may have parts could be considered in light of *Metaphysics* v 25, the treatment of things called "part." Parts are not there restricted to the divisions of quantities or enmattered things but even forms can have parts.

[20] The issue whether soul is homogeneous or nonhomogeneous might be suggested by Plato's *Phaedrus* 271a, where the question is raised about soul "whether it is one and like by nature or much as the shape of the body is many-formed" (πότερον ἓν καὶ ὅμοιον πέφυκεν ἢ κατὰ σώματος μορφὴν πολυειδές).

generally, as well as the various faculties of soul shared with the variety of plants and animals. Aristotle views psychology as pertaining to natural science that includes at least all animals and plants.

Is Aristotle accusing most of his predecessors of limiting their focus to human soul or just more recent thinkers, that is, those "now" like Socrates and Platonists who turn to human concerns? Perhaps even the early "cosmological" reflections of the Presocratics already somehow have human preoccupations? Yet these earlier inquirers study soul within the investigation of nature, whereas the Platonists who for the first time take up earnestly the question of what is soul restrict themselves unfortunately largely to the human soul. Consider how in Plato's *Timaeus* the souls of all the lower animals merely devolve from the human soul. By referring to those "now" investigating the soul (402b3), Aristotle seems especially to speak of his contemporaries the Platonists. Plato of course allows parts to soul and nonhomogeneous parts, that is, the rational, spirited, and appetitive parts, but in centering the investigation on human soul, he skews his results and limits access to understanding soul and its parts.

(6) Having raised the question whether the parts of soul differ in genus or species, and noted the exclusive focus on human soul, Aristotle recommends considering cautiously whether there is one definition for soul, as there might be of the genus animal, or instead each specific kind of soul is defined differently, such as horse, dog, human, or god (402b5–9).[21] This issue seems quite in place after the likely reference to the Platonists and their too-limited concentration upon human soul. Can Aristotle, consistently with his own reservations about universal entities, push for the widest investigation of soul? Animal may have a single account since it is a genus, though it has lower-order genera within it. Might soul be similarly generic – even as encompassing both plants and animals – and so capable of a single account? Yet for Aristotle there may be reason to doubt the worth of such generic definition since a genus seems to be universal, predicated of many things, and questionably to exist (see *De int.* 17a38–b1 and 402b7–8). Universals questionably exist just as such, or merely have a posterior sort of being, because we do not encounter a universal such as animal, but only dogs, horses, and so on. Though generic universals may receive a single account, it could well be secondary to definition of the specific kinds, such as dog and horse, and the account of soul should concentrate upon these.[22] As

[21] Aristotle here holds open the possibility that gods have soul to emphasize how comprehensive psychology might be. The divine heavens as bodily and in everlasting circular motion may seem ensouled. Yet it emerges that as imperishable they lack nutritive capacity and as unchanging qualitatively they also probably lack sensitive power, so soul seems unlikely for them but only something analogous. In ii 1–2 the possibility of soul is closed off for incorporeal gods. Gods as having *life* (ζωή, see *Meta.* xii 7.1072b26–28) might seem to be *ensouled animals* (ζῷα), but this will not turn out the case. That Plato's *Timaeus* 30b–31a seems to speak of the cosmos and what it is modeled after as ζῷα, and so gods may be included among living beings or animals, enables and requires Aristotle to speak as he does in 402b6–7.

[22] Ancient commentators question soul as genus inasmuch as, unlike the genus animal, it has quite diverse genera with different levels of life subsumed within it, i.e., plants and animals (see Rodier 1900, ii 15–20 and Hicks 1907, 184–187 on Alexander's interpretation). There are clear priority and posteriority within types of soul because nutritive soul is required for all mortal, living things whereas perceptive

we then have reservations about a common account of animal, so we might have even greater reservations about soul as something common (402b8–9).

This passage contrasts what is καθ' ἑκάστην (according to each) and what is καθόλου (universal or according to the whole). Sometimes this contrast is between the particular, nonrepeatable being and the universal, that is, between an individual such as Socrates and a universal notion such as human being or animal. But sometimes, as here in 402b6–7, the contrast is between the species, of which the individual is an instance, and the universal genus (cf. 424a15–16 and *Physics* 184a23–24).

(7) Whether to deal with soul universally or the soul of each kind of animal having just been raised in 402b5–9, Aristotle proceeds to the related question of dealing with soul of each kind of animal or instead the parts within this sort of soul. If rather than multiple souls within the living thing, the living being's soul has parts, should definition of soul first seek the whole soul or these parts (402b9–10)? Return to the suggestion of parts indicates that Aristotle supposes the soul somehow has parts as more likely than that an animal has several souls within it to account for its varied functions. Nevertheless, the suggestion that an animal might have several souls within it usefully emphasizes that we wish to know "what it is" regarding any soul or any possible parts of soul. The idea of multiple souls emphasizes the unity of any soul but raises the issue how the several souls within an animal would be coordinated into any higher unity. This sort of issue leads to the view that soul has parts (cf. Plato *Theaetetus* 184b-d).

The question then about order of definition, whole soul or its parts, pertains to the deep issue of metaphysical priority. Whole seems prior to parts if parts only go along with the whole. There questionably is animal soul just as such, but there is soul of dog, horse, and so on, and the parts of these souls could hardly be independent of them, so definition might concentrate upon the species of animal. Yet from another standpoint, parts of soul, such as perceptive soul, do not depend upon various individuals or species of animals. There could be the perceptive part of soul even if there were no dogs or horses, so long as some kinds of animals possessing it exist. Thus the parts of soul might seem to have priority to, and in this sense to be separate from, any particular individual or species of animal. Consequently, there is serious question about the order and priority of defining whole soul and parts of soul.[23] Moreover, perhaps even the definition of soul for the types of animal depends upon parts of soul, since, for example, the human soul differs from other animals in virtue of a peculiar part of soul, the rational part.

soul is lacking to many. Other treatises, e.g., *Meta*. iii 999a6–12 and *EE* 1218a1–9, deny that where there are priority and posteriority in being there can be a single genus. Hence soul might seem to be some sort of universal wider than a genus and even more dubiously to have a useful single account. Within the study of the soul Aristotle will sidestep questions about the status of universals, since these belong to first philosophy, but he will warily seek a single, general account of soul.

[23] Aristotle's zoology tends to concentrate upon the functional parts of animal bodies rather than the species of animals (see, e.g., *PA* 639a15–b5 and 644a23–b15). Focus upon whole kinds, such as horse and dog, rather than parts, such as stomach and liver, would lead to endless repetition as analogous parts are reviewed again and again. The situation may well be similar in consideration of the soul.

Some of this perplexity about "parts" arises because these parts of soul are formal rather than material parts. A material part, such as the leg of an animal, can only be defined in terms of the whole and cannot be without the whole, but a formal part may either enter into the definition of the whole, as genus or difference enters into definition, or be a kind of what is defined, as species of the genus, as white and black are forms of color. Probably the parts of soul are themselves kinds of soul, and so soul cannot be without one or more of these parts. Material parts are posterior to the whole, but this may not be the case for formal parts (see *Meta.* vii 10–11).

402b10–16 (8) If the soul has parts, as seems most likely, there is difficulty demarcating them according to their natures (402b10–11). For example, do distinct parts engage in sense perception and thought or in perception and in moving the animal? Hence, Aristotle will both have to ascertain *that* a part is, that is, that it is different from other parts, and to determine *what* precisely each part is. Such issues seem crucial whether, as we just saw, definition of the parts of soul might precede that of the whole soul, or the inquiry goes from a general definition to accounts of the parts.[24] The attention to demarcating parts of soul confirms that Aristotle is very concerned with how to give an account of what follows from soul as well as soul itself.

(9) And in investigating the parts of the soul, will the parts be studied first or their works or operations (ἔργα); for instance, the account of thinking (νοεῖν) or perceiving (αἰσθάνεσθαι) might precede that of the capacity for thought (νοῦν) or perception (αἰσθητικόν, 402b11–14; cf. 415a16–20). Probably the operation takes priority because it is an actuality in terms of which the capacity or faculty of soul is defined; for example, sense is the capacity for perceiving, and thus demarcated from other parts of the soul. (10) Proceeding along this line of reflection, which favors actuality over potentiality as that in terms of which the account must be made, prior even to the operation of the faculty and the faculty, we should initially study the objects (τὰ ἀντικείμενα) of the faculties, such as the object of thought (νοητόν) or perception (αἰσθητόν, 402b14–16; cf. 415a20–22).[25] Hence accounts of the parts or faculties of soul may be preceded by accounts of their operations and these by accounts of their objects. Surely this reflection upon the priority of faculty,

[24] In iii 9.432a22–b7 Aristotle indicates that there is much perplexity regarding division of soul into parts and that soul permits indefinitely many divisions.

[25] The term used for the objects of faculties is τὰ ἀντικείμενα (*ta antikeimena*). This means literally "that which lies over against." Often Aristotle uses this as his most general term for opposites, i.e., the genus that includes contraries, contradictories, relations, and having vs. privation (see, e.g., *Categories* 10 and *Meta.* v 10). That which lies over against a faculty of soul will be the object of the faculty. The object – the perceptible, thinkable, knowable, the desirable – is such in relation to the faculty; e.g., knowledge is knowledge of something knowable. In 402b16 some manuscripts have νοητικοῦ and some νοῦ. The latter is used in 402b13, but Aristotle might use νοητικοῦ, probably a neologism, in line with his use of αἰσθητικοῦ in b16. Probably he uses the somewhat strange and technical αἰσθητικοῦ rather than αἰσθήσεως because of the ambiguity of the term *aisthesis*, which might stand for the operation (sense-perceiving), the faculty (sense perception), and even the sense organ.

operation, or object concerns the approach to take to definition of soul and what follows from it, clearly connecting with the previously raised issue about whether soul is potentiality or actuality (402a25–b1).

The difficulties about the priority of accounts stem, as we have been observing, from questions about the relationship of parts of the soul to the soul and of the objects and operations of these parts of the soul to the parts. Perhaps we can appreciate the logic of the situation. Aristotle will manage to produce in book 2 a general definition of soul that does not have to introduce the parts of soul directly into the definition. This general definition appeals to the broad notion of *life*. Yet, life is only understandable through the parts of soul and their operations: plant life depending upon the power to nourish itself and animal life upon both this and the power to sense-perceive. Since the "parts" of soul are *forms* or *kinds* of soul, they are not strictly properties or essential accidents of soul, though Aristotle hardly bothers at this early stage to clarify this point. The essential accidents or properties of soul more likely include the operations or affections of the parts of soul: thinking, seeing, hearing, smelling, tasting, touching, the various emotions, remembering, dreaming, sleeping, and so on. But if these are properties or accidents, and we somehow define the faculties of soul and soul in terms of operations, then the soul might be defined in terms of its properties or accidents. Yet as Aristotle helpfully points out (402a8–10 and 403a3–5), probably all of the affections of soul also involve the body along with soul, so they should more strictly be called accidents or properties of the living thing rather than of the soul. Study of objects and operations of the soul's parts, then, connects in a complex way with the definition of soul.

402b16–403a2 Aristotle has considered perplexities about the principles of definition and about the approach to giving an account of soul and accounts of what follows from it. He continues with a general reflection about accounts of entities and their accidents, how they assist each other. Of course the context is getting to know soul and what follows from it, but the passage 402b16–403a2 does not mention soul at all, so that its points hold for any inquiry. In any investigation he will seek to elicit all the phenomena, that is, all that pertains to a subject, as preparation to determine which among these are the principles so that there can be demonstrations (see *HA* 491a7–14 and *Prior Analytics* 46a17–27). And not only, he says, does knowing the what it is (τὸ τί ἐστι) help with considering the causes of the essential accidents of substances or beings (τὰς αἰτίας τῶν συμβεβηκότων ταῖς οὐσίαις), but also in turn these essential attributes contribute greatly to knowing the what it is (τὸ τί ἐστιν, 402b16–22; cf. 409b14–18).[26] As illustration of the value of knowing the what it is for demonstration, he observes that knowing that the angles of a triangle sum to

[26] Aristotle has a rich terminology for what definition defines. He can speak, for example, of the "what it is" (τὸ τί ἐστι), the "essence" (τὸ τί ἦν εἶναι), and "account of being" (ὁ λόγος τῆς οὐσίας, see *Categories* 1a1–2). The "what it is" can be wider than "essense," including the genus and species, since the what it is question may be answered by naming the genus or species as well as giving the essence. To give the definition of essence involves providing genus and difference. Only substantial beings in Aristotle's own strict sense, such as plants and animals, properly have essences, yet we can ask about any being what is it or its essence, e.g., what is color or what is animal (see *Meta.* vii 4.1030a18–b7). In Platonic

two right angles – which is an essential accident of triangle – depends upon what the straight and curved are or what the line and plane are (402b18–21). Demonstration of essential accidents begins from the grasp of such definitions (b25–26).[27] Though demonstration may not be the means of discovery, some sort of demonstration serves well for presenting the causal connection of essential accidents with things defined. When all or most of the essential accidents can by way of definitions be demonstrated as they appear to us (κατὰ τὴν φαντασίαν), we can be sure that things are well defined (b21–25).[28] Thus facility in demonstration of essential accidents gives support to accounts of principles. Where definition of the subject matter does not illuminate why its essential accidents are as they are, nor facilitates conjecture about them (εἰκάσαι), all seems to have been said merely dialectically (διαλεκτικῶς) and emptily (b25–403a2).[29]

Aristotle's comments do not signal a shift in procedural priority, that is, a method whereby one might consider the essential accidents before determining the definition of soul.[30] Instead Aristotle observes a propos of any scientific investigation that definition as getting to the principle should contribute to understanding of the

parlance also accepted by Aristotle, *ousia* extends widely to any being, though for Aristotle it more prominently refers to substantial being.

[27] Mainly Aristotle avoids speaking here of demonstration (*apodeixis*) since in the context of soul and its faculties and operations that are all involved with matter this interferes with strict demonstration. *Apodeixis*, however, can be used more or less strictly.

[28] This first appearance of φαντασία (appearance or imagination) in *De anima* suggests the wide usage possible for this notion. In iii 3 it will be given its central meaning, but it may be used more generally as here to indicate the way things appear to us, in this case the way the accidents of some nature present themselves. Such appearances are likely encapsulated in *endoxa* (cf. Owen 1986). If one can account for these in terms of the account of the being, then one has an adequate account of the being. We may suppose that it is the appearance of these accidents of animals, such as walking and perceiving, that leads to the assumption of soul in the first place. An appropriate account of soul must help with accounting for these initial appearances.

[29] "Dialectic" in Plato can mean all the sort of discussion found in the dialogues or especially the highest-level philosophical theorizing. Aristotle usually means by dialectical the taking of accounts acceptable to the interlocutor, *endoxa*, when going through *aporiai* or positing principles (see, esp., *Topics* i 1–2). What is dialectical, then, might be merely enticing and deceptive, as here in 403a2, though it can also be the way to genuine principles. Aristotle can also use "dialectical" nearly like "logical" as a description of a method opposed to the "physical" (see *Meta*. vii 4.1029b13). The physical approach aims to account for motion whereas the dialectical or logical approach determines what something is without special attention to motion and operation. It remains strictly at the level of *logos* and argumentation. This dialectical approach gets the form, and even as it truly is rather than merely the way it seems to some interlocutor, but it avoids dealing with any actual matter in motion. This latter usage may be seen later in 403a29–b2.

[30] Hicks 1907, 191–192 says, "It would seem, therefore, that in such cases the properties are better known to us, and we become acquainted with them, by sensation and experience before we know that they are deducible from the definition of the thing; the method pursued throughout Book II. of the present treatise exemplifies this. Philop. 40,30–41, 6 adduces from the *Physics* the definitions of τόπος, ἄπειρον, κενόν, χρόνος and that of hail from *Meteor*. I. 12, 347b34 sqq. as obtained in this way." In most cases we are familiar with accidental features prior to the definition of essence, so Hicks seems incorrectly to suppose that Aristotle is here introducing some exceptional new procedure. Though any inquiry should seek the whole in terms of which to explain the parts, some insight into the parts surely contributes to knowing the whole. Aristotle is considering the general problem of the possible circularity of investigation.

essential accidents. This in fact serves as a major test of the success of the definition. In this respect Aristotle's account of soul triumphs dramatically over his predecessors' accounts, for his account of soul fits most if not all the psychical phenomena. His observation about the relationship of accounts of substance and accidents is needed because the great difficulty in giving accounts of the essential accidents of soul and the requirement to look at operations and objects prior to faculties might suggest that the procedure in the *De anima* is unusual. But in all sciences the principles should contribute to the grasp of what follows from them, and in many sciences, as here, what follows from the principles in turn confirms the principles. Scientific reasoning can be viewed either as linear, since demonstration of what follows from principles may proceed linearly from them, or as circularly confirming the explanatory power of the principles inasmuch as what follows helps secure the principles. But this hardly applies uniquely to investigation of soul and what follows from it.

Demonstrations in the case of soul will sometimes involve necessity, especially hypothetical necessity, and sometimes what is for the most part the case or probability. While the parts of the soul are formal parts, and allow at least for demonstration based on hypotheses, the full accounts of these and the affections of the soul, the soul's operations, since these generally are only *with body*, draw in additional principles beyond soul, that is, bodily parts as principles. The account of soul might only then permit conjecture about some of these affections of soul. The passage 402b16–403a2 links the *aporiai* concerning account giving already raised with regard to principles and parts with those about the soul's affections now to be explored.

403a3–24 The perplexities so far considered concerning the account of soul and the accounts of what follows from the soul precede the more particular perplexities regarding the affections of the soul. By going through perplexities inhibiting – but also ultimately fostering – his investigation, Aristotle prepares for a thorough treatment of the entire field of inquiry. The affections (πάθη, *pathe*) of the soul that he has particularly in mind are the operations or works (*erga*) referred to before when he asked whether the parts of the soul, their operations, or their objects should be investigated first (402b10–16). The affections of soul are the operations of the various faculties or parts of the soul.

The major perplexity concerning the soul's affections is whether all are common (κοινά) to that which has the soul, that is, the animal or plant that is an ensouled being, or some are proper (ἴδιον) just to the soul itself (403a3–5; cf. 402a9–10). Determining this, he says, is necessary but not easy (403a5). If all the affections belong to the living ensouled thing rather than just to the soul, then soul by itself is not the subject or substratum for such accidents, and soul will not be separate, that is, will not be completely apart from the body. Thus this topic is necessary for understanding the relationship of soul and body. Plato in the *Phaedo* in the context of arguing for the soul's immortality, and in other dialogues as well for similar purposes, speaks as if the soul has its own operations not involving the body and hence is a separable substantial being. If this is the case, soul has a status quite unlike that which it has if hardly conceivable apart from body and not the

subject of affections peculiar just to it apart from any bodily involvement. Aristotle comments that most of what the soul undergoes or does (πάσχειν οὐδὲ ποιεῖν), such as to be angry, to be confident, to desire (ἐπιθυμεῖν), or generally to perceive, cannot occur without the body (a5–7).[31] Thinking (τὸ νοεῖν) seems the best candidate for an affection merely of soul, perhaps because thinking occurs whatever the bodily condition and with no obvious bodily organ. Yet he suggests that thinking either is or requires *phantasia*, which involves the body, and hence thinking in ensouled beings connects with body (a8–10).[32] At this early stage prior to elaborating his own views, Aristotle announces possibilities that he may or may not ultimately accept. Since most of the predecessors had difficulty distinguishing mind and sense perception, and Plato links thought and perception as *phantasia* (see *Sophist* 264a-b), intellection is plausibly *phantasia* or dependent upon it. Aristotle himself will eventually allow that *phantasia* is some sort of mind (e.g., 427b27–29), and he will link all thinking in mortal beings closely with *phantasia* (e.g., 432a8–14), yet it will seem that thinking is largely properly an affection of soul.

Aristotle raises the issue of the soul's bodily involvement very gingerly. As yet having developed no account of soul, he can hardly finally decide its relation to body. He says that it appears (φαίνεται) that of the soul's operations most can be "nothing without the body" (οὐθὲν ἄνευ τοῦ σώματος, 403a5–6). This seems the least determined possible relation of soul and body; that is, the soul will not do or undergo most of its operations without some bodily involvement. Even if it is granted that no operations of soul take place without the body, and it seems probable that none can if even thought is not without *phantasia*, the role of body in the soul's function is still unspecified and highly problematic. When Aristotle goes on to argue that affections of the soul are "with body" (μετὰ σώματος, 403a16–17), this may somewhat strengthen the connection, but many possibilities are left open as to what this may mean, so that much controversy yet surrounds the role of the body in such operations as sense-perceiving and thinking.[33] Is it enough, for example, that the animal merely has sense organs properly disposed (e.g., eyes open) for sense perception to take place, or do physiological processes (i.e., qualitative motions) arise in these sense organs during sense perception? Does intellection's connection with *phantasia* and sense perception mean that some physiological process transpires during thinking, or might there be none at all? The relationship of soul and

[31] After mentioning being angry, being bold, and desiring, Aristotle says "generally perceiving" (ὅλως αἰσθάνεσθαι, 403a7) perhaps because all these other affections are built upon cognition provided by perception or they are even types of perception. Notice that so far Aristotle leaves it open whether these affections, though this name suggests they are passions undergone, are due to passion (πάσχειν) and/or action (ποιεῖν) of the soul (a6–7). Talk of being "with the body" or "not without body," as in 403a6, a9–10, and a15–17, conveniently leaves open exactly what the relationship is of soul and body.

[32] Perhaps it is best to transliterate φαντασία as *phantasia* since the usual translation, "imagination," misleadingly leads us exclusively to constructive imagination, as imagining a winged horse. Back in 402b23 was a very wide usage of *phantasia*. The role of *phantasia* for thought is treated in book 3.

[33] Sisko 1998, 348–351 discusses the possible difference between "with the body" and "nothing without the body." It is argued that "the οὐθὲν ἄνευ τοῦ σώματος relation need not be taken as equivalent to the μετὰ σώματος relation. It is entirely compatible with the text to suppose that μετὰ σώματος picks out a narrower range of affections than does οὐθὲν ἄνευ τοῦ σώματος" (351).

body, and what takes place in each or both when the animal does or suffers some psychological activity, are matters demanding consideration.[34]

Were some operations or affections proper to soul (τῶν τῆς ψυχῆς ἔργων ἢ παθημάτων ἴδιον), that is, not at all involving body, Aristotle indicates, soul could be separate (χωρίζεσθαι) from body and the living thing, but if none are proper to soul, then it is not separable (χωριστή, 403a10–12 and a15–16).[35] That soul would possibly be separable should be surprising if Aristotle, as do his predecessors, posits soul just to explain functions of certain bodies, and then it turns out that it may exist apart from those bodies it is introduced to explain. The logic of Aristotle's argument requires that the one and only way soul could be separate is if it has some affection pertaining to it alone.[36] The issue here is not so much whether soul might preexist the body or exist after it, and thus function separately, but rather whether when soul explains the living thing's functioning during its life it may have functions peculiar solely to the soul without the body. For instance, is it as appropriate or more appropriate to say that the soul thinks as to say that the human thinks by means of the soul (see 408b14–15)? If the soul has some functions proper and peculiar to it, then it is wholly or in some respects separate, and so it or parts of it may preexist and have subsequent existence completely free from body.

If soul has no affections proper to it and is not separate, then it seems bound to body as the straight line is joined with perceptible matter (403a11–16). A straight line as straight touches a bronze sphere, that is, a perceptible sphere, at a point if and only if the line is perceptibly enmattered. Apart from any perceptible matter, lines are merely formal (the essence or definition of line) or mathematical, and therefore they cannot touch a *perceptible* sphere at all. Since Aristotle speaks of a line possibly

[34] These questions have dominated recent discussions of the *De anima*. In Slakey 1961 and Sorabji 1974 it is suggested that in color vision, e.g., the "eye jelly becomes red." This is defended in more subtle version in Sorabji 1995. Burnyeat 1995a and 1995b vigorously attacks the view that physiological process occurs at all during sense perception. Burnyeat holds that the animal needs bodily sense organs, but sense perception is merely the becoming aware of the sensible object. The body plays a very limited role in the experience of sense perception. Burnyeat claims to be offering the most traditional interpretation. Responses to Burnyeat by Nussbaum and Putnum 1995, Caston 2005, and others concern the role that the body plays in sense perception. All these positions are compatible with Aristotle's suggestion that affections of the soul take place "with body" or cannot take place "without the body," but much additional clarity is needed about the extent of the body's involvement.

[35] The use of παθημάτων here in 403a11 might apply to affections of the soul (and so be little different from *pathos*) or possibly to those incidents that may give rise to such affections (hence the unusual disjunction of ἔργων, i.e., functions or those incidents that give rise to them). For more on the use of *pathema*, see comments on 403a20.

[36] Themistius *In de an*. 6,11–33 illustrates the logic of 403a10–12 with the conditionals "If Dion is going to sail, it is also possible for him to have a good voyage" and "If Dion is not going to sail, it is also impossible for him to have a good voyage." Since *possibility* enters into the first conditional, in the second Aristotle is not merely fallaciously denying the antecedent to conclude the consequent. Many statements of the form "If *p*, then possibly *q*" are really biconditionals, "Possibly *q* if and only if *p*," as is the case in 403a10–12. Descartes seems to take up precisely Aristotle's challenge when he contends that the soul (or mind) has functions that we can conceive it engaged in whether or not we have a body, so that the soul is separate from body and is the true subject of these functions (see *Discourse on Method* iv and *Meditations* ii).

as separate, this applies to a mathematical line that has only "intelligible matter", that is, extension, and thus is conceived separate from the perceptible so that it cannot touch a perceptible sphere.[37] What this illustrates is that just as a straight line must be perceptibly enmattered so that it can touch a bronze sphere at a point, the soul must be with body so that its affections can occur.[38]

This discussion about how affections of soul occur only with body creates expectations that Aristotle's definition of soul will put the soul in close connection with body. From this definition demonstrations should follow of many accidents of soul. When most of the affections of soul have been shown to occur with body, it will finally be secured that soul is not separate from body, and hence that the definition of soul is appropriate. This discussion thus prepares us, along with the previous treatment of the perplexities, for the sort of definition of soul that Aristotle will give.

Aristotle supposes it likely that all the affections of the soul have bodily involvement (εἶναι μετὰ σώματος, 403a16–19). Previously "affections" (πάθη, 403a3) included emotions, perceiving, and thinking, that is, affectivity and cognition, but now Aristotle confines his examples of παθήματα to emotions: "wrath (θυμός), gentleness, fear, pity, boldness (θάρσος), joy, loving (φιλεῖν), and hating (μισεῖν)" (a17–18).[39] Clearly the body undergoes something (πάσχει τι) when the animal

[37] Aristotle may have found this example of the straightedge touching the perceptible sphere at a point interesting and suggestive for several reasons: (1) mathematical entities may or may not be enmattered; (2) geometrical objects in bronze were, as Hicks 1907, 197 points out, "familar objects in the lecture room"; (3) Protagoras had objected to supposing that a perceptible tangent touches a circle merely at a point (*Meta*. 997b35–998a4); (4) Plato views the soul as requiring circular motion; (5) Aristotle will compare the soul to a point (427a10); and (6) the line's touching the sphere is analogous to the soul's touching things.

[38] Because Aristotle refers to "the straight as straight" (τῷ εὐθεῖ ἢ εὐθύ) in 403a12–13 it may seem that he should mean a mathematical line, though it is hardly impossible to construe him as meaning a straight perceptible line. Ross 1961 secludes from the text the χαλκῆς in 403a13–14 (he also has to change τό in line 403a15 to τι) so that Aristotle will be saying that a straight mathematical line as straight touches a mathematical sphere at a point, but if line is considered separate from any matter whatsoever, even intelligible matter, as the very essence of straight or any essence is separate from matter, then it could hardly touch anything at all (see his p. 168). Ross's emendation is unnecessary and makes less sense of the context. Perhaps Aristotle unusually speaks of "the straight as straight" just to emphasize that even a perceptible line could be conceived, as straight, merely touching the bronze sphere at a point. But Ross supposes that a perceptible line "would touch the sphere not at a point but over a small area."

[39] It might seem that some of these affections are dispositional rather than activities, but perhaps Aristotle's choice of terms indicates that he means to refer to emotional activities. That he uses the same term, πάθη, in 403a3–7 for many psychical affections, but in 403a16–19 specifies merely emotions or passions, has led to controversy about how much evidence this supplies for the spiritualist or literalist interpretations of sense perception (see, e.g., Everson 1997, 263–265 and 279–282; Sisko 1998, 348–351; Caston 2005). Sisko 1998, 349n23 comments in support of Burnyeat over Everson, though without embracing the spiritualist view, "since the passages are located in the largely aporetic *De anima* 1 and since perception receives a detailed positive treatment in *De anima* 2, it would seem that if a strong case for the literalist's thesis cannot be made on the basis of *De anima* 2, it is rather unlikely that such a case can be made on the basis of *De anima* 1." Nonetheless, the argumentation seems designed to use the most obvious case of the emotions to support extension of the claim that psychical affections generally somehow involve body as well.

experiences these passions inasmuch as we observe blushing, pallor, trembling, agitation, and so on; turn toward such affections usefully defends the connection of soul's affections with body. Other cases are less obvious and might pose problems. Nutritive functioning surely concerns body, but whether soul enters at all into nutrition could well be denied since fire nourishes itself and grows without soul's intervening (clarity about soul's involvement in nutrition awaits book 2). That intellective functioning implicates body as well as soul has just been disputed (403a8–10), and the extent to which the body enters into sense perception raises questions. Hence, the emotions, linked as they are with sense perception, locomotion, and thought, most helpfully confirm the working together of soul and body.

Involvement of the body with the affective life of animals might seem evident enough in bodily changes due to the passions, such as the heat and threatening behavior in anger and the cold and escape behavior in fear, but since such changes are not obvious with all emotions, Aristotle employs additional considerations to bear witness (μηνύει, 403a19). Sometimes strong and clear provocations (παθημάτων) do not rile or frighten us, whereas at other times small and weak incidents move us, when the body is agitated (ὀργᾷ) as when in anger (ὀργίζηται, 403a19–22). And this is made still more manifest (φανερόν) because even when there is nothing fearful happening at all people can display all the characteristics of fear. Here *pathemata* refers to the incidents that might provoke our passions rather than the passions themselves.[40] What can explain the lack of response to strong incidents are the condition and readiness of the body. When the body is prepared for anger, fear, or other passions, it takes little, and in the case of fear really nothing fearful at all, to provoke the passion. Aristotle can utilize the linguistic and physical connection of ὀργάω, the longing and excitability of the body, with ὀργίζω, the animal's being angry, to support his point. Agitation makes the animal prone to anger. Even more convincingly the body intervenes when those in certain conditions take fright without any real external provocation. By contrast, when the bodily condition opposes a passion, it may not occur, as a very cold condition of body will not allow for anger despite an insulting incident or a very hot condition of body inhibits fear in spite of a threatening incident. Therefore it seems that the bodily condition readies the animal to experience a passion or prevents it from experiencing it, and therefore clearly the body is intimately connected with the affective life of animals, and presumably psychical life generally.

Why Aristotle uses this sort of evidence of the body's involvement with passions, besides its ready applicability to the passions, is perhaps that it has analogy with the role of the body in cognition. The body's condition readies for or inhibits passionate response much as the healthy condition or overstimulation of the sense

[40] *Pathemata* occurs in most texts of the *De anima* but twice, 403a11 and a20, while in the text of Jannone 1966 it also occurs in 403a16. Everywhere else *pathe* appears instead. In 403a11 *pathemata* may refer to affections of the soul, or possibly also to those events that might provoke such affections, whereas in 403a16 it refers just to affections of soul, but in 403a20 it must refer to provocative incidents that might give rise to such affections. Thus in rapid fashion Aristotle calls attention to his peculiarity of usage, or if *pathe* belongs in 403a16, then he indicates the switch in *pathemata* from affections to incidents by utilizing *pathe* in between to stand for affections.

organ, as when light is too bright or noise too loud, readies for or impedes subsequent sense perception.[41] Not only do short-term conditions of the body impact upon affectivity and cognition, but long-term natural dispositions of the body may play constant roles in affectivity and cognition. For example, cold-blooded animals may be more timorous than warm-blooded and thinner blood makes for more cognitive ability (see, e.g., *PA* 648a2–11 and 650b18–651a2). In *De anima* 421a13–15 hard-eyed animals register only some colors, and in 421a23–26 the humans with softer flesh have better sensitivity. The focus on affectivity may put us in mind of the full range of psychical phenomena and their connection with the body (cf. iii 4.429a29–b5).

When Aristotle speaks of the body's condition as readying the animal for or inhibiting a passionate response, we should not suppose that the body is the primary cause of affectivity. Even though the body may open or close the way toward passionate response, the moving cause for passion is some cognition by the animal. It is when things *appear* frightful or pitiful, for example, that the animal becomes afraid or pitying. Though the body's condition may contribute to the appearance, causal priority must be given to cognition itself. Aristotle says that the affection occurs "with the body" (μετὰ σώματος, 403a16–17) or "at the same time" (ἅμα, a18–19) rather than because of the body. And in a25–27 he indicates an affection is motion in a body due to some further cause. Were he not to give priority to cognition as causing affective response, he would become some sort of "voluntarist," "noncognitivist," or "physicalist." In *Metaphysics* xii 7.1072a29 he insists, "we desire because it seems rather than it seems because we desire" (ὀρεγόμεθα δὲ διότι δοκεῖ μᾶλλον ἢ δοκεῖ διότι ὀρεγόμεθα). In thus giving precedence to cognition over affectivity, Aristotle follows the lead of Plato, who suggests in *Euthyphro* 10a that something is loved by the gods because it is pious rather than that it is pious because they love it. Others readier to give priority to matter or passions over cognition may have bodily events determinative of affective response.[42]

[41] Themistius *In de an.* 7,15–23, perhaps being prejudiced against the emotions, interestingly focuses upon the difference of body in affectivity and in sense perception: "the body's affinity with the affections is greater than that of the organs with the sense. For when these organs are in an unnatural state, they just impede the activities of perception, whereas a degenerate temperament in the body, far from impeding affections, arouses and intensifies them, since they are more closely attached to the nature of the body."

[42] Since emotions derive from cognition, they have cognition as their moving cause, even if the cognition is provoked by physiological events. If some physiological process connects with sense perception, this may be the moving cause of perception without resulting in "bottom up explanation" since the sense perception is still an affection of the soul. Burnyeat 1995a, 23 rightly says, "when one is angry, the blood boils, but that is merely a necessary, not a sufficient condition for anger" but goes on to add much more dubiously and misleadingly, "when we turn from the emotional to the cognitive side of our mental functioning, Aristotle holds, as it seems to me, a much stronger thesis. Not merely is there no deduction from physiology to perception, not merely are there no physiological sufficient conditions for perception to occur, but the only necessary conditions are states of receptivity to sensible form: transparent eye-jelly, still air walled up in the ear, intermediate temperature and hardness in the organ of touch." But even if there are sufficient physiological conditions for perception of proper sensible objects, since these conditions still presuppose soul as crucially involved in perceiving, this need not eliminate or lessen soul's role so that bottom up accounts result (see Sisko 1998, 336–337 and Caston 2006, 322–326).

403a24–b19 The remainder of the chapter takes up the final perplexity regarding the affections of the soul, what sort of account suits them. In the argumentation regarding possible separation of the soul, and the search for affections of soul that might be without body, it has emerged that such passions as fear, anger, and the others so clearly implicate the body that they are λόγοι ἐν ὕλῃ, that is, notions in matter (403a24–25).[43] The flexibility of the term λόγος, which can mean speech, reason, notion, definition, account, form, ratio, and so on, serves the philosopher's purposes. When Aristotle says passions are enmattered *logoi*, he surely means that they are enmattered forms (see 403b1–2 for evidence that *logos* may have to do with form) and that their definitions should also include their material involvement. But in addition he suggests that the passions can be reasonable and connected with speech – hence they enter so prominently into ethics, rhetoric, poetics, and perhaps even philosophy generally inasmuch as philosophy is due to wonder (see *Meta.* 982b11–983a23 and Plato *Theaetetus* 155d). And might we expect as well that the crucial cognitive affections, sensing and thinking, might also be *enmattered logoi* (in ii 12 the sense is said to be a *logos* of the bodily organ)?[44]

Aristotle offers an example of how an affection should be defined: "Being angry is a sort of motion of such a body or part or faculty by this for the sake of this" (τὸ ὀργίζεσθαι κίνησίς τις τοῦ τοιουδὶ σώματος ἢ μέρους ἢ δυνάμεως ὑπὸ τοῦδε ἕνεκα τοῦδε, 403a25–27). This is the paradigm for any such definition since it is formulated in terms of genus and difference and sets out the four causes: form, substratum, mover, end. Other emotions and most likely other affections of the soul should be similarly defined. An affection is a motion in genus, and the rest of the definition – of some sort, of something, by something, for the sake of something – supplies the difference. The sort of motion is the form, that which is in motion is the substratum, what gives rise to the motion is the moving cause, and that for the sake of which is the final cause. Strictly, motions take place in bodies, and Aristotle prominently mentions body to confirm that passions of soul are enmattered, but if an affection is just a motion of body, then it is questionable how it is an affection of *soul*. Hence he has carefully stated that it is some sort of motion of a certain kind of body or its part or a faculty. It is motion of an ensouled body, or of some part of ensouled body or soul, or of some faculty, which part or faculty could be psychical, so that the affection may be a motion in body and soul, and even the definition of thinking might conform to the model. Aristotle says the affection is "a sort of motion" (κίνησίς τις) – and this can also mean "motion of a sort," that is, not really motion – because insofar

[43] Some manuscripts have λόγοι ἔνυλοι instead of λόγοι ἐν ὕλῃ in 403a25. The phrase λόγοι ἔνυλοι, which can mean enmattered notions or definitions having matter in them, leaves ambiguous whether the forms or notions (*logoi*) are conceived as in matter or are conceived as having matter within them. For this latter possibility Hicks 1907, 199 refers to *Meta.* 1033a4–5. It makes little difference in this context whether form is conceived as containing matter or matter is conceived as containing form.

[44] Burnyeat 1995b, 433 with n38, Burnyeat 2001b, 130, and Burnyeat 2002, 82n143 deny that Aristotle intends what he says about anger and so on here in *DA* i 1, i.e., *pathe* of the soul, to apply as well to sense perception. Caston 2005, 281–285 argues that this is a very strained, if not impossible, reading of Aristotle's text. But what should really be at issue is not simply whether sense perception is enmattered *logos*, as it likely is on *any* interpretation, but about what sort of involvement there is by body.

as it is a motion in the body it will most likely be some sort of alteration rather than locomotion or growth, and so on. But insofar as it is an affection of soul, it should not strictly be a motion at all but an activity or ἐνέργεια in contrast with motion. Thus by speaking of "a sort of motion" or "motion of a sort," Aristotle may have under consideration both an alteration of body parts and an activity of soul.[45] The moving and final causes within the definition – "by this for the sake of this" – clearly involve soul since, apart from nutrition, the moving cause of psychical affections is the cognition of something provocative. And as motion generally for Aristotle has an end or aim, so will psychical "motion"; for instance, anger seeks revenge (cf. the account of anger in *Rhetoric* ii 2.1378a30–32).

Since such definitions of affections can be put in terms of motions, study of the soul, so much of it as has to do with body and motion, should belong within physics (403a27–28). Perhaps thinking or any other psychical function to the extent that it does not involve motion and a bodily organ and is not definable as an enmattered *logos* doubtfully fits within physics. Aristotle need not and cannot here justify how far physics extends its investigations to the affections of soul, but he can clarify the sorts of definitions a physicist should seek. And here is where it finally seems likely that affections of soul must not only be "with body" but also involve some sorts of motions of the body. Attention to different sorts of definitions points to full accounts of affections of soul that include both the formal aspect and the material-physiological aspect.

Dialectical definition differs from physical definition (403a29–30). The dialectician, largely ignoring matter about which the physicist is concerned, defines a passion such as anger as the desire for revenge, whereas the physicist draws in the seething of the blood and heat around the heart (a30–b1).[46] Here the physicist gives the matter and the way this enters into motion in the affection, and clearly this is bodily motion. But the dialectician gives the form and *logos* (b1–2). "Dialectical" can mean an account that satisfies expectations in discussion because it is what the interlocutor accepts, it is endoxic, or it is a purely formal account (see book 1, ch. 1, n. 29). "Desire for revenge" is the form and *logos* of anger (b1–3). Since the dialectician is indifferent to matter, it may seem preferable to call this *logos* rather than form, if the physicist supposes form is always in relation to matter: it is called *logos* to emphasize that it is an account avoiding the material. But the *logos* is the form of the thing (ὁ μὲν γὰρ λόγος εἶδος τοῦ πράγματος, b1–2), and the thing can only be if the *logos* or form will be in a certain sort of matter (ἐν ὕλῃ τοιᾳδί, b2–3). Certain psychical operations thus require certain sorts of matter. Hence Aristotle would be unlikely to suppose that artifacts could ever be functionally equivalent to

[45] The controversy among recent interpreters (see previous note) is whether for Aristotle any sort of motion need take place within the bodily sense organs during the activity of sense-perceiving as it seems to during emotions. The account of being angry in 403a25–27, even if there are analogous accounts for sense perception, still is indecisive about what takes place in bodily organs, if anything.

[46] Cf. the definition of θυμός in Plato's *Cratylus* 419e1–2. On "seething" (ζέσις), see *De resp*. 479b30–32. Renehan 1963 argues that "and heat" (καὶ θερμοῦ, 403b1) is a fifth-century AD interpolation. About how Aristotle's definitions employing the four causes fit poorly with "functionalist" definitions, see Caston 2006, 321–322.

living things and could experience affections formally the same as those of ensouled beings. Surely, since many different sorts of plants and animals have psychical functions, there is considerable flexibility in the sort of matter capable of supporting such functions, but artifacts lack suitable matter.[47]

The dialectician, merely needing to say what people are likely to believe and to remain within argument, may stop with an account of the form, but can the physicist, seeking to account for all the factors involved in natural being, have definitions merely disclosing matter? There is a formal account of a house, "shelter protective against destruction by winds and heat and storms" (403b3–5); the material account of house has it as "stones, bricks, and timbers" (b5–6); and there is a combined account as "the form in such [materials] for the sake of these" (b6–7). Which sort of definition does the physicist give: that of the matter without the *logos*, the *logos* alone, or that composed of both (b7–9)? This example defining an artifact rather than a natural thing clearly illustrates the distinction of form, matter, and composite, though the artifact's function does not much involve motion, and surely not self-motion, so the material account merely lists components.[48] Definition of a living being might have to mention soul as form and source of motion, but Aristotle has yet to define soul because this is what is at issue. The combined definition provides the form, matter, and end of the house, that is, at least three of the four causes; knowledge of a house or natural being seems to require such combined definition. The physicist, concerned with the causes and principles of natural motion, should presumably have the combined account of natural things in order to have comprehensive understanding, though Aristotle does not assert this but leaves it as a question (b8–9). Of course developing such combined definition adds to the difficulty of the project; all the perplexities, besides giving guidance to how the inquiry should proceed, show why the investigation is hard (see 402a10–11).

In what may appear a compressed and confusing digression, Aristotle answers regarding the definitions of physicists and compares their definitions with those of other investigators (403b9–16). After asking whether the physicist does not give the combined definition (b8–9), he asks who might seek merely the material definition and who merely the formal definition (b9). He affirms that there is someone who defines the affections inseparable from matter as not separable: "or is there not someone who is concerned with the affections of the matter, the inseparable

[47] The world might be conceived as nature's laboratory where starting from various kinds of soul, it uses the four sublunary bodies and their compounds as instruments for realizing the functions of nutrition, sense perception, locomotion, and so on. Aristotle is a "functionalist" just insofar as various plant and animal bodies, or parts of them, can realize some of these functions. For example, the sense of touch can be achieved in water animals and land animals having quite different bodies. Yet he supposes that they can only be realized in such living things and that all nature's "experiments" have already been tried (except perhaps for some possible plant or animal hybrids or grafts). Gadgets and artificial limbs, as analogous as they may seem to living things, do not have life and psychical affections. Yet artificial intelligence might be possible if mind does not demand any specific sort of matter.

[48] It may be of interest the way a house resembles a living thing and relates to the four elements. A house sustains life; it is made from earthy components, stones, bricks, and timbers, suitably organized so as to protect against air (wind), water (rain), and fire (heat).

affections as not separable" (ἢ οὐκ ἔστι τις ὁ περὶ τὰ πάθη τῆς ὕλης τὰ μὴ χωριστὰ μηδ' ᾗ χωριστά, b9–10).[49] This is the physicist who thus defines all the functions and affections of such a body or such matter (ὁ φυσικὸς περὶ ἅπανθ' ὅσα τοῦ τοιουδὶ σώματος καὶ τῆς τοιαύτης ὕλης ἔργα καὶ πάθη, b11–12). This point confirms that the physicist seeks combined definitions and considers *all* the attributes that inhere in *such* a sort of body or matter and accounts for them as thus belonging to a substratum, including enmattered psychical capacities. The physicist deals with all the attributes deriving from what is natural as natural.

In contrast to the physicist, who deals with all the attributes of natural things as enmattered in this sort of matter, there is another sort of expert (τεχνίτης) who deals differently with attributes, though not treating them as separable (403b12–14). Craftspersons, such as carpenters and physicians, deal with the attributes of matter or body, but not with *all* the attributes of a kind of body or matter and not as belonging *naturally to such a kind* of body or matter, but merely as useful for producing some result. For example, a physician does not consider all natural human attributes nor all the attributes of some medication but only what is pertinent to effecting a cure. A carpenter might not care so much about which wood or material is being used so long as it has features such as being rigid, holding screws, and so on. Thus the craftsperson as "maker" rather than "user," aiming to accomplish merely a relatively narrow end by working with some limited properties of matter and not having to care much what sort of matter it is, may approach the one-sided material definition. The attention to means toward an end emphasizes matter and motion.

A mathematician also considers the attributes that are inseparable from body and matter, but the mathematician treats them as separable since they are arrived at through abstraction (ἐξ ἀφαιρέσεως), that is, by ignoring the kind of sensible body or matter to which they belong (403b14–15). The mathematician as mathematician cares little about bronze, wood, tree, or gnat, but only for discrete or continuous quantity. Hence the mathematician tends to strictly formal definitions. The dialectician also dealt exclusively with formal definitions, but the dialectician questionably has expertise as does the mathematician, and Aristotle is here considering other experts in relation to the physicist. The first philosopher or metaphysician deals especially with nonembodied or immaterial things, that is, divine substances, and hence these will be entirely separate from body or matter: "and as separated, the first philosopher" (ᾗ δὲ κεχωρισμένα, ὁ πρῶτος φιλόσοφος, b15–16). Insofar as the first philosopher deals with such separate, nonembodied things, the definitions will involve no matter at all.

[49] The Oxford translation has "Must we not say that there is no type of thinker who concerns himself with those qualities or attributes of the material which are in fact inseparable from the material, and without attempting even in thought to separate them?" Ross 1961, 169–170 argues against such translation as grammatically impossible and suggests as fitting the text a translation of the sort given. Yet since Ross cannot make sense of this translation in context, because he thinks both craftsmen and physicists study inseparable affects as inseparable, he unnecessarily revises the text, replacing τις with εἷς in 403b9 so that he can read it as saying, "there is not only one person who studies the properties inseparable from matter, and does not treat them as separable" (see p. 165).

Aristotle has set up a trajectory of the extent to which account giving attends to form and matter. The physicist studies all features as belonging naturally to such and such a sort of matter. The craftsperson may be less concerned about the specific matter, since a carpenter may use different sorts of material to make a similar product and the doctor various medicines that are similarly effective. Mathematicians have still less concern for sensible matter in their accounts, and first philosophers deal with completely immaterial things.

Returning, after consideration of how affections of soul inseparable from body should be defined (403a25–b16), to the topic whether such affections can be proper just to soul, Aristotle says that the affections of the soul (τὰ πάθη τῆς ψυχῆς) are inseparable (ἀχώριστα) from the natural matter of animals, but in the way in which it was seen that anger and fear are inseparable rather than the way in which line and plane are inseparable (403b16–19). Lines and planes belong in bodies, but they can be in any sort of body whatsoever. The mathematician considers them through abstraction by ignoring the particular sorts of sensible bodies. The mathematician can even treat them as if they were separable from any sensible matter. In the case of affections such as anger and fear, however, in the way the physicist should treat them, the sort of body cannot be ignored. These affections involve motions in particular kinds of bodies. Various sorts of animal bodies permit the various emotions, but not just any old matter suffices or any old motions. The physicist must treat the affections of soul as enmattered *logoi* (see 403a25), requiring definitions accounting for them as certain forms in definite sorts of matter.

The concern dominating the last half of chapter 1, how affections or attributes of soul entangle with the body and how accounts of them are to be given, in particular Aristotle's suggestion that there are both formal and material accounts, is crucial to the history of reflection upon the soul and to contemporary philosophy of mind. When animals are angry or afraid, not only are they having certain cognitions and desires, but also they have some sort of heating or cooling taking place around their hearts, a tightening or loosening of the muscles, and a tendency for some types of progressive motions. Thus there are physiological processes going on in the body during such passions that seem partly constitutive of the passions. When animals are sense-perceiving and humans thinking, ought Aristotle also to be able to describe accompanying physiological processes? Because thought depends upon *phantasiai* and perception upon media and organs, these psychical operations surely take place not without the body and even *with the body*, but need further significant physiological processes occur as well with thinking or perceiving? Should a material account of cognition emerge comparable to the material account of emotions and affectivity? Obviously Aristotle picks for illustration the much clearer case of affectivity in which manifest physiological changes accompany the emotion. How analogous or disanalogous to affectivity is cognition? The understanding of crucial sections of Aristotle's *De anima* rides upon the answers to such questions.[50]

[50] Burnyeat 1995a, 15–26 and 1995b, 421–434 denying that Aristotle's account of sense perception really involves physiological process, and consequently that the account has contemporary relevance, has provoked much response.

Since Aristotle has been so clear about what he seeks in the *De anima* and the difficulties that he must overcome, will he offer merely a groping treatment? Should we read this treatise as if we are in the midst of investigations in which Aristotle is making up his mind? Most likely we get the results of previously completed inquiries. But why, then, does Aristotle not put the science into axiomatic form resembling geometry? Perhaps he supposes his manner of presentation more educational inasmuch as it shows how one works through perplexities to arrive at first principles. Students of nature disagree, and Aristotle's treatment not only sets out principles and results, but also explains why others should have arrived at their views. By going through *endoxa* one proceeds from what is more knowable to us to what is more intelligible by nature. Moreover, natural science, though demonstrative, cannot have the clean, simple development of geometry since matter is so germane to the subject. Because of the involvement of matter – which can be and not be – things have merely hypothetical or conditional necessity; that is, if they are to achieve some purpose then they are such and such, and attributes hold only for the most part (ἐπὶ τὸ πόλυ) so that the demonstrations are about what is for the most part the case. Many principles on different levels of being must enter into accounts of natural things: both form and matter and of various sorts reflecting the many natural kinds and affections. Thus the topic of the last part of the chapter, the connection of soul and its attributes with the body, helps explain why this investigation receives the presentation Aristotle gives it.

2

The Predecessors' Use of Soul to Account for Motion and Perception

403b20–31 The first chapter laid out the perplexities or *aporiai* confronting the effort to provide accounts of soul and its attributes, perplexities resulting from *endoxa* that draw thought in opposed directions. Much of this reflection was methodological. A connected task for the beginning of an Aristotelian science is to review the substantive positions of predecessors. Here the *endoxa* are not as in chapter 1 general ones about what an account of soul and its attributes should be like, but the concrete accounts the predecessors give of the soul and its attributes. This further eliciting of *endoxa* continues the project of dialectic.[1] The predecessors in their general notions and concrete accounts of soul raise perplexities and may offer ways to resolve them. In 403b20–22 Aristotle says that in order to be well provided (εὐπορεῖν) we are to go through the perplexities simultaneously (ἅμα διαποροῦντας) with the opinions (δόξας) of predecessors, that is, their views and difficulties to which they give rise. We may embrace (λάβωμεν) what the predecessors have said well but be on our guard against (εὐλαβηθῶμεν) whatever they have not said well (b23–24).

By speaking of his predecessors' doctrines along with their reasons for proposing them, Aristotle delves deeply into principles. As usual in his treatments of predecessors, he carefully orchestrates his approach so that he has profound preparation for elaborating his own positions that alleviate the perplexities. Perhaps only to the extent that the views of predecessors somehow cover all the real possibilities, or contain all the possibilities in germ, can comprehensive understanding be attained. It is therefore crucial in order to speak authoratively on a topic that one have familiarity with what is reasonably said about it.[2]

The beginning or principle (ἀρχή) of the investigation is to ascertain what the predecessors especially suppose pertains by nature to soul (ὑπάρχειν αὐτῇ κατὰ

[1] See *Topics* i 2 for the tasks of dialectic, and about *endoxa* see introduction n. 30.

[2] Previously in regard to 402b21–403a2 it was suggested that an adequate account of the soul should contribute to comprehensive understanding of the many affections of the soul, i.e., the relevant phenomena. The present suggestion that comprehensive understanding requires satisfactory dealing with the predecessors' very broad set of views amounts to much the same thing since they were aiming to account for the various affections of the soul, i.e., to cover the phenomena.

φύσιν, 403b24–25). What most connects to soul by nature would be its own nature and its natural contribution to other things. Aristotle says that those things with soul are distinguished from those that lack it by looking primarily to two characteristic marks: "The ensouled seems to differ from the non-ensouled especially by two things: both by motion and by perceiving" (τὸ ἔμψυχον δὴ τοῦ ἀψύχου δυσὶ μάλιστα διαφέρειν δοκεῖ, κινήσει τε καὶ τῷ αἰσθάνεσθαι, b25–27; cf. 427a17–19). That he gets these from examining his predecessors is attested in 403b27–28, and throughout the chapter evidence emerges that the predecessors do stress motion and perception as marking what is ensouled.[3] Since Aristotle can take over from his predecessors that the ensouled differs from nonensouled, he need not presently expend overmuch programmatic attention to arguing *that* soul *is*.[4] Soul is something assumed necessary to account for the motion and perception belonging to certain beings (cf. 402a6–7). Aristotle must confirm that they do look to these two contributions of soul and to trace their thoughts about what soul is. He should not hold hard to the point that the predecessors distinguish the ensouled from the nonensouled, or he discounts some predecessors. The earliest monistic and hylozoist thinkers probably suppose that all bodies are ensouled since the primary body is itself soul (see, e.g., Anaximenes DK 13B2). The emphasis, then, should be on what soul causes and what soul is, whether or not every body is ensouled.

All those theorizing about soul posit it to account for certain functions or operations. The two obvious functions of soul are moving the body and perception.[5] The classic discussion of functions (ἔργα) is in *Republic* i 352e–353d. Here Plato suggests that something's function, whether an individual thing or a class, is what it alone does or does best. These criteria for function generally imply a *comparison* to other classes or members of the class that might perform the same function. What a thing can alone do does not mean the only thing that it can do, but what it can do that other things cannot, and what something does best means what it does better than other things that may also do it, and not what it does best of the various things that it might do. The comparison is always with other things. Hence, in determining what is most something's *own* or its very *self*, that is, its own function or nature or being, the investigator has to look toward (all) other relevant things.[6] Aristotle and his

[3] Aristotle's use of σχεδόν δύο ταῦτα (perhaps these two) in 403b28 acknowledges that coming down to these two is rather Procrustean, but readily justified, as will emerge, by extended usage of both "motion" and "perceiving."

[4] We shall see, however, that he does eventually argue that soul is needed to account for the most basic level of life, nutritive life, and that it cannot be explained merely by such natural components as fire and earth (see esp. 413a25–31 and 415b25–416a18). Thus there is later some confirmation that there is soul.

[5] Aristotle's thinking of the soul functionally, i.e., that it is posited to account for functions, may do some real work. Consider that Aristotle might have found in Heraclitus and Plato's *Theaetetus* 155e–157c some ground for suggesting that the soul merely is motion. If soul is posited to account for the motion of the body, Aristotle will not leave it at saying the soul just is motion. This would offer little account of the motion. Moreover, if the higher functions, sense perception and thought, are themselves some sorts of motions, soul simply as motion explains little.

[6] This applies to definition by genus and difference. The background assumption in the case of natural kinds is that all these have their own function or natural niche; i.e., nature works for ends and each

predecessors assume this standpoint in reflection upon soul because they consider functions that soul alone explains or best explains, such as motion and cognition.

Summarizing the key contributions of soul as motion and perception (403b25–27) may cover much ground. "Perception" (αἴσθησις) is likely used in the broad way of the predecessors. Before Plato's *Theaetetus*, αἴσθησις could easily include much more than *sense* perception.[7] It might include all awareness or consciousness whatsoever: observe in 404b9 in referring to this point that Aristotle conjoins knowing (τὸ γινώσκειν) and perceiving (τὸ αἰσθάνεσθαι), indicating that his initial usage of αἴσθησις might extend to both (and see 427a17–19). Prior to Plato there hardly emerged a fixed vocabulary for and distinction of cognitive functions and operations. Hence, we may suppose that Aristotle's predecessors are distinguishing ensouled beings generally by the powers of motion and awareness of the world. Not only are terms for cognition fluid, but also the Presocratics have not pinned down what they mean by "motion." Specification of various sorts of motions, that is, changes in place, quality, and quantity, as well as substantial change, appear again evidently in Plato and then Aristotle, but debatably earlier (see, e.g., Plato *Theaetetus* 181c–d).

Even though there are two fundamental distinguishing marks of what is ensouled, motion and perception, the soul as mover deserves priority (403b27–29; cf. 405b31). The soul as cause of motion seems already closely linked with perception since animals are moved as a result of perception and desire. But even more decisively, perception itself appears to the predecessors to involve motion. It is likely that there is perception only because the soul is a mover and capable of motion. Yet, many animal motions seem to occur apart from the animal's perception, since such nonvoluntary motions as heartbeat and respiration go on always. And perhaps plants are ensouled and have some motion while entirely lacking perception. Consequently, the reason that soul's role in motion should be treated prior to perception is its priority in being, that is, the motion due to soul can be without perception, while the perception cannot be without the motion.[8]

Explaining either of these functions, motion or perception, leads toward soul as incorporeal (see 405b10–12). This is even more obvious in the case of explaining motion, and more striking because starting out by putting the soul in motion to account for motion we end up denying that the soul has any motion at all. This is crucial for getting clear about what soul is, and additional reason to deal with this

sort of natural being does one or more things that the other natural beings do not, or it does them better than the others do. This is accounted for by the soul, form, or inner nature of natural beings, and consequently the soul may as well be said to have functions since it causes the natural functions of the ensouled being. The *natural* function is not generally determined from the standpoint of humans, as may well be the case with artifacts or natural materials utilized by humans, but a kind of plant or animal has as its natural function to live its characteristic kind of life.

7 See on this wide use of *aisthesis* Frede 1987, 3–8 and Polansky 1992, 67–69.

8 Hicks 1907, 212 mistakenly supposes that καὶ μάλιστα καὶ πρώτως in 403b29 merely suggests that the treatment of motion prior to perception has logical priority when in fact it has priority in being. For the various senses of "priority," see, e.g., *Meta.* v 11. Later in 407b34–408a1 Aristotle indicates that all his predecessors especially attribute to soul the capacity to move the body.

function first – it seems the reason given in 405b31–406a3 for first attacking what the predecessors say about soul and motion. To move things and to cognize them, as suitable *first* principle, the soul will itself be nonbodily. For initiating motion, soul should not be merely another body in motion, and for cognizing bodies, the soul cannot be any ordinary body. The soul should perhaps move without itself being in motion, and it should cognize without being simply like or unlike what it cognizes. Aristotle's own understanding of soul as form of the living body will appear the fitting denouement and completion of the reflections of his predecessors.

Those predecessors emphasizing the soul's role of causing motion typically have the soul itself in motion in order to move other things (403b29–31). What is not itself in motion, they suppose, cannot move another, that is, they do not allow for unmoved movers. As something most highly mobile, the soul would have the power in turn to cause motion in other things. In this way securing high-level mobility, the soul becomes so subtle that it tends toward incorporeality. This leads ultimately to nonbodily and consequently nonmobile soul that nonetheless causes motion in bodies, that is, an unmoved mover.

It may assist with what Aristotle says here and later in the *De anima* to recap some of his way of thinking about motion. Motion or change is of several sorts: change in place (locomotion), change in quality (alteration), change in quantity (growth and diminution), and change in substance (genesis and perishing).[9] Each of the other sorts of change presupposes locomotion inasmuch as the mover must get into proximity to what is moved (see *Phys*. viii 7). Analysis of any change discloses three analogous factors: form, matter, and privation of form. Matter underlying the change leaves the privative condition and progressively takes on a new form, where "form" can mean a new place, quality, quantity, or substance.[10] For Aristotle all motions are cases of what is in motion *being moved* by something, so what is in motion requires a mover or cause of its motion thoughout its duration (*Phys*. vii 1 and viii 4).[11] There may be natural or compelled motion (see 406a4ff. about

[9] In the introduction Aristotle's definition of motion in *Physics* iii 1 is discussed. Strictly, change (μεταβολή) extends more widely than motion (κίνησις), since change of substance is not a type of motion as are the other changes (see *Phys*. v 1–2).

[10] In taking on a new form, the motion or change is nearing termination or completion. Thus all motion or change (except for the rotation of the heavens) heads toward its own end in rest or absence of change. The matter underlying change in place, quality, or quantity might well be a substantial being since such changes are changes in "accidental form." E.g., Socrates walks to the Lyceum, blushes, or grows. Change in substance, especially when this is a natural being, poses greater difficulty in establishing matter that might take on a new "substantial form." In *Physics* i 7.190b3–5 the seed is suggested to be what underlies the coming into being of plant or animal.

[11] For more modern physics, by contrast, motion is little different from rest, since we speak of *states* of rest or *states* of motion (see Koyré 1958). Our first law of motion, the law of inertia – that a body at rest tends to remain at rest or a body in rectilinear motion tends to remain in rectilinear motion at constant speed unless a force acts upon it – makes rest and nonaccelerating motion equivalent. Since in English the verb "move" is ambiguous – it may be transitive, meaning to cause something else to enter into motion, or it may mean simply to be in motion without any transitive sense – care must be taken in use of this term. The passive sense of the term, "being moved," is less ambiguous: to be moved is to be in motion as a result of the action of a mover. Throughout this commentary, to prevent ambiguity, "move" in the active sense is only employed transitively to mean causing motion.

being moved in virtue of itself vs. in virtue of another); the nature is an inner source or principle of rest and motion. Among nonliving bodies, the four simple bodies, earth, water, air, fire, have their own natural motions down or up to their natural places at which they come to rest; the soul is the nature of mortal living bodies bestowing more complicated motions. In all cases of motion, something capable of being moved is put actually into motion; that is, some cause leads from potentiality for motion to the actuality. The mover may or may not itself be in motion. For example, an object of desire or the art in the soul of a craftsperson causes motion without itself being in motion, but a boat moves its passengers through itself being in motion. All motion insofar as it is a case of *being moved* takes place *in* what is being moved (*Phys*. iii 3).[12] What moves something else must be simultaneous with what it is moving insofar as motion requires a mover throughout its duration. Aristotle has as his model a sequence of carriers: a hand carries a stick that moves a rock. Even projectile motion will somehow for him involve a simultaneous mover.[13] Since all movers are simultaneous with what they move, there cannot be an infinite regress of movers, that is, movers that have been moved by another mover. Thus for any case of motion there must be a first mover that is either a self-mover or itself an unmoved mover. Self-movers of the usual sort are perishable beings, plants or animals, that have an unmoved mover within them, their soul. Their soul might be itself changed, however, were it to initiate motion with no motion preceding. Hence Aristotle insists that there is always some motion within the bodies of living things and the outside world always also keeps in motion so that there is some stimulus for the plant or animal's motion (*Phys*. viii 2.253a7–20 and 6.259b1–20). Since there always is motion, as Aristotle contends is the case because the heavens are forever in rotational motion, there necessarily are eternal unmoved movers at the source of all these eternal locomotions (*Phys*. viii).

Aristotle's predecessors need hardly accept all the parts of Aristotle's account of motion. In particular, they may not suppose that all motion requires a mover or recognize or give importance to the possibility of unmoved movers.[14] For them what

[12] This "in" is more or less literal because all motion of whatever sort, being bodily, must take place in some body and place. For Aristotle there is no void, so all change takes place in some body or among bodies, and therefore has some location. Locomotion is most problematic, however, since while the moved body is "in" motion or motion is in the body, the body is changing its place. Also, rotation of the outermost heavenly sphere might seem especially problematic, because the heavenly sphere is questionably in place inasmuch as there is nothing outside it. Also, unlike modern physics, Aristotle always has a *body* in locomotion, and he does not allow for the possibility of wave motion by which *energy* is in motion rather than a body or bodies.

[13] The medium through which the projected object is in motion somehow continues to act as mover for it (see *Physics* viii 10.266b28–267a20). The problem for Aristotle is that while the mover initially sets both the object and the medium in motion, and the medium continues to move the object, nothing continues to move the medium. Aristotle tries to get around the problem by viewing media such as air and water as capable of sustaining motion because they have loose parts that serve as moved movers in succession. Whether or not this account can be sustained, projectile motion is viewed not as continuous motion but as involving a successive and contiguous series of motions. Hence the heavenly bodies, as in continuous motion, are not projectiles.

[14] Some of the predecessors seem to have unmoved movers. A Platonist might suppose that the Forms or Ideas are somehow movers and unmoved, though the soul is self-motion (see *Phaedrus* 245b–e and

is not itself in motion cannot move another thing, so that the soul as moving other things must itself be in motion (403b29–31). They seem to have a faulty appreciation of how the cause or principle may differ from while resembling what it causes.[15] For Aristotle, if form is somehow the cause of motion, and form is motionless, the mover can be the same in form as what it causes, yet without itself being in motion (see *Meta*. vii 7–8 about the *homonymy* of causes). The earlier thinkers perhaps direct their thought more toward projectile motion, so that there might be an infinite series of moved movers going back indefinitely in time, or they suppose that some motion need not require a mover beyond itself since the ultimate mover will be something in eternal self-motion. Whatever is most mobile or always in motion will seem to them to be soul. But in spite of themselves, their thought leads to Aristotle's own position. Strictly, only bodies undergo motion. Living beings are self-movers, since within them their soul moves their body and is the principle of their motion, but soul itself is no self-mover or in motion at all. The soul as nonbodily is rather an *unmoved* mover of the living being, that is, the ensouled body.

403b31–404b6 Thinkers viewing the soul as mover that must itself be in motion include Democritus, Leucippus, Pythagoreans, Anaxagoras, Plato, and Platonists. Aristotle gives the basic considerations supporting their positions so that they can be seen to undermine themselves. Democritus holds that the soul is spherical fire atoms since these would be particularly mobile and capable of moving things (403b31–404a9; cf. 405a8–13). In Presocratic thought, as also for Plato and Aristotle, the hot is the active factor in many processes. Hence Democritus plausibly links fire and soul and picks out among the atomic shapes the sphere for their atoms.[16] Lacking angles or flat surfaces, spherical atoms will not catch on things or settle down easily. All atoms are always in motion for Democritus (see *DC* 300b8–11), but the spherical atoms of fire will be especially active. If they are the relatively smallest atoms, they will readily penetrate any conglomerations of other atoms. Impressed with the way specks of dust (ξύσματα) in beams of light seem constantly in motion, most likely as a result of bombardment by the spherical atoms of fiery light, Democritus has soul atoms similarly keeping up motion in the animal body (404a3–4). The agitated specks represent the *panspermia*, the collection of various atoms that form bodies; that part of the *panspermia* maintaining the motion, the spherical fire atoms, will be soul (a4–6). The soul atoms move the others, being themselves in motion (καὶ κινεῖν

Laws 895bff.). Xenophanes DK 21B25 and Anaxagoras in discussing Mind may also have unmoved movers.

[15] In *Meta*. ii 1.993b23–31 Aristotle argues that causes and principles must be in the highest degree what they cause in other things. So, e.g., fire as source of heat in other things is hottest. Frequently the mover is the same in form as what it causes (see *Meta*. vii 7–9). Unsubtle application of such thought might lead to the supposition that what causes motion in other things must be most mobile.

[16] Aristotle says that Democritus picked the spherical shape from the infinite number of shapes of atoms (404a1–3). Having infinite possible shapes for atoms (see *GC* 315b6–15), Democritus supposed that some atoms might be large enough to be seen. Epicurus refined the atomic theory, after Aristotle's criticism, rejecting infinite shapes so that there need be no visible atoms. Instead he proposes an indefinitely large number, but not an infinite number of shapes (see D.L. x 42–43).

τὰ λοιπὰ κινούμενα καὶ αὐτά, a6–8). This illustration explains the soul's efficacious role in animal motions, though soul is imperceptible to us.[17]

Connected with this line of thought, that soul atoms penetrate the rest of the body providing it motion, Democritus makes respiration distinctive of living (404a9–10; cf. Plato *Cratylus* 399d–e). This is the first clear reference in the treatise to life. Democritus is a contemporary of Socrates, so late in the tradition, and hence life may only have become a topic well after the beginning of the tradition. It will be a major contribution of Aristotle in the early chapters of book 2 to clarify the relation of soul with life. For him, since soul and life apply to plants as well as animals, soul and life do not always link with respiration and breath. For Democritus, the spherical soul atoms penetrating the entire body and moving it are introduced and maintained by respiration, thus bestowing vitality and life (404a10–16). The highly mobile soul atoms tend to pass out of the body and especially because the environment's pressure on the animal squeezes them out, so respiration must counteract the pressure, hinder, and replenish escaping atoms, keeping soul within the body (cf. *De resp*. 471b30–472a26). Loss of heat, cessation of respiration, and death make the animal rigid and relatively motionless. Animal life thus depends upon respiration, and what this life primarily consists in is motion initiated and sustained by the supermobile fiery soul atoms.[18]

Pythagoreans, according to Aristotle, think along similar lines to those of the atomists (404a16–17).[19] Impressed as Democritus is with the agitation of specks of dust in sunbeams, considering the soul the mobile mover of the body, some Pythagoreans view the soul as the very motes in the air, whereas others take the soul as what moves the motes (a17–19; cf. a3–4). What strikes them about the beams is the apparent constant motion even when there is no wind (a19–20). Since the

[17] Themistius *In de an*. 9,9–19 stresses the way the illustration accounts for the soul's being a body yet imperceptible. Leucippus is mentioned only in 404a5 and said to speak similarly to Democritus, at least regarding the *panspermia* and spherical soul atoms. It is unclear whether Leucippus also deals with respiration and its connection with life. Leucippus may have been the originator of the atomic theory, but it is difficult to distinguish his contributions from Democritus's.

[18] While Democritus has respiration maintain heat in the animal by introducing fire-soul atoms or keeping them in (but the inrushing air may also tend to compress and congeal the soul [see πηγνύον in 404a15]), Aristotle views respiration as a means of moderating the heat within the animal. Air and lungs tend to be cool and by moderating the great warmth in the chest help to preserve the animal's vital heat (see 405b28–29 and *De respiratione*). Whereas Democritus has *life* sustained by the external environment, Aristotle stresses that the external surroundings sustain the motion of perishable self-moving beings (see *Phys*. 253a7–20 and 259b1–20). In regard to the Homeric *menos* that can be breathed into a hero by a deity, Bremmer 1983, 60 says that this notion of breathing it in "can be explained from a quality of breathing. Just as one breathes into the fire and fans it, so one breathes into persons spiritual powers and fans them." The phrase that life continues so long as there is the power of respiration (404a15–16) may be compared and contrasted with 413a29–31 and 416b14–15.

[19] Simplicius *In de an*. 26,12–19 suggests that Aristotle's accounts of Democritus and the Pythagoreans are superficial since the Pythagoreans hardly conceived the elements as like motes in the air. Any possible superficiality in his presentation may seem unimportant to Aristotle because his interest is following out the trajectory of thought of soul as highly mobile. The Pythagoreans referred to are probably contemporaries of Plato.

motes are astir in perfectly calm air, the motes either move themselves or are moved by further movers, perhaps self-movers. These thinkers along with Democritus seem to take for granted that soul is always in motion, requiring little further explanation, while Plato sees the need to have soul as self-mover. Aristotle sets up a trajectory of thought from Democritus, to the Pythagoreans, and to the Platonists: the highly mobile soul leads to the self-moving soul.

Similar to the Pythagoreans are those who speak of the soul as the self-mover (τὸ ἑαυτὸ κινοῦν, 404a20–21). These too conceive motion as most characteristic of the soul (οἰκειότατον εἶναι τῇ ψυχῇ), have soul accounting for the motion of all other things, and make soul move itself (ὑφ' ἑαυτῆς, a21–24). The soul, these believe, must be in motion when it moves itself because they do not allow for movers that are not themselves in motion (a24–25). Though these thinkers are unnamed, Plato and the Platonists are evidently intended (see Plato *Phaedrus* 245c5–246a2, *Laws* 895e10–896a4, and discussion of 404b27–30). Here Aristotle perhaps leaves out their name to link them with the Pythagoreans and to suggest that the principal line of thought of all these thinkers is that the soul is most mobile, the source of motion to all else, and consequently itself *self-moving* if there cannot be unmoved movers. Only the unnamed Platonists finally arrive explicitly at the position that the soul as source of motion must be a self-mover. Previously Aristotle noted that the predecessors have the soul as *itself* in motion (κινούμενον αὐτό, 403b30 and κινούμενα καὶ αὐτά, 404a8), but here he makes clear that the result of this whole thought path is soul as self-mover or cause of motion to itself (τὸ ἑαυτὸ κινοῦν, 404a21, and ὑφ' ἑαυτῆς, a24).

Aristotle refers to the views of the Platonists before going on to Anaxagoras, though of course the Platonists are later in time, because he traces the line of thought to its end, the line that leads to soul as self-moving. While everything else is movable, soul by moving itself thereby in turn is the source of motion to everything else. Self-moving soul is an extraordinary notion. This is endless motion implying immortality and giving rise to cognizance of other things. Since the train of thought pursued by Democritus and the Pythagoreans leads to the Platonic conception of the soul as self-mover, attacks upon the earlier positions may therefore tell against the Platonists as well. The subtlety and mobility of the soul so emphasized make incorporeality of the soul inevitable (see 405a5–7). But since what is incorporeal cannot really be in motion, if only bodies are in motion, this path of thought destroys itself and calls for a motionless soul. The Platonists struggle to conceive the soul as incorporeal and yet in motion, while Aristotle keeps it incorporeal and motionless. It is the living being that is the self-mover, its motion due to its unmoved mover soul.

The line of thought traced so far has the soul as mover because it itself is in motion. But there is a further possible conception of the soul as mover: it moves through the power to think. At least Anaxagoras seems to say that mind moves all things, thus perhaps highlighting some sort of deliberate, conscious direction of motion (404a25–27 containing a near quotation of DK 59B12). This view differs from Democritus, who makes no distinction of soul (ψυχή) and mind (νοῦς) and

hence less readily employs thought and intention as cause of motion.[20] For Democritus the truth is that which appears (τὸ φαινόμενον), and hence there is no special need for a faculty of mind devoted to ascertaining the truth regarding a realm of intelligible objects (a27–29). Whether or not this is really Democritus's own view – and Aristotle's reference to a line from Homer about Hector's deranged thoughts suggests that this is an implication rather than explicit in Democritus (a29–30)[21] – since he does not set off mind as a faculty in the truth but uses soul and mind indistinguishably, appearances must all be considered true (a30–31).[22] But those such as Anaxagoras who attempt to distinguish mind and soul may associate mind with a realm of truth accessible only to mind and may have mind as mover without itself being moved.

Aristotle complains here as elsewhere (see *Meta*. 985a18–21 and cf. Plato *Phaedo* 97b–98e), however, that Anaxagoras is not clear and consistent about mind and soul (404b1–3; cf. 405a13–17). Sometimes mind in particular is made the cause of proper order whereas at other times soul is given this role. Soul must probably enter as a cause of order since it, rather than mind, may belong to all the animals, great and small, honorable and dishonorable (404b3–5). But this damages Anaxagoras's thought because order is attributed to what does not obviously think. Mind – at least the sort truly involving intelligence (*phronesis*) rather than a broader sense of *nous* that might encompass *phantasia* (cf. iii 3.427b27–28) – we hardly attribute to all animals since not even all humans have it (404b5–7).[23] Yet Anaxagoras grants

[20] Philoponus *In de an*. 35,11 indicates that for Democritus, as we would expect, since the soul is merely spherical atoms, the soul will not have multiple parts. Consequently, mind and soul could not differ. This would supply a possible answer, one not accepted by Aristotle, to the perplexity raised previously in 402b1 about whether the soul has parts or not. That Democritus seems to have soul account for all cognitive functions as well as motion indicates that his view of soul really combines an explanation of motion and perception.

[21] Hicks 1907, 219 and Ross 1961, 176 point out that the closest Homer gets to this quotation is in regard to Eurylaus rather than Hector. In *Iliad* xxiii 698 we find κὰδ δ' ἀλλοφρονέοντα μετὰ σφίσιν εἶσαν ἄγοντες. Appropriately perhaps for discussing derangement, Aristotle rather mangles the quotation from Homer (cf. *Meta*. 1009b28–31). Supposing all appearances true is derangement of mind.

[22] Since Democritus holds that atoms and void, both imperceptible, are the fundamental truth, it might seem unlikely that he would suppose appearances genuinely true. (In fact this view about appearances is developed at length without reference to atomism in Plato's *Theaetetus*.) Perhaps Democritus can believe that what appears to the senses is true for them since the whole realm of appearances misses the genuine truth of atoms and void, though it is based on their infinite diversity, and no criterion for such appearances exists outside appearance itself (see *GC* 315b6–15). Accordingly, whatever atomic emanations confront the soul must be what is so for it. Even dream images reflect what really appears to the dreamer due to a film of atoms penetrating to the sleeper. Aristotle probably extends Democritus's thought, much as Plato did, far beyond its proper domain.

[23] Aristotle in 404b5–6 refers to "that which is called mind in virtue of intelligence" (ὅ γε κατὰ φρόνησιν λεγόμενος νοῦς), which should be compared to 407a4–5 ("that being called mind" [ὁ καλούμενος νοῦς]), 429a22 ("that therefore being called mind of the soul" [ὁ ἄρα καλούμενος τῆς ψυχῆς νοῦς]), and 432b26 (ὁ καλούμενος νοῦς). Generally when Aristotle speaks of something's "being called" such and such, he means what he himself is calling by this name in the present context, unless he attributes such naming to someone else (cf. *De juv*. 467b30, 468a24, and 469b19). In 404b5–6 he indicates the ambiguity about what is called *nous*, but he emphasizes his restriction to speaking of mind as an intellectual capacity disclosing the truth. Even some humans lack this sort of mind. When he denies that it appears (φαίνεται) that

that soul belongs to all animals and most likely accounts for their order into great and small and honorable and dishonorable. Thus he fails to adhere consistently to mind as a peculiar cause of motion directing things finely and rightly by its thought.

404b7–27 There were two marks of ensouled being, motion and perception. Having quickly set out the positions of predecessors using soul to account for motion – along two main lines, the very mobile soul and the soul moving by its understanding – Aristotle turns to those using soul to explain perceiving and knowing, that is, cognition generally (404b7–10).[24] Those focusing upon the motion of the ensouled beings conceive the soul as most capable of moving things (κινητικώτατον, b7–8). But those focusing upon cognition generally have the soul composed of the same principles as the objects that the soul is to cognize: monists use their single principle also for soul; pluralists work their pluralism into soul too (b8–11).[25] The operative assumption for all these thinkers is that cognition is through "like by like": the soul becomes aware of what is like itself.

Empedocles gives most striking and explicit formulation of this assumption by asserting,

> For by earth we see earth, by water, water,
> By AITHER divine AITHER, and by fire, destructive fire,
> Yearning by yearning [Love] and strife by mournful strife. (404b13–15; DK 31B109)

Empedocles has the principal components in his account of the cosmos cognizing themselves. Presumably what engages in cognition will then either be each principle taken singly or some composition of these principles. Aristotle suggests each principle taken singly is cognizant when he says that Empedocles considers each of his elements soul (404b11–12). The quoted passage has each of the elements cognizing its kind, in which case each should be a soul. Even if Empedocles never calls the single elements soul, perhaps Aristotle finds it highly dubious that soul could comprise nonsoul, so even were the composition of elements soul, the various components should then be soul as well. Though Aristotle may allow emergent properties of material compounds – that is, the compound displays features lacked by the components – he might deny that cognition is any such emergent feature. Only adding soul gives psychical properties.[26]

mind belongs to all the animals (404b5–6), he may play on the previous talk of appearances (a28–29) or acknowledge that its extension cannot be clear prior to an adequate account of mind. See the discussion of 407a4–5.

[24] As indicated previously, *aisthesis* can be used very broadly to cover all cognition. Having just distinguished mind and soul in 404a27–b6, Aristotle is freer to mention both knowing and perceiving (τὸ γινώσκειν καὶ τὸ αἰσθάνεσθαι) in 404b9. Also, the distinction prepares for speaking about Plato, with respect to whom γινώσκεσθαι is appropriate (see 404b17).

[25] In *Metaphysics* i 3–6 Aristotle traces his predecessors' thought on causes. He generally views those prior to Parmenides as monists tending to conceive their one principle as a material cause. Parmenides and those subsequent to him are pluralists since they feel the need for additional causes especially to account for change.

[26] Empedocles says that blood is thought (DK 31B105), presumably because it is well blended of the elements (DK 31B98). Aristotle probably, then, is simplifying Empedocles' own account of cognition.

Those having the soul account for cognition through like by like, that is, composing the soul of the same ultimate principles used for all else, they make the soul the microcosm of the surrounding macrocosm. Such views not only treat the soul as microcosm, but also may lead to panpsychism and hylozoism, that is, everything is ensouled or alive inasmuch as the microcosm imitates the macrocosm. Moreover, the key assumption that cognition is through like by like guarantees that all cognition is somehow self-cognition since any principle of the cosmos cognizes itself.

There certainly seems much justification within the Presocratics for Aristotle's interpretation. Many besides Empedocles account for cognition through like by like, and Aristotle will soon enough indicate some of these. But he now turns to the fascinating case of Plato (404b16–27). The interest here is that even outside a "materialistic" framework the like-by-like view can enter strongly into play. Aristotle tries to show Plato's conformity to this approach by giving it three connected formulations. Plato in the *Timaeus*, Aristotle relates, makes soul from his elements or elemental principles (b16–17). *Timaeus* 34c–35b derives soul from a mixture of changing and unchangeable (or divisible and indivisible) being, same, and other, which seem elements for all else as well. The four elemental bodies spoken of later in the *Timaeus*, earth, water, air, fire, should also be somehow composed of Being, Same, and Other. Because these compose everything that is, soul can be like what it is to know (404b17–18). Aristotle then adds that similarly (ὁμοίως) in what is said about philosophy it is explained that the Animal itself or Living Thing itself (αὐτὸ τὸ ζῷον) derives from the idea of the One itself and the first Length, Breadth, and Depth, and the other things likewise, perhaps here including in "the others" (τὰ ἄλλα), the other Forms and everything else (b18–21).[27] Since the Living Thing itself is the paradigm for all ensouled beings including the cosmos, this seems to be a further way to account for the generation of soul and other beings. Finally, Aristotle tells us, Plato expressing himself differently speaks of mind as the One, knowledge the Two, opinion the Three (the number of the plane), and sense perception the Four (the number of the solid). This may well end up amounting to much the same as the Living Thing itself's deriving from the One and the first Length (Two), Breadth (Three), and Depth (Four). Since the Numbers that are the Forms themselves and principles (οἱ μὲν γὰρ ἀριθμοὶ τὰ εἴδη αὐτὰ καὶ ἀρχαὶ ἐλέγοντο) have as their elemental principles what enters into everything else, these elemental principles also being associated with the various levels of cognition, mind, knowledge, opinion, perception by which things are judged (κρίνεται δὲ τὰ πράγματα), what generates all things also accounts for all the levels of cognition of these things (b21–27).

Aristotle's ways of presenting Plato's views surely sound strange. He enters the notorious terrain of Plato's "unwritten doctrines" (called this in *Physics* 209b15).

[27] In 404b19 Aristotle mentions ἐν τοῖς περὶ φιλοσοφίας λεγομένοις (in the things being said concerning philosophy). This could refer to one of Aristotle's own writings, περὶ φιλοσοφίας (*Concerning Philosophy*) noted in *Physics* 194a36, and to discussions by Plato. Ancient sources suggest the latter. Perhaps the reference deliberately covers both. Animal itself or Living Thing itself is referred to in *Timaeus* 37c–d as the paradigm for this universe, so if Aristotle refers to his own writing this work may be elaborating upon the *Timaeus*.

In fact it can be seen that Aristotle offers quite concise, if flat, accounts of what appears in Plato's dialogues, and hence these are only "esoteric" notions insofar as they are difficult to understand.[28] Powerful thought stands behind Aristotle's terse formulations; Aristotle's evidence was mined by the Neoplatonists and became for centuries decisive for the interpretation of Plato.[29] A relatively clear and straightforward account can be given of the Platonic thought that makes good sense of Aristotle's comments about Plato here in the *De anima* and elsewhere, fits with the dialogues, attributes to Plato solid thinking, and links with the interpretations of the Neoplatonic commentators. We concentrate upon two topics, the soul and participation in Forms.

Plato famously distinguishes unchanging, intelligible Forms from the changeable, perceptible things participating in them. Where then do souls belong? Souls are not perceptible things, and yet they hardly seem to be unchanging Forms either. They must be some peculiar sort of intermediates between Forms and particulars, that is, between being and becoming (cf. Simplicius *In de an*. 62,2–11 and Plato's *Timaeus* 35a). Such an intermediate status well reflects the situation of humans between being and becoming. By partaking of both, humans might be able to cognize both. As intermediate, soul can derive as *Timaeus* has it from changeable and unchangeable being, same, and other.[30]

Perceptible things have the Forms as their principles through participation; for instance, a beautiful human partakes of Beauty itself and Human itself. But what are the principles of the Forms? Each and every Form seems inescapably to be one, a being, other than the other Forms, unchanging, and so on. Hence each Form appears to participate in many other Forms, such as One itself, Being itself, Other itself, and so on, and the problem of comprehending participation extends to the Forms themselves. The way particular perceptible things participate in the Forms resembles and derives from the way the Forms participate in each other.

The very being of the Forms depends upon such participation in each other. Were Forms not to partake of each other, each would seemingly stand isolated as the single being that it is. Consequently, for example, the Large itself might be the supreme large thing and Being itself the supreme being, but such that either nothing else is really large or a being, or there emerges an infinite regress of Forms of large

[28] There is much dispute about Aristotle's reports on Plato's "unwritten doctrines" (e.g., Cherniss 1944, Gaiser 1980, Krämer 1990, Sayre 1983, Vlastos 1963). The suggestion that Aristotle is deliberately pedestrian in handling Plato might be illustrated by the treatment of Plato's *Republic* and *Laws* in *Politics* ii. What is remarkable is how illuminating such treatment can be. Aristotle gives a flat reading of Plato as of the Presocratics, but this turns out to be a most stimulating reading. Is Aristotle not thereby following the lead of Plato's own dialogues, where many interlocutors' and predecessors' views are taken in pedestrian ways that nonetheless turn out to be quite profound? Part of the point is to clarify the extent to which the appeal of the predecessor's thought consists in its use of evocative figurative presentation. The flat presentation removes much of the imagery.

[29] See Tigerstedt 1977 for the traditional Neoplatonic interpretation of Plato.

[30] The intermediate status of the soul may connect it with the situation of mathematical entities, if Plato, as Aristotle often relates (e.g., *Meta*. i 6.987b14–18), views them too as some sort of intermediates between sensibles and Forms, like the former in being indefinitely numerous and like the latter as unchanging.

or being. An infinite regress might develop because each Form is an instance of itself and hence requires a further Form to account for itself. Such problems are rehearsed in the "third man arguments" of the first part of Plato's *Parmenides*. Having the Forms participate in each other rather than in no relationship with each other provides a way around such problems. Undeniably, each Form is the one Form it is while also being other than all the others. Each and every Form thus partakes of the One itself and the Other itself. Even the One itself and the Other itself must thus participate in both of these, since the One itself is the one Form that it is while also being other than the others, and similarly for the Other itself. What we have, then, is a conception of principles – or elements (see 404b25) – for the Forms themselves, each having to partake of the One itself and the Other itself.

Aristotle sometimes speaks of these principles of the Forms as the One and the Indefinite Dyad (or the Great and the Small, see, e.g., *Meta*. i 6.987b18–988a1; or the Unequal, or as here Length, Breadth, and Depth, see 404b20–21, *Meta*. xiv 1.1087b4–21, and 2.1089b8–15). The One is a principle of limit. The "Indefinite Dyad," the "Great and the Small," or "Length, Breadth, and Depth" are other names for the Other itself, a principle of unlimitedness. The Other itself is "indefinite" because each Form is other than indefinitely many others, and it is "dyadic" because what is other is always other *than an other*. Plato here has a version of the Pythagorean principles of limit and unlimitedness. Substitution of Length, Breadth, and Depth for the other unlimited principles usefully introduces Two, Three, and Four as elements. The great attraction of reflecting upon principles of limit and unlimitedness is their possible application to all levels of reality and the taking of thought to extremes, thereby securing comprehensive understanding since no possibilities are left unconsidered.[31]

Plato supposes that in order for any Form to be the Form it is, it must be the *one* Form it is and be *other than* the other Forms, or each Form must be the *same* as itself and *other* than all the others, or it must *be* what it is and *not be* anything else. These different formulations suggest what is under discussion, for instance, in Plato's *Sophist*. One, Same, or Being, as a limiting principle, must somehow join with Other or Nonbeing, as an unlimited principle, to constitute the Forms. Or Being can seem the conjunction of Same and Other. A philosophical precedent for this simple thought that a being must be the same as itself and other than all else might be found in Parmenides DK B8.57–59: "the same as itself in every direction, but not the same as the other; but that other one, in itself is opposite." Thus Plato has not only principles of the Forms, but also of everything else since a particular as well as a Form must be the same as itself and other than all other things, or be what it is and not be everything else. So all being of any sort whatsoever – particular, intermediate, or Form – somehow combines

[31] The whole Protagorean-Heraclitean position developed in Plato's *Theaetetus* can be seen to be reflection upon the consequences of excluding all limit principles or unity from things (see Polansky 1992, 74–78).

being (sameness) and nonbeing (otherness). Aristotle therefore aptly observes in 404b16–18 that Plato in the *Timaeus* composes soul and the things it knows from the same elemental components.

Since each being must somehow combine being and nonbeing, or same and other, Being itself may be said to be a sort of "Two" while yet the one it is. In fact, because the Forms partake in each other, any Form sharing in one, being, same, unchanging, other, like, unlike, and so on, we should allow that each Form is also somehow a multiplicity, hence the plausibility of speaking of Forms thus participating in each other as "Numbers" (404b24–27). The Forms are not simply isolated units but complexly articulated in accordance with the very structure and principles of being. Forms are Numbers not so much as if Beauty itself is 13 and Straight itself is 57, but "Number" represents their mode of being as participating in numerous other Forms (cf. *Meta*. xiii 5.1092b8–25). The other Numbers will especially have as principles the One, Two, Three, and Four.

Since each Form is what it is, while yet participating in many other Forms, the Form somehow has its being both *in itself* and *in the others*. Thus the way Forms participate in each other allows for the possibility of lower-level beings and cognition: images, change, life, soul, and mind. There can be lower levels of being than the Forms since the Forms can appear in things other than themselves.[32] An image is somehow both what it is the image of and yet other than it. An image or imitation is due to something appearing in another (see *Timaeus* 52c). So images provide images of the very manner of being of Being itself and the Forms generally. Moreover, that the Forms have being in other things provides the foundation for change and life. Inasmuch as a Form participates in other Forms, in otherness, it seems "to go out of itself" and figuratively to have motion. So the unchanging Forms do not have to be denied all motion and life. The ordinary motion of perceptible things can be viewed as the image of such "motion" of the Forms among themselves by their participation in each other, and so *Timaeus* 37d refers to the realm of becoming and time as a moving image of eternity. If the Forms permit motion and even *self*-motion, inasmuch as they participate in each other, the realm of Forms may be said to be "alive." The whole intricate association of the Forms with each other constitutes a living organism (see, e.g., *Sophist* 248e–249b). It is God, the Demiurge of the *Timaeus* or Living Being itself. The articulated structure of the Forms provides a paradigm for the universe and all that is within it. This articulated structure of the Forms, that is the Living Being itself, can be said to derive from the idea of the One itself and from the first Length, Breadth, and Depth, which is a way of speaking of the unlimited principle and the Two, Three, and Four (cf. 404b18–21).

[32] Much as there is an unlimited principle of the Forms since each Form must be other than all the others, there is an unlimited factor at the level of perceptible things. Perceptibles are due to the Forms appearing in the receptacle of being, i.e., in another (see *Timaeus* 50b–51b and 52a–53b). This receptacle is pure otherness, that is, what we have left to think about when we remove all limiting principles from a perceptible thing (cf. Aristotle *Metaphysics* vii 3). Hence the receptacle can be depicted both as place and as material component, while also seeming in motion.

From 1, 2, 3, 4 – which sum to 10 and constitute the tetractys – Plato could construct the different levels of cognition and of being.[33] Mind or the apprehension of principles is like 1 or a point; knowledge is discursive or demonstrative and so as if proceeding along a line, the line being determined by 2 as end points; opinion is superficial, floating on the surfaces of things, and so like the plane first determined by 3; sense perception struggles to apprehend bodily beings, and so is like 4 which demarcates the tetrahedron, the first solid. These different levels of cognition clearly correlate to the different level constituents of geometrical and corporeal things: point, line, plane, and solid. Thus the principles of numbers and simple numbers, 1, 2, 3, and 4, suffice for the levels of cognition and the levels of entities to which this cognition relates (cf. 404b21–27; the "divided line" in *Republic* vi 509d–511e similarly sets up a correspondence of levels of cognition and being).

Clearly, principles of limit and unlimitedness have widest application. They enter into particulars, mathematical entities, the soul, cognition, Forms, and deity. With regard to human moral development, since desire can tend toward unlimitedness, character must be developed to limit it. Throughout the *Republic* Socrates struggles to make both the city and the soul properly one. He argues that the good order of justice, rather than unlimitedness and injustice, produces happiness.[34] We have made reasonable sense of Aristotle's initial remarks about Plato on soul's being composed of principles like those constituting what it cognizes.

404b27–405a19 Since soul seems both to move other things (κινητικόν) and to cognize them (γνωριστικόν), some thinkers, according to Aristotle, combine the views and pronounce the soul "a number moving itself" (ἀριθμὸν κινοῦσθ' ἑαυτόν, 404b27–30; cf. *Topics* 140b2–4). This unattributed position is usually assigned to Xenocrates.[35] Previously in 404a20–25 it was indicated that some, presumably Platonists, hold that the soul moves itself. Hence, for a Platonist that the soul is a self-mover is unsurprising, but the soul as number may sound strange. The previous comments about Plato prove helpful, however, since soul can be a number either because soul and mathematical entities are both intermediates or through connection with the Form-Numbers. The soul that comprises being, same, and other, much as all the Forms, is complex and numberlike, and soul must be a number to

[33] 1 + 2 + 3 + 4 equals 10, which for Pythagoreans and Platonists held much interest as the tetractys. On the relationship for Plato of number, being, soul, and cognition, see Dillon 2003, 19–24. Aristotle himself feels the charm of simple "meaningful" numerical relationships as explicative of reality. For example, he suggests that there may be 55 unmoved movers (*Meta.* 1074a11–12), which fascinatingly corresponds to the sum of the integers from 1 to 10.

[34] We can see that Aristotle shares this line of thinking when he says in the *Ethics*: "Again, it is possible to fail in many ways (for evil belongs to the class of the unlimited, as the Pythagoreans conjectured, and good to that of the limited), while to succeed is possible only in one way (for which reason one is easy and the other difficult – to miss the mark easy, to hit it difficult); for these reasons also, then, excess and defect are characteristic of vice, and the mean of excellence" (1106b28–35).

[35] Aristotle's use of συνέπλεξαν in 404b29 for the combining of the motive and cognitional approaches to soul may be especially appropriate regarding Platonists (cf. 406b28, 409b11–12, 428a25–26). Observe the prominence given to weaving things together (*sumploke*) in Plato's *Sophist* and *Statesman*. See Dillon 2003, 12 and 121–123 for the attribution to Xenocrates.

cognize the Form-Numbers. The whole realm of Forms as "alive" and "in motion" can be viewed as God, Living Being itself, and self-moving number. Any lower soul in imitation of this, in an intermediate status, would thus also have to be a self-moving number. The Platonic suggestion that mind is 1, knowledge is 2, opinion is 3, and perception is 4 hardly interferes with calling soul a number.

Mention of this view that joins the soul's role in motion and cognition is an aside. Yet we observe that even those who concentrate upon the soul as mover can hardly avoid also crediting the soul with some cognition. Unifying these views, Aristotle perhaps suggests, exposes a possible tension since one tends to make the soul unlike and the other like the rest of things. The soul as mover of all else requires that soul be especially mobile and hence different from the other principles, while the soul as cognizing all else through like by like leads to soul with the same principles as everything else. The self-moving number conception of soul manifests such tension, taking immovable things, numbers, as self-moving.

What sorts of principles and how many a predecessor employs impact greatly upon the resultant conception of soul (404b30–31). Especially significant regarding the sorts of principles the thinker uses is whether they are bodily (σωματικάς), as for Anaximenes and Democritus; or nonbodily (ἀσωμάτους), as for Pythagoreans and Platonists; or a mixture of both sorts, as attempted by Anaxagoras and Empedocles (b31–405a2). This is a contrast between those who are rather more *physiologoi* and devoted to material principles and those more devoted to definition and in pursuit of formal principles. Regarding the number of principles, monism or pluralism importantly influences the view of soul (a2–3). To ensure cognition of like by like, the monist makes the soul of the single principle and the pluralist utilizes the several principles. But Aristotle concentrates upon application of the principles in the account of soul to explain motion (a3–5). Not unreasonably (οὐκ ἀλόγως) they have seized upon first principles naturally capable of causing motion. Such has seemed to some fire, and therefore fire should serve as soul because fire is most fine-grained and incorporeal of the elements (λεπτομερέστατόν τε καὶ μάλιστα τῶν στοιχείων ἀσώματον) and that which primarily is in motion and moves other things (a5–7; cf. Plato *Cratylus* 412d). Here it is rather explicit that mobility leads toward incorporeality. That which is itself mobile and therefore motive, and hence suited for soul, seems to shed gross and sluggish corporeality.

Democritus more neatly (γλαφυρωτέρως) exploits such thinking, providing explanations in his atomic theory for the subtlety of fire and its mobility (405a8–9). Identifying soul and mind, he has for soul fire atoms suitably tiny and spherically shaped so as to move things (a9–11). The spherical shape of the atoms, Democritus says, makes them most mobile (εὐκινητότατον), presumably because they have no flat surfaces and angles to impede their motion, and hence they serve for mind and fire (a11–13). The identification of soul and mind fits with Democritus's materialism and suggests how the atomic theory explains not only motion but also cognition. The tiny, spherical soul atoms *penetrate* among the atoms and their configurations, moving them and cognizing them. He might thus avoid tension in the explanation of mobility and cognition of like by like. The spherical atoms are different enough from the other atoms to contribute to their motion, while being like enough to them,

as penetrating atoms, to cognize them. Democritus can perhaps speak of soul when his theory explains motion and mind when it explains cognition (note use of νοῦν in a13). Identifying soul and mind as he does smoothly accounts for both motion and cognition while maintaining a materialism with subtle principles tending toward incorporeality.

In contrast with Democritus, Anaxagoras says soul and mind are different, yet he still has trouble keeping them apart since he uses them as one nature (405a13–15; cf. 404b1–7). He does, however, manage to elevate mind as the principle of all things, for mind alone, he states, is simple (ἁπλοῦν), unmixed (ἀμιγῆ), and pure (καθαρόν, 405a15–17). Anaxagoras famously theorizes that everything is in everything except mind, which as pure of all else and unmixed therefore controls and knows everything else (see, e.g., DK 59B11 and B12). Any impurity in mind would introduce everything into it, if everything is in everything. In *Metaphysics* 989a30–b21 Aristotle observes that this scheme distinguishing total mixture of everything else from unmixed mind is on the way to an appropriate conception of matter and form. Mind, sharing in none of the features of what it moves or cognizes, since it is simple, unmixed, and pure, is suited for its functions. Rather than as other thinkers explaining cognition through like by like or motion by a highly mobile soul, Anaxagoras has mind that is unlike all else accounting for both motion and cognition (405a17–19).

Anaxagoras greatly assists Aristotle to his own approach to soul and mind.[36] Aristotle will pass between those, on the one side, who have cognition through like by like, and Anaxagoras, on the other, who explains cognition by the unlike. Rather than crudely composing the soul of the ultimate material principles, earth, water, air, fire, or the bodies that result from these, Aristotle conceives the soul as a form that is the potentiality to take on the forms of these. The soul's cognitive capacities, sense and mind, are initially unlike what they cognize but potentially like it since actual cognition involves reception of the form of what is cognized. Thus cognition is in different ways of the unlike and of the like. Moreover, the soul as actuality and form of the body differs sufficiently from the body to be its mover, an unmoved and incorporeal mover.

405a19–b10 Anaxagoras and Democritus, prior to the Platonists, are hardly alone in looking to the soul to explain both motion and cognition. Aristotle now turns to some thinkers who might be considered material monists, thereby having a less promising theory, to show that even these used soul to account for motion and cognition. He mentions that Thales, the traditional originator of Presocratic thought, is remembered for having the soul as a moving principle since he supposed that lodestone moves iron because of soul (405a19–21). Aristotle's comments about

[36] Anaxagoras also exercised considerable influence on Plato. The narrator of Plato's *Parmenides* is Cephalus from Anaxagoras's home Clazomenae, and the hypothesis of the instant in *Parmenides* 155e–157b reminds us of mind as unmixed and pure. Socrates in the *Phaedo* expresses his interest in having mind as the cause of all things, and this seems fulfilled so far as possible in the account in the *Timaeus*.

Thales generally acknowledge that his thought is a dim memory. No original writings remain in Aristotle's time, if there ever were any. We may perhaps surmise that for Thales the ensouled magnet is also somehow cognizant of what it moves since it only moves certain things. In any case, Aristotle will elicit several more early thinkers to confirm the widespread appeal to soul to explain both motion and cognition, and the resulting tendency to view soul as incorporeal. His quick perusal of these others gives completeness to his inquiry and ensures that he has appropriately gleaned the main tendencies within the tradition.

Diogenes of Apollonia and others believing air to be most fine grained (λεπτομερέστατον) select it as principle for all things (405a21–22; cf. a6, where others have fire as most fine grained). Since the soul and all things derive from air, that is, air is first, soul can know all things through like by like, and the extreme subtlety of air (λεπτότατον) accounts for the soul's being mover of all else (a23–25). Intriguingly, Aristotle indicates that accounting for motion, as by the subtlety of the mover, leads toward incorporeality of soul even more readily than accounting for cognition. Earlier than Diogenes, Anaximenes and perhaps others attributed motion and cognition to air. Air, of course, is also breath (πνεῦμα) or spirit, and hence we might respect a view that thus makes the soul spiritual. Aristotle seems most concerned to illustrate the ubiquity of soul as mover and cognizer, and the consequent proclivity for subtlety and incorporeality.

Heraclitus too seems to Aristotle to have soul as principle accounting for both motion and cognition, at least if for Heraclitus the principle of all is some sort of exhalation (ἀναθυμίασιν, 405a25–29: in DK 22B7 Heraclitus likens everything to smoke and frequently compares everything to fire). As exhalation like the rest of things, the soul will be least bodily (ἀσωματώτατον) and always flowing (ῥέον ἀεί) and mover, and it will know all else because its own motion is akin to the motion of everything else. Aristotle says, "What is in motion by being in motion knows" (τὸ δὲ κινούμενον κινουμένῳ γινώσκεσθαι, 405a27–28). His portrayal of Heraclitus as an odd monist materialist seems unfairly pedestrian (cf. *Meta*. 984a7–8), yet Heraclitus is somehow a monist (see B2, B50, B32), and his principle, the *logos* (λόγος), figuratively given many other names – "fire" (B66, B90), "nature" (B123), "Zeus" (B32), "war" (B53, B80), "thunderbolt" (B64), "child" (B52), and so on – fits with difficulty within Aristotle's four causes. Aristotle also emphasizes Heraclitus's reliance upon everything's being in flux, thus converting matter into motion, which seems to him close to what the many believe (405a28–29). Since Heraclitus holds that the cosmos is an "ever-living fire" (B30), the "dry soul" is best (B118), and soul "has so deep a *logos*" (B45), he illustrates for Aristotle employment of a rather incorporeal soul to move flowing things and to cognize them.

Alcmaeon is said to resemble the thinkers discussed, though hardly himself a monist, presumably also in having soul account for motion and cognition (405a29–30). Aristotle has Alcmaeon say that the soul is immortal because it has been likened to the immortals (διὰ τὸ ἐοικέναι τοῖς ἀθανάτοις), by which he means the heavenly bodies that are always in circular motion (a30–b1; see DK 24B2). Joining beginning to end in circular motion, the motion goes on forever and there is immortality. Alcmaeon has soul as a microcosm of the whole heavens, so that it will be ever in

motion and capable of knowing all, as do the divine things. Plato elaborates upon such themes in *Timaeus* 36bff.

Other thinkers endeavoring to give an account of the soul, more material monists, seem to Aristotle cruder (φορτικωτέρων), adding little to the general lines observed and offering him hardly any further help with his own account (405b2–10). In reviewing these he completes the elemental possibilities for principles. Previously mentioned were those opting for fire and air, but these more vulgar thinkers choose water or blood for soul, thus losing some grip on the subtlety of principles, though Aristotle points out that no one promotes earth except as the pluralists include it along with the rest of their principles that either mix to compose soul or are each soul (405b8–10), presumably because earth is too unsubtle, inert, and opaque to account for self-motion and cognition. This confirms the tendency toward incorporeal principles even among the materialists. Hippo selects water, Aristotle suggests, because the seed or fetus (γονή) of all things is moist (b2–3; cf. *Meta*. 983b25–27). Hippo thinks he refutes (ἐλέγχει) the claim of blood to be soul, because seed or fetus seems watery or surrounded by water rather than blood, and what is at the beginning and first alive should be soul (405b4–5).[37] Hippo has the watery beginning the animating principle, as water's fluidity and transparency perhaps help with motion and cognition. Others, such as Critias – Plato's cousin and leader of the Thirty Tyrants – designate blood as the soul (b5–8). Looking toward perception as most characteristic (οἰκειότατον) of soul, the nature of blood (τὴν τοῦ αἵματος φύσιν) seems to bestow it, perhaps because bloodless parts do not perceive or because some persons such as he have nobler blood than others.[38] Empedocles, of course, also looked to blood as cognitive, but because it mixes the elements and thereby allows like-by-like recognition (see DK 31A86 and B105). Critias may have taken the view from Empedocles, but Aristotle does not wish to taint him by associating him with Critias. Aristotle may find it chilling to mention the tyrant Critias as valuing the soul for perception and viewing blood as the soul, yet so eager to distinguish himself through spilling blood (see Xenophon's *Memorabilia* i 2.12–16). The very name "Critias" (Κριτίας) seems to hold him up as judge (κριτής), and note Aristotle's use of κριτήν in 405b8, but Critias's own noble blood was questionably discerning.

Aristotle has gone through the positions of those concentrating upon the distinguishing functions of soul: soul as cause of motion, soul as cause of perception, and soul as both of these. In doing so he has dealt with monists and pluralists, materialists and those with formal principles. He has also considered which material principles might support the soul's functions and how formal principles have been applied to this task.

[37] That Aristotle does not find Hippo's view convincing of seed as watery, see *GA* i 19 and esp. 726b1–11. For Aristotle seed is a residue (περίτωμμα) from nourishment and either is blood, something analogous, or derived from blood or its analogue. The caliber of Hippo's thought is demeaned also in *Meta*. 984a3–5.

[38] Themistius *In de an*. 13,34–37 says Critias's reason for making the soul blood is that he emphasized perception and supposed that bloodless parts, such as bones, nails, and teeth lack cognition (cf. Simplicius *In de an*. 32, 23–24). But Themistius 13, 37–38 objects that sinews, though bloodless, are most sensitive.

405b11–30 Having reviewed in this chapter the various opinions about soul of his predecessors, Aristotle sums up what they have said and why. He states that they all define the soul so to speak (ὡς εἰπεῖν) by motion, by perception, and by incorporeality (τῷ ἀσωμάτῳ, 405b11–12). Incorporeality joins motion and perception, which were the initial two distinguishing marks of the ensouled (403b25–27). Incorporeality appeared in 404b31, 405a7, and 405a27; its inclusion here with the two other marks of soul indicates that thinking about these two marks leads also to incorporeality. Rather than being a function of soul, however, as is moving or cognizing, and thus useful for getting at what soul is, perhaps acknowledged by the "so to speak," incorporeality is a mode of being attributable to the soul for accomplishing these functions. Seeking either subtle, mobile principles to explain motion or formal principles for cognition draws toward incorporeal soul. Incorporeality conflicts both with soul as itself mobile and with soul composed of bodily elements through which to cognize like by like. This very conflict is the beauty for Aristotle of incorporeality. True appreciation of incorporeality will guide him toward his own accounts of soul and its functional capacities.

Clearly each of the three defining characteristics of the soul links with the fundamental principle or principles of the various predecessors' schemes of thought (405b12). When they have concerned themselves to define the soul by its cognizing, they have made the soul of just the element (if monists) or elements (if pluralists) of what must be cognized (b12–14). They thereby nearly all converge on the same view however differently expressed, with just Anaxagoras dissenting, that the like is cognized by the like (b14–15). Holding that the soul can cognize all things, they have to form it of the entire set of principles, and thus they nearly unanimously presume cognition is through like by like (b15–17). Whether they are monists or pluralists, materialists or formalists, they can all join in the same basic thought that soul is constituted of the same principle(s) as all else (b17–19). Fire and air are mentioned as the more plausible material principles, and the formalists, who generally are pluralists, can adhere to the same pattern of thought. This is, of course, a profound line of reflection, for soul is a microcosm, capable of cognition of all that there is, and cognizing by somehow being or becoming assimilated to what it cognizes.

Only Anaxagoras strays from this line of thought (405b19–21 and b14). He supposes that mind is impassible or unaffected (ἀπαθῆ) and has nothing in common with anything else (κοινὸν οὐθὲν οὐθενὶ τῶν ἄλλων ἔχειν). Earlier we heard that he has the mind as simple, unmixed, and pure (405a16–17). Hence mind for Anaxagoras is unlike other things and has nothing in common with them. But he also has the mind as "unaffected." This means that the effort of mind in cognizing things cannot be assimilation or likening to them since the mind is not being acted upon or seemingly in any kind of motion. But then what can happen for cognition to occur? Aristotle comments that Anaxagoras's view of mind, as unaffected and with nothing in common with other things, leaves quite obscure how mind will ever be acquainted with anything and what could cause it (πῶς γνωριεῖ καὶ διὰ τίν' αἰτίαν, 405b21–23; cf. 429b22–430a9). Anaxagoras rightly heads toward incorporeality, differentiates the cognitive power from what it cognizes, and appreciates that cognition is no ordinary

case of being affected and motion, but he does not manage to clarify how mind can know things as they are. This unobvious explanation, worked out by Aristotle in iii 4, proves central for his account of mind.

Many of Aristotle's predecessors have contrarieties (ἐναντιώσεις) within their ultimate principles, and consequently they construct the soul from the contraries (405b23–24; cf. *Phys*. 188a19–30). But some use merely one of the contraries, such as the hot or the cold or some other of such a sort, and hence they have but this one for the soul (405b24–26). Hot and cold are primary among such contraries since heat is especially active and crucial for life. Monists might have just one side of the contrariety as primary and the other as derivative. Surely the reasons for using such principles are that soul must cause motion and be like what it is to cognize, but Aristotle observes that in focusing on hot and cold the predecessors nicely accord with etymology (b26–29). Those looking to the soul as hot probably connect living (ζῆν) with boiling (ζεῖν); and those emphasizing cold (ψυχρόν) may associate respiration and cooling (κατάψυξις) with soul (ψυχή: recall the linkage of respiration to life in 404a9–10). Such etymologies figure in Plato's *Cratylus*, and they seem to go back to such pre-philosophical notions as the "breath-soul." Etymology provides only weak and ambiguous support for a view of soul, but Aristotle nonetheless displays it to complete his survey of possible justifications.

This chapter has presented the predecessors' views and why they hold them (405b29–30). These views appear so suggestive because Aristotle, in his carefully contrived presentation, has gotten down to fundamentals that point toward his own approach. Only if his canvassing opens the whole field of real possibilities does comprehensive understanding become possible. To the extent that psychology fits into the understanding of the cosmos, the profundity of the account of soul depends upon the adequacy of principles of the cosmos to explain being, becoming, and cognition. The predecessors of course assist Aristotle not only with his psychology but also with physics and metaphysics. Previously Aristotle said that the knowledge of soul makes a great contribution to all truth (402a5–6), and we recognize as well that the understanding of soul must cohere with conceptions of being and the world.

3

Criticism of Predecessors' Way of Accounting for Motion

Having sketched the views of the predecessors and why they hold them, Aristotle criticizes them for the rest of book 1. This is Aristotle's version of Socratic cross-examination. Chapters 3 and 4 challenge the views of those explaining the soul as mover in motion; chapter 5 attacks those focusing upon the soul's role in cognition. Cognition enters chapter 3 to some extent as well, because cognition may be a sort of motion. The soul might be in motion either because as mover of the animal it has motion of its own that originates motion in the body or because cognition is some sort of motion. This prominence of motion helps explain why 405b31 announces that soul's involvement with motion should be considered first (cf. 403b27–29). All the criticism of predecessors will be *dialectical*. Aristotle cannot simply demonstrably refute the *endoxa* but only argue against them on the basis of other *endoxa*. Dialectic lacks firm starting points, instead using some *endoxa* to challenge others.[1] Yet in spite of being dialectical, Aristotle's arguments end up with the definitive conclusion that the predecessors' positions are impossible (see, e.g., 405b31–406a3). How can such a solid conclusion emerge from dialectical consideration?

Aristotle, it will be seen, uses a barrage of arguments. It may well provoke suspicion that so many arguments enter the attack against his predecessors' views. Were there a decisive argument, we might expect it to suffice, but Aristotle frequently resorts to a series of arguments. Plato's Socrates occasionally does much the same

[1] Regarding Aristotle's methods, Aquinas comments: "It is one thing to argue out the simple truth of a question, and another to reason against a particular theory; in the former case you have to make sure that your premises are true, but in the latter you proceed from what your adversary concedes or asserts. Hence it is that when Aristotle criticizes the views of others, he often seems to use rather weak arguments. In each case he is, in fact, destroying his adversary's position by drawing out its logical consequences" (*In de an.* §74).

And a little later: "Here we should note that often, in criticizing Plato, it is not precisely Plato's own meaning that Aristotle criticizes, but the obvious sense of his words. He has to do this because Plato's method of teaching was faulty; he constantly used figures of speech, teaching by symbols and giving his words a meaning quite other than their literal sense; as when he calls the soul a circle. So lest anyone should be led astray by this literal sense, Aristotle sometimes argues precisely against it, in criticizing Plato" (§107).

himself. One reason for this approach is that Aristotle questions a whole tradition that says a variety of things. He cannot simply make the assumption that would seem to clinch the argument, that the soul is not a body and so soul cannot be in motion. He cannot blithely make this assumption because most of the predecessors do not accept it, and even the Platonists who accept it nonetheless continue to speak of the soul as self-mover. Only a panoply of arguments challenging all the possibilities for viability of a family or families of theories allows for a conclusion of impossibility. Marshaling so many arguments, Aristotle aims to eliminate any possible life in his predecessors' positions, so his conclusion of impossibility may hold. What provoked suspicion, the multiplicity of arguments, can lead to a decisive conclusion. Because he needs only to refute the predecessors, though decisively, rather than to obtain a positive result of his own, the argumentation can work with the predecessors' assumptions remaining merely as assumptions.

The conclusion of impossibility through dialectical examination negates the predecessors' positions but without being merely destructive. Aristotle's dialectic sets up *aporiai* afflicting a variety of predecessors and points toward the pitfalls to avoid and his own positive resolutions of the perplexities. Only by thoroughly exposing clusters of difficulties for the predecessors' positions and the impossibility of some of their thought will the need for his resolutions and their outlines appear.

It may be worthwhile to observe the orderliness of Aristotle's barrage of argumentation, which may seem mystifying and burdensome. It is often hard to tell just where one argument ends and another begins. Appreciation of these sections of argumentation increases, however, if we recognize that Aristotle starts with the most general point of view. He then proceeds step by step through a series of considerations. In each case the next step is based upon the previous one but typically with some new assumption or consideration brought into play. Only when we note that the arguments thus proceed by steps in which the previous step is assumed are we in position to make convincing interpretations. Where the argument is initially perplexing, it will clear up once its connection with what has gone before and what it is adding is seen. Aristotle's methodical procedure permits him to deal in the most thorough way with various aspects of the predecessors' positions. Some of the interest for the reader is in clarifying the assumptions that Aristotle makes, thereby locating the aspect of the predecessors' view open to challenge. The ultimate question regarding Aristotle's argumentation is whether it is sufficiently thorough to justify conclusions of impossibility of certain aspects of a predecessor's theories.

Figure 1 gives some indication of the various topics for treatment and why Aristotle can be satisfied that his investigation is comprehensive.

405b31–406b25 In first taking up the soul as mover and in motion, Aristotle announces that it is not just false that the soul has as its very being (οὐσίαν) moving itself or is capable of moving itself (τὸ κινοῦν ἑαυτὸ ἢ δυνάμενον κινεῖν), as some suppose,[2] but it is among the *impossible* things (ἕν τι τῶν ἀδυνάτων) that motion

[2] Ancient and modern commentators suggest that Aristotle especially has in mind Plato's statement about soul in *Laws* 895e10–896a2: τὴν δυναμένην αὐτὴν αὑτὴν κινεῖν κίνησιν.

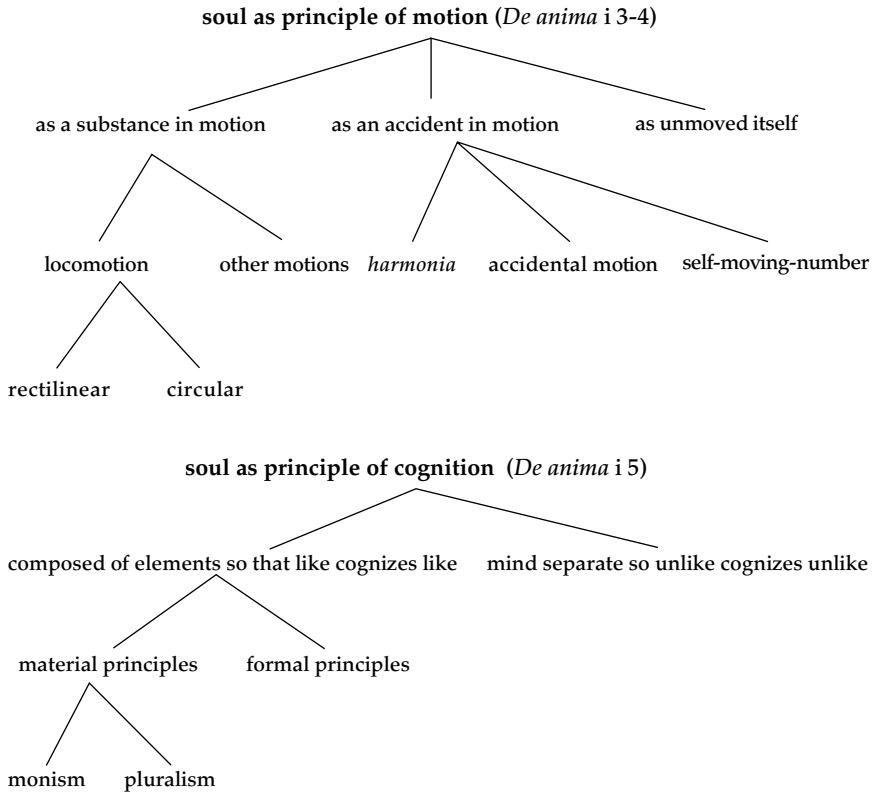

FIGURE 1

(κίνησιν) belongs to the soul (405b31–406a3). The very fundamental impossibility in the view that soul can be at all in motion justifies taking this up first. Aristotle denies both that motion belongs to the essence of the soul, as it would if it were defined as motion moving itself, and that the soul ever enters into any motion whether or not this belongs to its definition. Such complete rejection of motion as possible for soul may be jolting, and so Aristotle comments that previously he has said that the mover need not itself be moved (a3–4).[3] If there can be unmoved movers, then soul can be principle of motion without itself having to be in motion.

The denial of motion to the soul is fundamental for understanding soul. As a consequence operations of the soul can involve exclusively motions in the body, since

[3] Aristotle states that it has been said before (πρότερον εἴρηται) that it is not *necessary* (οὐκ ἀναγκαῖον) that all movers themselves be moved or in motion. Most movers are themselves moved, but first principles or causes must ultimately be unmoved movers. This view is worked out at length in *Physics* viii 5, to which ancient commentators suppose that he refers. Yet, modern commentators suggest looking back to 403b28–31 where he states, "Some say that what originates motion is both pre-eminently and primarily soul. Believing that what is not itself in motion cannot move another (οἰηθέντες δὲ τὸ μὴ κινούμενον αὐτὸ μὴ ἐνδέχεσθαι κινεῖν ἕτερον), they supposed that soul is among the things in motion." Such a passage backed up by the argumentation of the *Physics* might qualify as a prior statement that it is not necessary for all movers to be moved.

the soul cannot itself be in motion, and the soul may itself engage in something other than motion. Aristotle embraces these consequences: the soul in operation is not in motion, but generally in activity that may accompany and further give rise to motion in the body. What prevents this interpretation from being obvious is that Aristotle does not much dwell upon the operation of the soul as activity (ἐνέργεια) and contrast it with motion. In fact, having decisively rejected in book 1 the possibility that the soul undergoes motion, he will often nonetheless say thereafter that the soul's operations are some kind of motion (see esp. ii 5). He also frequently discusses the localization of the soul in specific parts of the body that fosters the view that it can enter into some sort of motion along with the body (e.g., 424a24–28). As previously emphasized, in the context of physics – and the *De anima* tries to remain in this context so far as it can – Aristotle avoids introducing too dramatically the notion of activity that goes largely outside the domain of the located and movable. Moreover, since body enters into motion and Aristotle is concerned to consider soul-body interaction, it is often useful to speak in the ordinary way of psychical operations as motions. This is especially the case since cognition seems passive, caused by external bodies, and its retention, as in *phantasia* and memory, is facilitated through viewing it as motion.

To show that it is *impossible* that motion belong to the soul (406a2; cf. 408b30: οὐχ οἷόν τε κινεῖσθαι τὴν ψυχήν), it does not suffice merely to argue that motion does not have to belong to the soul or that it might not. Aristotle must argue that it does not and cannot. How will he argue for impossibility, and through dialectical argumentation? As suggested previously, he needs a barrage of arguments. Some of this argumentation will show that motion is unnecessary for accounting for functions or operations of the animal. Such argumentation helps the case but hardly goes far enough. A more vital part of the argument will establish that the soul cannot be an extended magnitude, that is, a body, and consequently cannot enter directly into motion. In attacking the soul as extended magnitude, he must inquire whether it might not only operate by motion but also merely by contact. He must try to consider all possibilities. So when he treats motion, he must think of rectilinear and circular locomotion and even alteration and quantitative change as well. He must also consider whether the soul is a substantial being or an accidental being and whether self-motion could be its essence. There are also the various theories of soul as mover, such as Democritus's, Plato's, the *harmonia* theory, and the self-moving number theory.[4] Aristotle removes every last bit of support for the view that the soul undergoes motion and contends that no theory successfully sustains the view of soul as in motion. By thus canceling all the possibilities, he establishes impossibility by way of dialectical argumentation (see esp. 409b13–14 and the reflection upon it). Primarily refuting motion of soul, the case need not make many positive assumptions, but can, like Socrates' argumentation, challenge the interlocutor on his own assumptions.

[4] Perhaps because Aristotle has already in *Physics* iv 7–8 extensively criticized the involvement of the void in motion and hence the atomic theory as an account of motion, he does not pay special attention to Democritus's theory of soul.

Ignoring the possibility of unmoved movers, the predecessors have soul as motive through being itself mobile: the target of Aristotle's refutative barrage. If the soul is in motion, it has to be moved in virtue of another or in virtue of itself (καθ' ἕτερον ἢ καθ' αὑτό) since all things in motion are caused to be in motion in one of these ways (406a4–5). Aristotle illustrates that sailors aboard a ship in motion are moved in virtue of another, the ship, while the ship is in motion in virtue of itself (a5–8). Of course sailors can also walk around the ship, and thus they in addition have motion in virtue of themselves. That something has motion in virtue of itself is clear (δῆλον), Aristotle says, when its own parts, such as legs and feet, are engaged in the motion such as walking (a8–10). Having motion "in virtue of itself" hence seems restricted to cases in which something is moved as a result of motion arising in its own parts initiated within themselves, whereas motion "in virtue of another" means that something is moved only because what contains it moves it or an external force causes it to be in motion.[5] Now, is the soul something that is moved and partakes of motion in virtue of itself, or is it only in motion along with the body, as a sailor is carried along by the ship (a10–12; cf. 413a8–9)? Since Aristotle has already announced the impossibility of the soul's being in motion (see 406a2–3), he investigates to confirm that soul cannot have motion in virtue of itself, even if it is the principle of motion of the living being.

This passage has the first appearances in the treatise of "in virtue of itself" (καθ' αὑτό, 406a5, a7, a11), which will be of considerable importance in other contexts (see, e.g., 412a6–8, 418a8–9). Some attention might here be paid the notion. "In virtue of itself" is discussed in *Metaphysics* v 18 (cf. *Posterior Analytics* i 4).[6] It may be said that *A* is in virtue of itself *B*: (1) if *B* is the essence of *A*; (2) if *B* is in the definition of *A*; for example, *B* is the genus of *A*; (3) if *A* is in the definition of *B*; that is, *A* is the first substratum or some part of it is the first substratum that has *B* as its essential accident;[7] (4) there is no other cause; or (5) *B* can belong only to *A*. In the case here of something being moved in virtue of itself, most pertinent are probably senses (3) and (4). Something is moved in virtue of itself if it is the

[5] Aristotle seems content here not to make too fine a distinction between motion in virtue of itself and in virtue of another. In *Physics* viii 4 there is much discussion of things moving and being moved in virtue of themselves (τὰ δὲ καθ' αὑτά) in contrast to accidentally (τὰ μὲν κατὰ συμβεβηκός). In 254b12–14 he says that things in motion or moving in virtue of themselves are so either due to themselves or due to another, and some by nature and others by force and contrary to nature (τῶν δὲ καθ' αὑτὰ τὰ μὲν ὑφ' ἑαυτοῦ τὰ δ' ὑπ' ἄλλου, καὶ τὰ μὲν φύσει τὰ δὲ βίᾳ καὶ παρὰ φύσιν). This appears to mean that self-movers have motion in virtue of themselves and also those natural beings that require something else to allow them to enter into motion, for example, as earth falls when an impediment is removed. And even a natural being forced to enter into motion in its natural way, as when a stone is thrown downward, can be said to have motion in virtue of itself. The *Physics* is not much concerned with artifacts having motion in virtue of themselves, as here in the *De anima* the ship is said to have motion in virtue of itself perhaps because of wind or rowers.

[6] Aristotle takes over the notion of what something is in virtue of itself, καθ' αὑτό, from Plato (see, e.g., *Sophist* 238c and 255c–d), who in turn could have found it in Parmenides (see DK 28B8.29).

[7] Aristotle's examples in *Meta.* 1022a29–32 are that a surface is white in virtue of itself, since surface is the first substratum of color, and a human has life in virtue of itself, since the soul that is a part of the human is the first possessor of life.

first substratum, such as a body, that receives the motion and its motion is due only to (or principally to?) its own parts. Motion in virtue of itself or another might be locomotion, alteration, and growth or diminution. A ship operating either under sail or by rowers has motion in virtue of itself as does an animal that walks because its feet and legs are in motion. Clearly motion in virtue of itself can be natural and voluntary motion, but even an artifact such as a ship can have motion in virtue of itself though it is not natural motion and not even exclusively self-caused since no nonliving thing can be a self-mover.

If *all* things that are moved are moved either in virtue of themselves or in virtue of another (406a4–5), any motion besides that in virtue of itself is motion in virtue of another. Then any part of a thing in motion that does not contribute to the motion, such as the hair of an animal; or any attribute of a thing in motion that does not contribute to the motion, such as paleness; or anything carried by or forced by something in motion, such as the sailor in a ship, is likely moved in virtue of another.[8] Those on the ship can be in various situations: involuntary passengers, voluntary passengers, sailors participating in the ship's sailing, sailors powering the ship as rowers. Insofar as they are all being carried by the ship they have motion in virtue of another, yet some of these may be in this motion more voluntarily and even contributing to it. If the soul were a bodily part, as some of the predecessors suppose, then the soul might be in motion in virtue of itself and/or in virtue of another, but if it is nonbodily, then it seems in motion in virtue of another but only accidentally, even if it initiates the bodily motion. If the soul is nonbodily, the *living being* as self-moved is in motion in virtue of its soul and hence in virtue of itself, while yet the soul as unmoved mover is in motion merely in virtue of another, that is, its body, which carries it around with it.

To explore whether the soul can be in motion in virtue of itself, Aristotle indicates that it must have one, several, or all of the sorts of motion that he distinguishes: locomotion, alteration, diminution, or growth (406a12–14). Whether or not the predecessors clearly demarcate these sorts of motion – and Plato's beginning to distinguish them in *Theaetetus* 181c–d and *Parmenides* 138b–c and 162d–e indicates such distinctions are rather novel – these motions are the real possibilities. If the soul is not in motion merely accidentally (κατὰ συμβεβηκός), that is, merely changing in relation to something else, as when Theaetetus grows, or merely being carried as a sailor in a ship, then soul should be in motion naturally (φύσει), and that means that it has one or more of these sorts of motions (406a14–15). Previously the contrast was instead motion in virtue of another or in virtue of itself (a4–5). Motions in virtue of another may be wider than accidental motions if, for example, we are disinclined to say that heatable material is being heated accidentally though we do not resist saying that it is being heated in virtue of another, and motions by nature

[8] There is also motion in virtue of another in the case of merely relational motions; e.g., Theaetetus grows taller while Socrates stays the same height and thus Socrates becomes relatively shorter; Socrates gets paler in relation to Theaetetus who gets a suntan; Socrates remains a certain distance from an object while Theaetetus walks farther away from it and so Socrates gets relatively closer. In such cases there is relational motion in regard to quantity, quality, or place due to motion of another.

are narrower than motions in virtue of itself since artifacts such as ships are moved in virtue of themselves but as artifacts not by nature.[9] If soul has motion by nature, then it also has a place (τόπος), for all the kinds of natural motions presuppose bodies in places or changing places (a15–16). This seems obvious for locomotion (when wave motion is excluded) because locomotion is change in place, and the other sorts of motion presuppose locomotion (see *Physics* viii 7). Growth or diminution depends upon alteration and leads to increase or decrease in the quantity of the place occupied, and alteration must at least involve the agent drawing close to what undergoes its action. Since some predecessors make the very being of the soul self-motion (ἡ οὐσία τῆς ψυχῆς τὸ κινεῖν ἑαυτήν), its motion cannot be accidental to it but must be by nature (406a16–22). By contrast paleness and three cubits in quantity are only in local motion accidentally because the body in which they inhere is in motion, and therefore they may lack a place. But a self-moving soul would have to be in motion naturally rather than acidentally, and hence it could not lack its own place.[10] While attributes of a body, such as quality, quantity, or motion, are not themselves in place, but only accidentally in place through inhering in a substratum that is in place, the predecessors taking the very being of the soul to be motion cannot have motion and place merely accidental to the soul. Aristotle will now develop several arguments against the soul as naturally in motion and in place.

What can be in motion by nature should also permit motion by compulsion, and vice versa (406a22–23). At least this seems so for nonheavenly bodies, that is, things that are not eternally in motion. Also, if something can be naturally in motion toward some terminus, it must be capable of rest at the terminus, and since it can be in compelled motion toward some terminus, it must rest there by compulsion (a23–26). Without being explicit about it, Aristotle already seems to be speaking about motion and rest in terms of locomotion since compulsion applies most readily to locomotion. Now it seems plausible that what has natural motion should also have compelled motion and natural and compelled rest, but one can hardly conceive what these compulsory motions or rests are in the case of the soul (a26–27; on use of πλάττειν in a27, cf. 412a18–19). Platonists who suppose the soul's very being self-motion should find this obnoxious but challenging. They will not wish soul as essentially self-motion and immortal ever to rest or to be moved by another. But then either they seem to make the soul's motion sui generis rather than one of the

[9] To speak of projectile motion as accidental is likely less appropriate than for things being carried along by something else in motion. Aristotle soon also contrasts motion by nature and motion by compulsion (406a22–23). Some of the motions in virtue of another or accidental motions, e.g., relational motions such as getting relatively farther away when something else draws closer, should hardly be said to be compelled motions, so compelled motion is likely an even narrower notion than accidental motion. Probably in general it is most obvious to speak of compulsion and force in regard to locomotion rather than alteration or growth and diminution (but see *Phys*. 230a18–b10). Thus we are perhaps prepared to understand that in the case of sense perception, the animal is moved in virtue of another, yet the motion is natural and neither accidental nor compelled.

[10] In fact, for Aristotle motions as such are not in a place, but the substrata to which the motions pertain connect with place. Simplicius *In de an*. 35,1–2 recognizes the point: "'the listed forms of change are in a place', since they happen to what is in a place."

four kinds specified, or since perhaps only in the case of heavenly bodies do we find motion without possibility of rest or compulsion, they make soul much like the heavens.[11] The *Timaeus* may show that they gladly embrace both these possibilities while rejecting any rest or compelled motion.

Another argument concerns the direction of motion the soul might be supposed to have (406a27–29). The previous argumentation queries whether soul has place and whether its motion and rest can be natural or compelled, all suggesting that the motion should be locomotion and the direction of natural motion might have significance. Now if the soul goes upward, then it presumably is fire, whereas if it goes downward it is earth. Such are the natural directions of motion of these elemental bodies. If its motion is intermediate (μεταξύ), then it is either air or water (a29–30).[12] Other thinkers besides Aristotle have to appreciate that fire naturally goes upward and earth downward (see 415b28–416a2). They have some role for lightness and weight in their thought. Direction of motion then seemingly determines soul to be one or another of the elemental bodies. If the soul is assumed light, as by Democritus, because it is fire atoms, then how does it ever move otherwise than upward? Would this other motion be compelled? Were soul naturally in downward motion these thinkers would be conceiving the soul as earthy, as Aristotle said they avoid (405b8–10). Again, the problem seems to be that any possibility that the soul has a natural motion turns it into a body.

A further argument disallows exceptional motion for the soul (406a30–b1). If the soul moves the body, it is reasonable (εὔλογον) for the soul to cause the same sorts of motions that it undergoes (406a30–b1). Many predecessors have the soul mobile to cause motion in other things, but if it causes motion resembling its own, then its motion should resemble that of other things. Since the body moved by the soul has locomotion, so should the soul. Perhaps we might think that the soul only engages in alteration, but moving the body that has locomotion and being in motion itself, the soul too should be engaged in some locomotion. At least those ignoring unmoved movers and inclined to have the soul naturally in motion may well accept this idea on the basis of the previous arguments that had the soul in motion by compulsion and naturally and in locomotion upward and downward.[13] Now, if soul engages in locomotion as body does, then the soul may be in motion

[11] Other theorists having the soul in motion can also hardly distinguish its natural and compulsory motion, and they must balk at any rest at all since soul is supposed to be most mobile. Yet it would seem that natural and compelled motion and rest must apply to the same things, and hence to soul. This suggests that natural and compelled rest and motion suit ordinary bodily beings rather than soul.

[12] This is the first appearance of μεταξύ in this treatise. Air and water are intermediates between fire and earth, so that these elemental bodies have intermediate motions and places. Later in the account of sense perception, there will have to be a medium (μεταξύ) or intermediary between the sensible object and the sense organ. Moreover, this intermediary is usually air or water. Whereas the intermediate in the cosmic frame is typically in the vertical dimension, that in the realm of sense perception is quite often generally horizontal.

[13] In *De motu animalium* 7–8, esp. 701b13–702a21, Aristotle has cognition, *phantasia*, and desire lead to alterations, i.e., heating or cooling, that expand or contract bodily parts to give rise to larger bodily motions. None of these are for him motions in soul, but even on such an account the alterations giving rise to expansion and contraction are already thus causing some change in place, at least for some parts.

within the body, either exchanging (μεθισταμένη) location entirely or exchanging the relative positions of its parts within the body (b2–3). But then why might the soul not also go out of and back into bodies, and so living things having died may be resurrected from being dead (τὸ ἀνίστασθαι τὰ τεθνεῶτα τῶν ζῴων, b3–5)? Ready travel into and out of bodies seems an implication of bestowing locomotion on the soul. Democritus and maybe the Pythagoreans have this possibility very much in mind (404a9–25).[14] An obvious question is why the soul capable of locomotion cannot be the same outside the body as within. Mobile fire atoms only supposedly become soul within an animal, but why should this be? Do they not always cause motion, and so anything at all fiery should be animated, such as the air containing fire atoms before being inhaled?

Aristotle has been concentrating upon motion by nature for the soul and has just considered how this might even have the soul traveling outside the body. But the consequences of self-motion could be still more troubling: the soul might become other than itself. As mentioned before, that which has natural motion can also be moved by compulsion (406a22–23), so the self-moving soul just might have accidental motion through force exerted on the living thing by another (406b5–6). But surely that which has self-motion as its very being (ἐν τῇ οὐσίᾳ) ought not (οὐ δεῖ) to be moved by another except in a nonaccidental way (b7–8). What Aristotle means to insist upon is that the motion of the self-mover as self-mover is not merely accidental to it, so that if, for example, an animal is moved by sense-perceiving some object, the object is not moving it merely accidentally as it would be were the object directly pushing the animal. The case of the self-moving soul, he suggests, should be like that of what is good in virtue of itself or on account of itself (τὸ καθ' αὑτὸ ἀγαθὸν ἢ δι' αὑτό) that should not be good for the sake of another (ἑτέρου ἕνεκεν) or on account of another (δι' ἄλλο, b8–10). Neither should essentially good things derive their goodness from outside themselves any more than the self-moving soul its motion from anything but itself. The soul might be said to be moved by sensible objects, but this seems to be just the case prepared for in which something external prompts motion without there being accidental motion (b10–11; cf. b8). The soul, if indeed it is at all moved (εἴπερ κινεῖται), is moved by sensible objects nonaccidentally and noncompulsively.[15] What Aristotle has been driving toward is the understanding that as self-moving being the soul is in motion by nature and not just accidentally. Even looking to the passivity of the soul in sense perception, where it might be moved by another, this motion is not merely accidental to the soul.

But now since the soul's self-motion is hardly merely accidental motion, the predecessors run into extreme difficulty. If the motion the soul gives itself truly is nonaccidental, then should the soul not cause itself to change its very being (406b11–15)?

[14] This differs from the primitive "free soul" because only death rather than dreaming or trance results from the soul's leaving.

[15] The doubts raised in 406b11 that soul can be moved at all apply generally as well as especially suggesting that sense-perceiving is something different from motion, namely, activity. See Themistius *In de an.* 18,20–35 (and also 28,22–29,5) regarding the distinction of *energeia* and *kinesis*.

All nonaccidental motion is a "displacement" of that which is being moved in the respect in which it is moved (πᾶσα κίνησις ἔκστασις ἐστι τοῦ κινουμένου ᾗ κινεῖται, b12–13). If motion is the very being of the soul, might the self-moving soul depart from its being a self-mover (ἐξίσταιτ' ἂν ἐκ τῆς οὐσίας) since it is in respect to its very being that it is in motion (b13–15)? Because its motion is what the self-mover is in virtue of itself (ἔστι ἡ κίνησις τῆς οὐσίας αὐτῆς καθ' αὑτήν, b15), and not merely accidentally, its very motion should move the self-mover from what it is. The soul can hardly remain unchanged through its very own motion.[16] For Aristotle motion of the usual types (listed in 406a12–13) is a destruction of the starting condition and ultimately of the motion itself when it arrives at its own end (see, e.g., 417b2–3). Either the soul's self-motion is one of the usual types of motion or some motion sui generis, but in either case soul as essentially motion should be changing out of itself.

The predecessors are being shown to have reflected inadequately upon the implications of motion for the soul. The arguments so far offered seem so destructive, since soul is just not the sort of thing that can be in motion, that Aristotle may hold up the predecessors to ridicule. Arguments should carry conviction, but subjection to easy ridicule may be even more sobering. Democritus and any others supposing the soul is in motion in the same way that it moves the body, Aristotle chides, sound like the comic poet Philippus (406b15–18; cf. 406a30–b1). Much as Philippus has the mythical sculptor Daedalus pour quicksilver into his wooden statue of Aphrodite to give it motion, Democritus introduces naturally never-resting spherical soul atoms to animal bodies (406b18–22). Does it not seem, then, that the soul ridiculously randomly rambles bumblingly, taking the body along?[17] How well conceived is such a theory? *We* will ask (ἡμεῖς δ' ἐρωτήσομεν), because Democritus apparently does not address what is so difficult or impossible to explain on his theory, if such a soul also can make the body rest (b22–24; cf. 406a23–26).[18] How could a soul that

[16] Menn 2002, 97–98 comments, "Aristotle's 'the soul would be displaced out of its οὐσία' is a reply to Plato's 'only what moves itself, since it does not depart from [ἀπολείπειν] itself, never ceases to be moved, but is a source and principle of motion also to the other things which are moved' (*Phdr*. 245c7–8); for Plato, this is a foundation for proving the immortality of soul. Plato thinks that if being moved belongs to the essence of soul (so that it must move itself, not depending on anything else to move it), this will explain the inexhaustibility and continuity of the motion with which the soul is moved, and so of the motion it imparts to whatever it happens to be present in. Aristotle, by contrast, argues that the continuity and inexhaustibility of motion depend on an *unchanging* cause: if the cause were changed, it would 'depart from' or 'be displaced from' the state that was responsible for producing the motion, and the motion would be interrupted and replaced by a different motion or by rest."

[17] If the spherical soul atoms cause both locomotion and alteration (by heating bodies), then the soul also should be engaged in both locomotion and alteration. Likening the predicament of his philosophical predecessors to that of poets and mythologers who might not aim to think consistently and convincingly (cf. 410b27–411a2, 404a29–30) can be an amusing but devastating reproach. Menn 2002, 112n43 compares this passage with *Politics* i 4.1253b33–1254a1. Might it be especially surprising to be giving birth to a beautiful goddess, and this one in particular who may have arisen from the severed genitals of Heaven, by pouring liquid into a statue?

[18] Even were Democritus to explain rest as may Epicurus, who holds that all atoms are constantly in motion (see D.L. x 43) but the larger body they compose may rest as the result of all the scattered motions of the atoms canceling each other – i.e., the vector sum of all motion is zero – this still would reveal nothing about the way *soul* atoms produce rest as well as motion.

does not determine both rest and motion be in control? Rather than looking to the soul's mobility to move the animal in turn, some choice and thought of soul generally perform the task (ὅλως . . .διὰ προαιρέσεώς τινος καὶ νοήσεως, 406b24–25). Aristotle may refer here to choice and thought either because Democritus limits his accounts to humans (402b3–5), or because animals may loosely or generally be said to choose and think inasmuch as they are moved by desire and *phantasia* (in 433a9–12 *phantasia* is said to be some sort of *noesis*).[19] Mobile spherical atoms fail miserably in accounting for voluntary animal motion since they do not also explain rest, and hence they can give no clear place to cognition and desire in originating animal motion.

406b25–407b12 A more subtle view of the soul than Democritus's spherical atoms, Plato's in the *Timaeus*, still warrants similar ridicule when it "gives a physical account" (φυσιολογεῖ) of how soul moves body (406b26–28). Aristotle's squib of Democritus's rather comic handling of the soul serves as backdrop for critiquing Plato's view. In the *Timaeus* soul moves the body because the soul that itself is moved is woven together (συμπεπλέχθαι) with the body (see, e.g., *Timaeus* 36e). The soul is composed of elements that include the elements of the body and divided according to the harmonic numbers (τοὺς ἁρμονικοὺς ἀριθμούς) so that it may have perception and natural harmony (σύμφυτον ἁρμονίας) and will carry the heavenly bodies around concordantly (τὸ πᾶν φέρηται συμφώνους φοράς, 406b28–407a2; see *Timaeus* 35a–37c). Presumably the way in which soul is composed of the same and the other and being and becoming has it always in motion, while its connection with harmonic number and ratio explains its orderly motion. Aristotle rapidly rehearses the *Timaeus*'s colorful portrait of the soul's components mixed together, divided according to harmonic ratios, and then bent to form two circles, the circle of the same and the circle of the other – the other further divided into seven circles – aligning the soul's motions with the observed motions of the heavens. The heavens all seem to go around the Earth in twenty-four hours from east to west, explained by the revolution of the same, but then the Sun, Moon, Mercury, Venus, Mars, Jupiter, and Saturn, all the heavenly bodies (besides the fixed stars) known to the ancients, have each their own peculiar motions, for which the seven circles of the other are responsible. The soul's motions are obviously modeled on the heavens', though for Plato it is soul that explains these heavenly motions. Plato may thus say more about the soul's motions than does Democritus and give them more order, yet similarly soul seems in motion much as the body that it moves, and Plato will have comparable difficulty explaining rest and choice and intellection, that is, the voluntary motions of mortal animals.

Before turning to Plato's *Timaeus* (or Alcmaeon), it might look as if Aristotle can suppose his predecessors have only rectilinear locomotion of the soul (see esp. 406a27–30). But Plato explains the circular motions of the heavens by the soul's circular motions and uses these circular motions as well to account for cognition,

[19] Also, Democritus is immediately being compared to Plato (406b25ff.), who has trouble with rest, choice, and intellection.

and so Aristotle must consider the prospects of such motion for the soul.[20] Since the types of locomotion he distinguishes are straight, circular, and combinations of straight and circular (see *Physics* 261b28–29), Aristotle thus considers all the possibilities of locomotion for the soul. For Plato the soul's composition involving harmonic numbers makes its circular motions concordant.[21] The soul's link with the harmonious might seem to help with sense perception, the concordant rotations would give rise to concordant music of the spheres that the cosmic soul through its own harmonious ratios is prepared to hear (see 406b28–31), but Aristotle soon contends that Plato's vision of soul in rotational motion, blighted as it is by conceiving soul as a magnitude (μέγεθος), applies to that which is called mind (ὁ καλούμενος νοῦς) more aptly than to sensitive (αἰσθητική) or appetitive (ἐπιθυμητική) powers (407a2–6).[22]

Here in 407a4–5 Aristotle talks of "what is called mind," as he does in some other places as well (cf. 404b5, 429a22, and 432b26). Each passage may have its own reasons, but behind them is a difficulty of how to speak of God. Anaxagoras clearly intends rightly to name God when he has mind (*nous*) ordering all things. But for Aristotle *nous* is generally only a capacity or potentiality, and so unsuited for God. God should be *noesis*, thinking, that is, activity, rather than mind (see *Meta.* xii 9). This helps explain why Aristotle refers to that which is called *nous*. What Anaxagoras calls *nous* is not what Aristotle calls *nous*, even if Aristotle learns much about *nous* from Anaxagoras. Anaxagoras, in meaning to speak of God, instead largely spoke of the human mind, and the human mind is a concern of the *De anima* rather than divine thinking. Here in 407a4–5 when Aristotle talks of "what is called mind" he speaks of Plato, who supposes himself to be dealing with both cosmic and human mind. But as indicated, Aristotle thinks *mind* inappropriate for God. Thus "what is called mind" here can mean what Plato misleadingly calls God, but it especially means what Aristotle himself appropriately calls the capacity pertaining to humans.

Strange as Plato's conception of soul as paradigm and harmonic cause for the cosmos may seem, Aristotle learns much from it about human mind. He just needs to replace circular motions of bodily magnitudes by psychical activities for which circular motion is the closest physical approximation and best symbolization. Circles join their beginning continually with their end (cf. Alcmaeon DK 24B2). It is apparently to strengthen the conceptual power of circular motion – which can be traced through the Presocratics from Anaximander's circular world, to Alcmaeon, to Parmenides' frequent references to circles, to Empedocles' sphere of love – that Aristotle develops the notion of activity that has its end and completion at each moment. Circular motion gets as close as bodily matter can to psychical activity.

[20] Witt 1995, 177 emphasizes the shift from straight to circular motion as Aristotle turns to Platonic positions. As indicated earlier regarding 405a29–b1, Plato may be following the lead of Alcmaeon.

[21] Aquinas *In de an.* §§96–98 explains Plato's preference for harmonic numbers by the soul's delight in the harmonious rather than the disharmonious and the Pythagorean view of the music of the spheres.

[22] Themistius *In de an.* 20,19–26 observes that the *Timaeus* only introduces the powers of soul lower than intellect into lower animals through the later action of subordinate gods (see *Timaeus* 41d).

Moreover, the value of numbers derived from music in connection with perception will seem preserved in Aristotle's accounts of the ranges of the sensibles. He tends to have seven or eight basic colors, sounds, odors, flavors, and so on, as if they were all linked with the musical octave (see book 2, ch. 9, n. 10). Thus Plato's picture, taken largely as figurative, proves extremely suggestive. When it is viewed more literally as a model of mind and soul, however, with eight circles composing the mind, and Aristotle treats it literally, despite Plato's caution against this in *Timaeus* 37c3–5, then Plato appears to have what we might now call a cognitivist or functionalist conception. The whole cosmos is an instantiation of mind, a huge computation device, functioning through simpler processes. Any similar scheme of circles suitably put together as described by Plato should be functionally equivalent to this mind.

Aristotle argues against Plato's scheme taken flatly literally in which soul becomes an extended magnitude engaged in thinking and moving the cosmos, at one level, and at another level moving the human body. If the account of thinking fails, then Plato's view has little advantage left over that of Democritus for explaining motion. Democritus was challenged about his handling of rest and moving the body without choice and mind (406b22–25); Plato's efforts taken straightforwardly do hardly better. Though Aristotle's criticism concentrates upon the conception of mind, the intent is to continue to show the inadequacy of the predecessors' views regarding soul as mover of the body. It serves Aristotle's purpose to deal with mind here in the context of motion since thus he makes the best case against the soul as extended magnitude. If only a magnitude can be in motion, soul that is not a magnitude cannot be in motion. Determining where the arguments begin and end poses considerable difficulty. Organizational clues are the initial "Now, in the first place" (πρῶτον μὲν οὖν) in 407a2 followed by two uses of "Further" (ἔτι δέ) in 407a18 and a32; the ἔτι εἰ in a31 differs from the other two appearances with δέ and may point to them as significant. These clues indicate that the attack is perhaps in three major parts: (1) mind cannot be a magnitude or think as a magnitude, (2) circular motion does not explain thinking, and (3) mind need not be in motion at all.

(1) Plato's discussion, taken literally, makes soul a magnitude, and Aristotle battles against having soul a magnitude (407a2–3). The soul of the cosmos depicted by Plato on the model of the heavens clearly must be a capacity such as mind (νοῦς), rather than sensitive or appetitive soul, since sense and appetite would hardly be in circular motion (a3–6). Sense and appetite do not have to go in circles with their objects, though mind may in some way circle back on itself in reflecting and seeking its starting points, yet this is dubious even for mind (see a25–31). Mind (νοῦς) is one and continuous as is its activity of thinking (νόησις), Aristotle can assert, both because this is true of mind and because for Plato thinking is circular motion (a6–7). Thinking is somehow the conceptions or contents through which thought occurs (ἡ δὲ νόησις τὰ νοήματα, a7–8). Aristotle uses νοήματα rather than νοητά relatively rarely in the treatise to emphasize more the content that composes the thought of mind (see 430a28, 431b7, and 432a12). He is going to be stressing how disjointed the contents of thought are, even if mind and thinking can be continuous. Because cognition is through like by like, mind, thinking, and its contents should

seemingly be like each other. But will mind's concepts really fit Plato's view of mind? Conceptions are one by succession, as number (τῷ ἐφεξῆς ἕν, ὡς ὁ ἀριθμός), rather than as magnitude (407a8–9). This is the case whether the intelligible objects are orbiting heavenly bodies, Plato's Form-Numbers, Aristotelian essences, or anything thought successively. The conceptions of *X*, *Y*, and *Z*, if distinct concepts, hardly flow continuously into each other. Hence, while mind is surely one and continuous, since its conceptions are only one by succession and do not constitute a single continuous magnitude, mind could not be continuous as a magnitude. Instead mind is one either as partless (lacking any magnitude at all or being an atomic magnitude) or continuous without being a magnitude at all (ἤτοι ἀμερὴς ἢ οὐχ ὡς μέγεθός τι συνεχής, a9–10). Rather than being a magnitude and thus continuous, mind is one if incorporeal and continuous because the activity of thinking is complete at each moment and continuable, that is, continuous through time.[23] Despite Aristotle's disjunction in 407a9–19, both disjuncts might apply and amount to much the same: mind is partless and continuous through time since not a magnitude. Plato fails to give mind and thinking their proper unity and continuity through misconceiving them as involving magnitudes.

Not only do mind's contents work against Plato's view of mind as magnitude, but thinking them also accords poorly (407a10–11). Does the mind, assuming that it has magnitude, think with its whole magnitude or by each of its parts (a11; see *Timaeus* 37a–c)? The mind's part might be either extended or a point – if a point may be called part of a magnitude (407a12–13).[24] Were mind to think point by point, it could hardly go through (or count, διέξεισιν) an entire process of thought since the points of a continuous magnitude are infinitely many (a13–14). Zeno's paradoxes about the impossibility of going through an infinite sequence in finite time come into play. If the points of an extended mind think, mind breaks up endlessly so that it may never think an entire thought. And if mind thinks with extended magnitude, whether it thinks by means of the whole magnitude or extended parts, because it thinks by rotating, it thinks the same thing many times or infinitely many times though it should be possible to think something once (ἅπαξ, a14–15). By thinking something once, Aristotle might mean thinking it one time as humans do, or since he speaks of cosmic mind, to think the same thing continuously forever. Rotating endlessly, mind as circular magnitude thinking by the whole of its magnitude or thinking with its parts an entire thing or part of a thing will in any of these cases think the same thing again and again rather than continuously and/or one time.[25] Thus this model of thinking cannot do what Plato needs it to do. Aristotle has confronted thinking by the whole, by parts, or by points of an extended magnitude

[23] In *NE* x 7.1177a21–22 contemplation, the activity of theoretical intellect, is said to be the most continuous of our activities.

[24] A circle might touch things at a point. Perhaps Platonists supposed lines composed of points (see 409a28–30 and *Physics* 231a20–26). This is the initial proposal that a point may offer a possible account for cognition. Compare the way Aristotle himself employs it in iii 2.427a9–11.

[25] More generally were thought by extended parts, since any of these parts breaks up into ever more parts each of which also thinks, thought fragments endlessly.

with insuperable difficulties so that this all tells against viewing mind or soul as a magnitude in motion.

In addition it looks as if it suffices for thinking that there be touching (θιγεῖν) by any part of the mind, in which case why bother to have mind in motion and to have any magnitude whatever (407a16–17)?[26] Embarrassing to the view under discussion, touching may serve in place of motion for thinking, and since contact can occur at a point, mind thinking by contact need not have any magnitude.[27] Or supposing instead that the whole circle is touching (θιγόντα) what it is thinking; what then is to be made of touch (θίξις) by the parts of the circle (a17–18)? This touching by the parts could not be thought if thought requires the touch of the whole circle, but then, incredibly, nonthought composes thought: thinking by means of the whole circle is composed of parts that are not thoughts. So why have mind as an extended magnitude at all since the supposition that mind has parts or could think by parts has been exploded?

(2) The first campaign has been waged against mind as magnitude; now Aristotle attacks the Platonic view of mind as capable of supporting any thinking whatsoever. If mind is partless, how can it think what has parts; and if mind has parts, how can it think what is partless (407a18–19)? Whichever way Plato tries to conceive mind, as having parts or partless, if it has to be a circle in motion, it cannot explain thinking. Aristotle argues that Plato necessarily has mind as a circle, that is, a circular magnitude, because mind's motion is its thinking and its motion is rotation, and if its thinking is rotation, then mind is a circle (a19–22). On the assumption that something is most itself when in actuality, if the mind's thinking is revolution of a circle, then mind must be the circle that can be in rotation. But what will mind engaged in ceaseless rotation always be thinking, and there should always be something it is thinking if its endless rotation is eternal thinking (a22–23)? Yet eternal revolution, forever repeating its pattern, seems inappropriate for either practical thought or theoretical thought; both types of thought have some sort of terminus. Practical thought has limits (πέρατα), since it is for the sake of something other than just the thinking, that is, the thinking terminates in some action and this is why it is practical thinking (a23–24). Ceaseless circular motion inaptly depicts practical thought; if Plato thus fails with practical thought, his account of soul as mover offers no more than had Democritus (see 406b22–25). And rotatory motion, Aristotle insists, does little better for theoretical thought, which is demarcated or defined by the accounts it gives (τοῖς λόγοις ὁμοίως ὁρίζονται, 407a24–25). Theoretical thought works through an account (*logos*) that is either a definition (ὁρισμός) or a

[26] This is the first time it is proposed that thought might occur by contact or touching. In *De sensu* 442a29–b1 Aristotle accuses Democritus and the other *physiologoi* of reducing all sense perception to touch. Plato may have intellection as a touching by the mind (see *Timaeus* 37a6, ἐφάπτηται). This may be an inescapable metaphor since Aristotle himself resorts to it in *Meta.* ix 10.1051b24–25 and xii 7.1072b20–21. Simple intelligible beings might be "touched" by something pointlike. Θιγεῖν may be used for touching with mind as a lighter touch than ἅπτειν as touching by the flesh and feeling.

[27] Strictly, points are bodily limits without magnitude and may be in contact but lack motion (see *Meta.* 1002b6–11).

demonstration (ἀπόδειξις, a25–26).[28] A demonstration has a beginning, which is typically a definition, and some end, which is the complete demonstrative syllogism (συλλογισμόν) or its conclusion (συμπέρασμα). And whether thought reaches a conclusion or the demonstration remains incomplete, thought does not bend back to its beginning as circular motion does but proceeds by middle and extreme term so that it might go straight ahead toward a result (a26–30).[29] Most sciences just assume their starting points, do not reflect much about them, and proceed to what follows from them. Neither a single syllogism, going from premises to conclusion by means of the major, minor, and middle terms, nor a series of syllogisms tends to resemble a circular motion returning to the same beginning. Definitions, too, in answer to the what is it question, are clearly limits or terminations to thought, or as de-finitions they must be limited or finite (πεπερασμένοι, a30–31). Hence neither sort of *logos* entering into theoretical science, demonstration or definition, bends back to the beginning as does circular motion, and Aristotle has shown that no type of thought, whether practical or theoretical, fits mind modeled on heavenly motion.

In addition if this circular model has the same rotation repeating many times (πολλάκις), mind will think the same thing many times (πολλάκις, 407a31–32). This closely resembles a14–15, but there magnitude was the target and here circling. Circular motion has the consequence that thinking repeats as many times as there are rotations. Since Aristotle has introduced practical and theoretical thought into consideration, he can forcefully suggest the unlikelihood that such thought should go round and round again and again. Previously he indicated that mind can think something just once (a15); practical or theoretical thinking does not typically run through the exact same path of thought from beginning to end again and again as in repeated revolutions of a circle.[30]

(3) Having challenged mind conceived as magnitude and thinking by way of circular motion, Aristotle takes up his third line of resistance to Plato's view: Why use motion in any way to account for thinking? Motion questionably suits thinking (νόησις) better than does some sort of resting (ἠρεμήσει τινί) or coming to a stand (ἐπιστάσει, 407a32–33). Mind comes to rest upon what it knows: the word for

[28] For Aristotle not all *logos* has to take the form of a sentence. *De interpretatione* 17a11–12 makes clear that Aristotle considers an account such as "biped animal" by itself a *logos*: "the *logos* of the human, if *is* or *will be* or *was* or something of such a sort is not added, is not yet an apophantic *logos* [i.e., a declarative *logos*]," though it is already a *logos*. Hence a definitional *logos* may have simplicity so that following much dialectical work it is graspable by intellectual intuition. The divine thinking might think always of its simple self without termination, but circular motion will not work for such divine thinking.

[29] Recall that in 404b22 knowledge was said for Plato to be 2, i.e., like a line of thought rather than a circle. But perhaps philosophical thought metaphorically must advance as a line does but also circle back to its beginnings. Consider Parmenides DK 28B5: "For me, where I am to begin from is the same [literally, common], for to there I will come back again," and recall that Aristotle himself suggested in 402b16–403a2 that principles lead to demonstration of what follows from them, but that the accidents in turn support the principles.

[30] Even though Aristotle rejects circular motion for practical thinking, he can himself take the uniform heavenly rotation as the paradigm for the practical life of the free person (see *Meta*. xii 10.1075a18–23).

knowledge, ἐπιστήμη (*episteme*), literally means to come to rest upon (see *Physics* 247b11–12 and Plato's *Cratylus* 437a). Even the lively and progressive part of thinking, syllogism or deduction, the making of inferences, seems to aim toward a conclusion upon which the thinking may rest, so that continuous motion dubiously accounts for thought (407a33–34). Plato thus evidently has difficulty with rest, much as does Democritus (see 406b22–24).[31]

If mind were in motion, and especially on the assumption just made that thinking might be better represented as resting, then mind's motion may be irksome rather than easy because it is compulsory (βίαιον), and the life of the mind would be far from blessed (407a34–b1). If motion is not the very being (μὴ οὐσία) of mind, but on the view of the *Timaeus* revolution in a circle is all that mind does, its rotational motion will be against its nature and so no delight (b1–2).[32] The Platonic account in the *Timaeus* seems to have mind mixed (μεμεῖχθαι) with body and unable to get free (ἀπολυθῆναι); that is toilsome if body is to be avoided (φευκτόν), and many including Plato suppose it better for the mind not to be with body (μὴ μετὰ σώματος εἶναι, b2–5).[33] Since the *eternal* heavens have the extended mind mixed with them, mind is trapped onerously in body forever.[34] The dual role of the mind in accounting for thinking and motion runs into trouble if mind's supposed motion is unable to explain thinking while also imposing on mind unwelcome burdens.

How Plato accounts for the revolution of the heaven is left unclarified, Aristotle claims (407b5–6). Since it is not the very being of the soul to be moved in circular motion, especially if thinking links more with resting, such circular motion seems accidental for the soul (b6–8).[35] There should presumably be some cause for the heavenly motion that is not merely an accidental cause. And it should hardly be supposed that body moves itself or the soul, since soul is posited to cause the motion of body and of the heaven (b8–9). Not only does Plato fail really to explain what causes the rotation of the heavens, but also the *Timaeus*, Aristotle complains, does

[31] Plato's *Sophist* 248d–249c already raises some difficulties about viewing thinking as either rest or motion. Aristotle has available activity (ἐνέργεια) as opposed to motion (κίνησις). Activity has the conceptual advantage of sufficiently resembling both rest and motion that it provides the features from both needed to consider psychical operations such as thinking and sense-perceiving. Activity seems occurrent like motion while continuing unchangingly like rest.

[32] Commentators have had difficulty with the text and with the argument. Ross 1961, 101 unnecessarily accepts Torstrik's substitution of ἧ for μή that appears in all the manuscripts. But Hicks 1907, 260 defends the unusual Greek construction, and the argument may be eased by noting the previous passage about thinking as rest and the context in which Aristotle considers just the two possibilities for what mind's being may be, motion or rest.

[33] Contrast Aristotle's contention that the affections of soul are "with body" (403a16–19). Aristotle may use "mixed" to recall some of Plato's terminology and to contrast with Anaxagoras's insistence that mind is "unmixed" (ἀμιγῆ, 405a18, 429a18, 430a18). That mind may be mixed with body suggests that it is not its own nature to be so involved, and this goes along with its circular motion's being compelled and toilsome.

[34] Simplicius *In de an*. 49,1–9 especially stresses the torment of the soul of the heavens inescapably occupying a body. Its fate is worse than that of the human soul, which can eventually escape from body.

[35] Circular motion is perhaps accidental to soul because knowing and thinking are aptly described as rest or coming to rest, and because the Demiurge initially has the soul straight and only subsequently bends it into circles (see Themistius *In de an*. 23,13–22).

not fulfill its own intention to show how things are for the better under God's direction. Plato hardly says as he ought that it is better for soul to be in motion rather than at rest, a motion that is not its very being, and that it is better for it to have circular motion rather than some other motion (b9–12). Everything done by the Demiurge is for the better, but nothing is said about how the soul's motion is better for it or anything else or why rotatory motion is better than any other. Hence motion for the soul seems unjustified in Plato's account.

Aristotle's three challenges to Plato's account of soul in the *Timaeus* contend that it inappropriately attributes magnitude to the soul, fails to account through circular motion for thought, and unjustifiably favors motion over rest for soul. Taken literally, so that mind becomes an extended magnitude in rotatory motion carrying around the heavens, Plato's account ends up little different from that of Democritus. Both embarrassingly resemble the comic tale of Philippus, who merely has Daedalus pour quicksilver into a puppet of Aphrodite to animate it. Aristotle discredits previous efforts to explain bodily motion by having the soul itself entering either into rectilinear or circular motion to move the body.

407b12–26 At the denouement of his series of objections to conceiving the soul as a magnitude moving the body, Aristotle has raised questions about why it is better that soul should move the heavens as it does. But such topics as the good and heavenly motion, he points out, belong to fields other than the present inquiry into soul, and therefore they should be let go for now (407b12–13). Yet the issue of the connection of soul and body pertains to the present study. But Plato's view that has been under consideration turns out absurd, as do also the theories of others, when they attach soul to body without specifying the reason they should do so (οὐθὲν προσδιορίσαντες διὰ τίν᾽ αἰτίαν) or how the body is suited to soul (b13–17). They blithely suppose that the mobile soul can move any old sort of body. Aristotle calls their positions absurd (ἄτοπον συμβαίνει, b13), as earlier he contended that putting the soul in motion is among impossibilities (τῶν ἀδυνάτων, 406a2). Attention must be paid to the relation of body and soul, if soul is in ongoing association (κοινωνίαν) with body as agent to patient and as mover to moved, for such association cannot be left to chancing things (τοῖς τυχοῦσιν, 407b17–19). Relationships that are always or for the most part the case cannot derive from chance or accident (see *Physics* ii 4–6 and *Metaphysics* vi 2). Mover and moved, what is active and passive, necessarily or for the most part belong together because these are correlated potentialities (see *Meta.* ix 1).

The predecessors have soul happening to serve as mover of the body through its own motion, thereby possibly also contributing to such other functions as thought. This approach makes less consequential what sort of body is in play. Soul moves the body as if accidentally and by compulsion. They look merely to what the soul should be and specify nothing about the body that receives the soul's action (περὶ δὲ τοῦ δεξομένου σώματος οὐθὲν ἔτι προσδιορίζουσιν, 407b20–21; cf. b15–17). Representative is the Pythagorean tale of transmigration that permits any chance soul to clothe itself in any chance body (τὴν τυχοῦσαν ψυχὴν εἰς τὸ τυχὸν ἐνδύεσθαι σῶμα, b21–23; cf. 406b3–5). Transmigration of souls has the same soul take on an endless variety of

bodies and function regardless of which it enters (see, e.g., Xenophanes DK 21B7, Empedocles DK 31B117, and Plato *Phaedo* 81a–82c). For Aristotle, however, each kind of body must have its own peculiar sort of form (ἕκαστον ἴδιον ἔχειν εἶδος καὶ μορφήν, 407b23–24).[36] Soul and body should go together much as an art and the tools it utilizes: the body provides the soul a set of instruments or organs (*organa*) for its use.[37] But the predecessors have soul enter any arbitrary body as the art of carpentry might clothe itself in flutes (αὐλούς, b24–27). Flutes should serve as instrument for the flute-playing art rather than for carpentry. A carpenter as such knows neither how to play nor even to make the flute (except under another's direction); nor can the carpenter use the flute for sawing and other such functions. To have carpentry take over the flute, in order to move the flute around, is as arbitrary or as absurd as having any soul enter any chance body to move it around.

If the predecessors assign chance bodies to the soul, their view may take on a strange appearance. Instead of having the body's functioning's being determined by the soul, they have the reverse, as carpentry entering into flutes must learn to play the flute. Thus the soul gives various sorts of life and motion depending upon the sort of body it enters. In the Pythagorean myth of transmigration the soul can enter into human, dog, or fish. The clothing of the soul, the body, determines its operations: clothes make the soul. Aristotle holds the reverse, however: that functions determine the instruments. The soul not only moves the body, but it will constitute the body as just the suitable body for its tasks. Any mortal living being must have a body supporting the most widely shared function, nutritive function. The variety of plants and animals shows that many types of bodies support nutritive functioning. The further functions of soul place upon the body additional demands for instruments; the larger the aggregation of functions, the more specialized the body has to be.

Aristotelian reflections may contrast with modern functionalist and computational accounts of soul. For functionalism it seems irrelevant what sort of body might be utilized to support a function as long as the function is performed.[38]

[36] The conjunction here of μορφή and εἶδος also appears elsewhere in this treatise (412a8 and 414a9). Ackrill 1997, 166 suggests that the conjunction prevents the reader from supposing that *eidos* in the sense of species is meant. But in 407b24 the conjunction seems used to prohibit thinking that Platonic Form is intended. Both *morphe* and *eidos* are metaphorical, the former originally meaning the structure of a thing and the latter its look or appearance. That *morphe* more especially means the arrangement or organization rather than merely the shape is indicated by its contrast with *schema* (shape) in *Physics* 245b6–12. *Eidos* is so exploited by Plato that Aristotle adds *morphe* to be more suggestive of his understanding of form. *Morphe*'s tie with configuration suggests that form is not something totally apart from particular things. For a natural being the form is not just shape or arrangement but functionality, else a manikin would be a human.

[37] Aristotle takes over the view of the body as providing instruments for the soul that Plato has prominently in *Alcibiades I* (see 129a–130c). Tools should fit the job. In 407b23 and b25 the Pythagoreans suppose the body a garment put on by the soul (ἐνδύεσθαι). The ancient cloak might be one size fits all, so predecessors dress the soul in any outfit. For the view of body as cloak in a Pythagorean context, see Plato's *Phaedo* 87a–88b.

[38] Burnyeat 1995a, 17 says, "the whole point of functionalism is to free our mental life from dependence on any *particular* material set-up." Yet, as Cohen 1987, 108–109 states, "although the functionalist may

Similarly the cognitivist model simulates mind by a collection of subroutines, for which, again, it hardly matters what constitutes the devices utilized. But Aristotle contends that ensouled beings cannot be made of just anything if body has to serve the soul instrumentally. The principal consideration is that living organisms perform many functions, the higher organisms performing all the lower functions as well, so that the suitable body has more and more requirements placed upon it (see esp. *DA* iii 13). Aristotle seems to have a remarkable explanation of the greater variety of lower types of living organisms. The functionalist account only seems plausible regarding lower organisms in which many types of body support the same or analogous functions.

Do organ transplantations and synthetic organs work against Aristotelian reflections? Would total replacement of all the parts of the body explode the tight fit of soul and body, or is such total replacement based upon imagination rather than real *possibility*?[39] Use of substitute organs requires that they be suited to the functions perhaps much as Aristotle requires. Were it possible to replace all the organs of a living thing, all the new organs would have to be able to serve the multiple functions presently served. Such thought experiments do not necessarily endanger Aristotle's conception because the new organs are being substituted while the soul continues to perform its functions. These cases are not so far removed from the grafting of plants and division of lower animals that Aristotle experienced and could adequately explain (see 409a9–10). Moreover, he could conceive the possibility of something like the transplantation of a new eye (see 408b21–22). The problematic case would be one in which beginning from completely lifeless parts something were assembled that could be said to take on life and even perform such higher functions as sense perception and thought. Yet at a low level this seems to Aristotle to occur in the spontaneous generation of animals. Thus soul might seem to supervene on the proper constitution of the instrumental components rather than serving as form and mover of the body. Spontaneous generation, however, is exceptional, and even in this case the animal comes to be as if soul were in charge (see *Meta.* 1032b23–31 and 1034b4–7).

not believe that there is any particular kind of physical state that is necessary for a given mental state, he may still hold that the mental state must be 'realized' in some physical state or other. . . . For the intuition behind the view is that organisms with radically different physiologies may still be in the same (functionally defined) mental state."

[39] Since the Pythagoreans imagine transmigration and putting on of new bodies like new garments, such thoughts are hardly completely foreign to Aristotle.

4

Criticism of the *Harmonia* View as an Account of Motion

In arguing that it is impossible for the soul to be in motion (see 406a2–3), Aristotle has criticized those predecessors conceiving the soul as a magnitude itself in motion thereby moving the body. Chapter 4 continues the criticisms with regard to a theory that might be supposed very close to Aristotle's own. The view of the soul as a *harmonia* (ἁρμονία), attunement, or concord of the body may advance beyond the crude mobile soul, for example, the Democritean spherical soul atoms or the Platonic world soul moving the heavens by way of its rotational motion. A *harmonia* is not itself in motion and will not travel from instrument to instrument, as soul transmigrating to any chance body (see 407b20–23). The *harmonia* view connects soul closely with body without making soul a magnitude like body. Soul rather serves as proper attunement, synthesis, or ratio of the various contraries that compose the body. Since right above in 407b23–24 Aristotle suggested that the soul might be the form of the body, and form could be some sort of synthesis or ratio (*logos*) of the body, *harmonia* could be the body's form and converge with Aristotle's own view.[1] He must distinguish this view from his own.

The attack on the *harmonia* view constitutes a crucial part of the overall argument. Aristotle's previous rejection of the soul as a magnitude in motion, that is, a substantial bodily being in rectilinear or circular locomotion, leaves open the possibility that the soul might instead be an attribute or accident of the body, much as color or three cubits (cf. 406a16–22).[2] Such attributes only enter into motion accidentally along with the body, so were soul an attribute of the body, soul might

[1] Not only might *logos* be a general account of soul along lines Aristotle could embrace (see 412b9–17 and 414a4–14), but Aristotle himself will also eventually call the sense power a *logos* (424a26–28).

[2] Witt 1995, 178–179 proposes this explanation for attention to the *harmonia* theory. Both the *harmonia* theory and the self-moving number theory tend away from corporeality. In 405b10–12 (and cf. 409b18–21) besides motion and perception, incorporeality was listed as a defining characteristic of soul. All those who select the most subtle and mobile bodies for soul, such as fire or air in preference to water or earth, incline toward incorporeality for soul. The *harmonia* and self-moving number views, dispensing with the notion that soul is itself a body, go further in this direction; of course they appear to Aristotle to stop short of the goal and to take a very wrong turn. Soul should be substantial rather than accidental, yet formal rather than bodily.

cause motion in the body only thereby entering into motion accidentally along with its body. The *harmonia* theory seems a promising way in which the soul could be an attribute of the body, and as an attribute of body rather than body, enter into qualitative change useful for accounting for the various functions of the soul. Another candidate for soul as accidental being, examined in this chapter, is soul as a self-moving number, that is, some sort of quantity. The *harmonia* and self-moving number views perhaps seem connected inasmuch as the one has to do with ratio (of numbers) and the other with number.

Demolishing these theories – one a more materialistic theory of soul as attribute of the body and the other a less materialistic theory – calls into question any view of the soul as mere accident of the body.[3] This may be especially the case since the *harmonia* theory offers the highest kind of attribute of the body, a bodily excellence, while the self-moving number theory focuses on another sort of limit principle. If soul is neither a bodily magnitude nor an accident, it should undergo neither locomotion nor any of the other sorts of motion. In addition, the denial that the soul could be an accident serves to answer the issue raised in chapter 1 (402a23–25) about what genus soul belongs in, substance or one of the other categories of being. If soul is no accident or attribute of the body, then it should somehow be substance, even if not a substantial being as a magnitude. Consequently, when at the start of book 2 he begins to define the soul in light of this argumentation, Aristotle takes it for granted that soul is substantial being. As form of the body, soul can be a substantial being in tight relationship to the body accounting for all the functions of the living being without soul itself entering into motion. He here manages to distinguish like-sounding views from his own while borrowing from them what is workable. Hence, rejection of *harmonia* and self-moving number theories has vital significance for the whole account of the soul.

407b27–408a28 The *harmonia* account of soul, Aristotle comments, is persuasive to many (πιθανὴ μὲν πολλοῖς) no less than the views already considered (407b27–28). *Harmonia* surely appears prominently in Presocratic thought in relation to soul and more generally (see, e.g., Heraclitus DK 22B51, B54; Empedocles DK 31B96; and Philolaus DK 44B6). The *harmonia* conception appeals to Simmias in Plato's *Phaedo* and there receives refutation (85e–86d and 91c–95a). It must be a view that those influenced by the Italian tradition of Empedocles and the Pythagoreans

[3] Perhaps another possible accident of the body that could be soul is motion itself. But it has already been denied that the very being of the soul is motion (see 405b31–406a3), and were the soul conceived to be self-motion this becomes its essence as a substantial being rather than an accident of the body. Since in the *De anima* Aristotle posits soul to explain certain functions, merely to assume that the soul is motion begs an explanatory principle for bodily motion. If this sort of accident is neglected, then the *harmonia* or self-moving number views seem the only types of accidents that might be soul while doing some explanatory work. None of the predecessors has recommended any other sort of accidental being, such as place or time, as soul. And the criticism of both views will eventually expose them as in fact doing no explanatory work, so that other possible ways in which soul might be accidental promise still less.

take seriously.[4] For these reasons Aristotle can say that this position has been persuasive to many, while also asserting that it has been subjected to public audits even in common discourses (ὥσπερ εὐθύνας δεδωκυῖα κἀν τοῖς ἐν κοινῷ γεγενημένοις λόγοις), that is, through Plato's criticism in the *Phaedo* (407b28–30).[5]

The view that soul is *harmonia* seems plausible, Aristotle suggests, because a *harmonia* is a blend (κρᾶσιν) and synthesis (σύνθεσιν) of contraries, and the body is composed of contraries (407b30–32). *Parts of Animals* ii 1 proposes that it is more accurate to say that the materials forming all composite bodies are the contraries wet, dry, hot, and cold rather than the so-called elements, earth, air, fire, and water. Whether the very formula of composition of the body that comprises contraries is the *harmonia* or the composed body itself or the body needs some further attunement awaits clarification, but whichever is the case, the soul may be this *harmonia*. A *harmonia*, whether in music or elsewhere, is an arrangement of contrary factors (see *Physics* 188b15–26 and later in this chapter regarding *Physics* vii 3). It might be especially appropriate to have the soul the arrangement or ratio of such contraries entering into bodies so that cognition can somehow be through like by like (see 409b28–410a13). Yet despite plausibility, and the acknowledgment that body needs arrangement, Aristotle insists that soul cannot be either a synthesis or ratio (*logos*) of the components mixed (τῶν μιχθέντων) in the body (407b32–34).

The terms "mixture" (μίξις), "blend" (κρᾶσις), and "synthesis" (σύνθεσις) can be used by Aristotle in stricter and looser ways. *On Generation and Corruption* i 10 discusses mixture, distinguishing it from synthesis (see esp. 328a5–18). A mixture and a blend have all the components so completely integrated that none of them shows up at even the most microscopic level, for example, salt perfectly dissolved in water (yet salt and water are potentially present in salt water and can be reseparated). "Mixture" applies usually to solid composition, whereas "blend" applies more strictly to fluids (see *Topics* 122b26–31). "Synthesis" gives a less tight composition,

[4] Younger associates of Aristotle, Aristoxenus and Dicaearchus, also seem to have embraced the view of soul as *harmonia* of the body (see Annas 1992, 30).

[5] The phrase τοῖς ἐν κοινῷ γεγενημένοις λόγοις (in common discussions) can refer to Plato's dialogue as much as to Aristotle's exoteric writings or to other writings, and it goes along with the claim that the *harmonia* conception has undergone public audits (εὐθύνας), as political officials did in Athens. Plato's *Phaedo* 92d2 suggests that *harmonia* is a view held by many. And see Aristotle's *Politics* 1340b17–19, which states, "There seems to be in us a sort of affinity to musical modes (ἁρμονίαις) and rhythms, which makes many of the wise say that the soul is a harmony, others, that it possesses harmony." Yet Charlton 1985, 132 says, "H. B. Gottschalk (1971) has suggested that the theory in the *Phaedo* is largely the invention of Plato himself. I find his argument persuasive; and in any case Aristotle knows the *Phaedo* so well that for that reason alone we should expect him to understand the ἁρμονία theory as it is understood there." Probably instead Plato is giving more definite formulation of previous trends of thought. Various commentators have disputed, however, about Plato's and Aristotle's understandings of this theory. The soul on the *harmonia* theory could be (1) the body as attuned, (2) the attunement as an excellence of the body, (3) the ratio that makes the attunement, (4) something supervenient upon the attuned body. Whether (2)–(4) may amount to a nonmaterialist view of soul has also been disputed. Though the *Phaedo* criticizes the *harmonia* theory of soul, the *Timaeus* uses *harmonia* quite prominently in speaking about soul as Aristotle indicates in 406b28–31.

typically with merely a juxtaposition of particles, such as grains of sand. When Aristotle speaks of *harmonia* and synthesis here in the *De anima*, he initially means an arrangement of contraries constitutive either of a body or of the excellences of such bodies, such as health or strength. Perhaps here downplaying the strict distinction between genuine mixture and synthesis (see esp. 408a13–18, where "mixture" seems to replace "synthesis"), Aristotle does avail himself of a further distinction of synthesis and ratio (*logos*). The synthesis is the thing resulting from composition or the attribute that the compound has as compounded, whereas the *logos* is the mathematical ratio of the components entering into the compound. *Harmonia* can therefore refer either to a compounded body, an arrangement of the compounded body, or the ratio of its components.[6] Since the *harmonia* is typically the fine arrangement, the *harmonia* theory of soul means that the soul is the proper adjustment of the body or the appropriate formula of the body's composition. The terminology applicable to *harmonia*, *synthesis* and *logos*, adds to its luster. Aristotle himself in the *Metaphysics* occasionally speaks of his formal principle as a *synthesis* and *logos* (e.g., 1013b22–23, 983a28, 1042a26–31; he does so himself later in *De anima*: 414a13–14, 424a27–28, a31).

Despite the fact that *harmonia* is a *logos* or synthesis of the things mixed, and therefore sounds promising for the soul, Aristotle flatly denies that soul can be either synthesis or *logos* (407b32–34). As previously at 405b31–406a3, 407a2–3, and 407b13–17, he starts out rejecting what he sets out to attack. For Aristotle the soul unifies the body and serves as principle for the functions of the living thing. The *harmonia* view offers little help with these life functions if it makes the soul an accident of the body rather than the nature and causal principle. Though *logos* and *synthesis* can have rich senses applicable to substantial form, they may also designate merely accidental principles, such as health of the body, so that they will not be soul.[7] Yet the inadequacy of the *harmonia* view can be hard to see even though Plato has already refuted it. Aristotle marks the development of his argument in three places by "further" (ἔτι δέ, 407b34, 408a5, and a21). These indicate that Aristotle is offering argument beyond that found in Plato *and* that the *harmonia* theory flounders even with its terminological appeal.

Having denied that soul can be *harmonia* as ratio or synthesis (407b33–34), Aristotle launches into one part of his attack. He right off asserts that the *harmonia* of the body does not move the body, though this is a function that all his predecessors especially assign to soul (b34–408a1). Such a challenge is most appropriate in the present general context of considering how soul explains motion of the body. It

[6] Taylor 1983, 218 gives a fourth possibility for Plato, that *harmonia* could be an entity produced by the ratio of elements but distinct from the elements and the ratio, but he points out that Aristotle mentions this only as an alternative to the *harmonia* theory (221). Regarding the different interpretations of the *harmonia* theory, Taylor says, "Plato did not clearly distinguish the three possibilities" (222), but instead of the compounded body as one of the possibilities Taylor thinks Plato retains the one Aristotle has ignored.

[7] Simplicius *In de an*. 54,11–13 says, "harmony of the parts is a corporeal condition of the qualities of bodies, even if of living bodies, and not life." So living bodies are harmonized, but this *harmonia* is not their soul.

"harmonizes" (ἁρμόζει) better with the facts, he affirms, to say there is *harmonia* in virtue of health (καθ' ὑγιείας) and the other excellences (ἀρετῶν) of the body rather than to say this in virtue of soul (κατὰ ψυχῆς, a1–3).[8] Health and the other excellences pertaining to the body are accidents of it instead of its substantial form and essence. In *Physics* vii 3.246b3–10, in arguing that bodily excellences are not qualities or alterations, Aristotle states,

> we say that all excellences (ἀρετάς) depend upon particular relations (ἐν τῷ πρός τι πὼς ἔχειν). Thus bodily excellences such as health and fitness we regard as consisting in a blending (κράσει) of hot and cold elements in due proportion (συμμετρίᾳ), in relation either to one another within the body or to the surounding; and in like manner we regard beauty, strength, and all the other excellences and defects. Each of them exists in virtue of a particular relation and puts that which possesses it in a good or bad condition with regard to its proper affections (τὰ οἰκεῖα πάθη), where by "proper" affections I mean those by which the thing is naturally produced or destroyed.

This accords with what he is now saying about *harmonia*. The *harmonia* or excellence of the body is its perfection, a condition it takes on owing to the proper adjustment of contraries, much like health or beauty. Such excellences are important to the body, as its excellences are crucial to the soul, yet bodily excellences may contribute to good motion rather than serving to cause motion, whereas excellences of soul cause motion of the living being and make it good motion. Health and strength, for example, impact upon bodily motion, but they are not the principal movers of an animal in the way desire and cognition of soul are. Aristotle can therefore say about *harmonia* as mover, "The absurdity becomes most manifest (φανερώτατον) if someone would attempt to assign the affections and functions of the soul (τὰ πάθη καὶ τὰ ἔργα τῆς ψυχῆς) to some *harmonia*; for it is difficult to harmonize" (ἐφαρμόζειν, 408a3–5).[9] While the soul's operations that in fact move the animal, such as desiring and cognizing, relate to bodily excellences, they are hardly just further exercises of bodily excellences. As noted earlier, excellences of soul, such as courage or skill at house building, are moving causes of animals more crucially than health or strength. Whereas the bodily excellence of health is due to a relation of hot and cold, that is, the ultimate components of matter, Aristotle has moral virtues of soul as relations of pleasures and pains (see *Phys*. 246b20–247a19). The difficulty of explaining psychical functions and operations and even any bodily motions of the living thing merely by *harmonia* of the body should make

[8] Aristotle's use of ἁρμόζει here in 408a (and ἐφαρμόζειν in a5) has some fun with the theory under review and helps explain how the theory might arise. *Harmonia* and the connected verb forms easily take on metaphorical uses that go beyond music as he illustrates. The slight joke that the *harmonia* theory does not harmonize with itself, i.e., does not have the soul understand itself well, is already suggested in Plato's *Phaedo* 92c and 94c, where Socrates complains that the view does not sing together (συνᾴσεται) consistently with itself.

[9] The conjunction of *pathe* and *erga*, if *erga* means works, may amount merely to emphasis upon the soul's operations, with the conjunct epexegetic with regard to affections (cf. 403b9–12 and 409b14–18). *Erga* can also mean functions, so the conjunction could mean the operations and the functional capacities of which these are operations. But starting in 408a5 Aristotle seems specially to attack *harmonia* as explanation of the soul's functional capacities.

manifest that *harmonia* is excellence of the body, such as health, rather than soul or an excellence of the soul.

The next stage of the argument, marked by ἔτι δ' in 408a5, deals with other shortcomings of *harmonia* besides failing to account for operations of the soul (a5–18). *Harmonia* has two important senses, synthesis and *logos*, neither of which works to explain the faculties of the soul. Synthesis, the most prominent sense (κυριώτατα), is the arrangement of a body, that is, a magnitude having motion and position rather than nonbodily magnitudes, tightly enough that nothing of the same kind can be admitted into the arrangement (οὕτω συναρμόζωσιν ὥστε μηδὲν συγγενὲς παραδέχεσθαι, a5–8).[10] Derived from this (ἐντεῦθεν), the ratio (*logos*) of mixture of the synthesis is also called *harmonia* (a9). *Harmonia* is the arrangement or the formula of the arrangement, but neither of these is well said (εὔλογον) to be soul (a9–10). Synthesis proves easily refutable (εὐεξέταστος), since all the different parts of the body are their own syntheses, so syntheses are many and of many sorts (a11–12). Aristotle asks which of these syntheses serves and how it will serve to explain the soul's capacities for intellection, sense perception, or desire (τὸν νοῦν, τὸ αἰσθητικόν, ὀρεκτικόν, a12–13). Presumably if soul is the synthesis pertaining to the whole body, the parts of soul will be the syntheses of parts of the body, but then which synthesis of which part pertains to which psychical capacity and how can it do so?

Earlier Aristotle complained that *harmonia* does not help with the operations of the soul (408a3–5), and now he is adding that it does nothing for the soul's capacities.[11] Are these not connected? If a conception of soul does not explain its operations, it can hardly explain its faculties for those operations. We may well wonder, however, why *harmonia* as a synthesis or syntheses might not give some account for the capacity of cognition and desire. If cognition is through like by like, no one body part's arrangement seems to prepare it to cognize any but a synthesis like its own, and no predecessor suggests that all the various syntheses of the parts of the body allow cognition of the various syntheses of other bodies (see 409b26–410a13). Any theory like the *harmonia* theory runs into what is now called the homunculus problem, though Aristotle makes this less explicit than Plato (see

[10] Simplicius *In de an*. 54,20–25 says, "Fitting together must be of a number of things positioned by each other, with nothing of the same kind coming in between. For harmony and fitting together require a number of objects and join them together. So things that are strictly said to be connected must join together and do so exactly, so that nothing of the same kind as both, if they are alike, or as either, if they happen to be of different sorts, is able to insert itself between them. Thus, if they are of wood, no wood; if of wood and stone, then neither wood nor stone. But there is nothing to wonder at if something liquid like air or water gets in. This is the strict sense of 'fitted [positioned] together' since their position is together with each other." In *Physics* vi 1.231a22–23 Aristotle says, "continuous are those things of which the extremes are one, touching are things in the same place, successive are things of which there is nothing of the same kind between them" (συνεχῆ μὲν ὧν τὰ ἔσχατα ἕν, ἁπτόμενα δ' ὧν ἅμα, ἐφεξῆς δ' ὧν μηδὲν μεταξὺ συγγενές). Any of such arrangements of bodily magnitudes seems a *harmonia*.

[11] The special emphasis upon the *harmonia* theory's inability to account for mind prepares the way for what Aristotle will argue in iii 4. No synthesis of the body could think all the various intelligible objects, many of which cannot be merely syntheses of a body. So mind must be unmixed in order not to be limited.

Phaedo 94b–e). When soul is likened to the organization of some apparatus, such as a musical instrument, a telephone switchboard, or a computer, a human may in fact be sneaked in to use the apparatus to give it functionality, for example, a piano player, a telephone operator, or a programmer. The homunculus becomes the ultimate synthesizer, but on a completely different level, and the explanation of awareness seems begged. The *harmonia* theory must introduce some further actor to empower and to utilize the harmonized body, and this actually is the soul with its capacities.[12] Life functions cannot for Aristotle be reduced to any arrangement of body as such, but a new principle, soul, must be posited to explain them.

Holders of the *harmonia* view might still look to the ratio (*logos*) of the mixture rather than just the synthesis of the body that is mixed, but this similarly is irrational (ὁμοίως δὲ ἄλογον, 408a13–14). Since this is similarly irrational, perhaps it sheds additional light on the difficulty with any bodily arrangement serving as soul. Any bodily part is composed of homoeomerous tissue, such as flesh and bone, each tissue material having its own ratio of composition of the elements. So there might seem to be many souls in the body and even in each part of the body if each of these ratios of mixture is *harmonia* and soul (a14–18). Aristotle particularly mentions flesh and bone because these are referred to by Empedocles (DK 31B96 and B98), and while we suppose the fleshy parts cognitive, it is doubtful that bone perceives (cf. 410a27–b2). Why should a ratio of some bodily parts be sensitive and others not? And if different bodily parts, say the ear and the hand, are both fleshy, why can only one of these hear? Or why should different ratios in different animals allow for similar kinds of perception? Is it because of the same or different formulae of the flesh? The theory inadvertently layers the animal into numerous and overlapping parts each having its own synthesis or ratio, so that each is seemingly ensouled and independent of the rest. Were any ratio of a bodily part capable of explaining a psychical function, it might seem irrelevant whether that part actually belonged to an animal or were separated from it. The *harmonia* theory, which supposedly gives unity to the animal, seems to leave it in shambles, unless there is an overarching soul involving a further *harmonia* of all the harmonies (note how in a different way Plato also refers to the need for harmonies within harmonies, *Phaedo* 93c).[13]

The view that *harmonia* is the ratio of mixture seems particularly pertinent to Empedocles, who has the ratio constitutive of such things as flesh and bone (see DK 31B96 and B98), and so confronts the issue about each bodily part's having its own ratio and perhaps its own soul (408a18–20). Someone might well ask Empedocles whether the soul is merely the ratio of the parts or whether it is something else in addition that arises in the parts of the body (a20–21). For example, is the ratio of earth, water, and fire in bone the very soul, or is the soul something beyond this

[12] Cf. Themistius *In de an*. 24,32–35 and Plotinus *Enneads* iv 7[2].8.17–33.

[13] Charlton 1985, 133 complains about this argumentation, "'There are many ratios of elements in the body, but not many souls' (408a15–18). True, but the theory is not that every ἁρμονία is a soul, but that every soul is a ἁρμονία." Yet, if only some *harmoniai* are souls, which ones? The theory leaves the question unanswered: only those *harmoniai* are souls that explain psychical operations, but how can they explain them?

ratio? Unless it is something beyond the ratio, any living being will have to have many souls within it as it has many ratios of the various parts of the body. While the existence of many souls to account for the functions of the living being is possible, it is hardly an attractive view.

Continuing to look toward Empedocles, Aristotle starts a third level of argument (ἔτι δέ, 408a21) when he attacks a way in which Empedocles may try to have a more unified soul by his talk of Love and *Harmonia*. Is Love causing a chance mixture, as suggested by some fragments (e.g., DK 31B57–62, B98), or is there a definite ratio of the mixture (408a21–22)? And is Love just the ratio, or is it something beyond the ratio of mixture, its cause, so that it might be soul (a22–23)? In DK 31B98 and B105 Empedocles seems to have blood, which is a chance mixture but one involving a fairly uniform composition of all the elements, as thought. Thus a certain ratio or the synthesis might be soul. If Empedocles makes no clear distinction between the ratios of bodily parts and the Love that mixes them, and it hardly seems that he does, then he has the perplexities of the *harmonia* theory (408a24). To avoid the *harmonia* theory's difficulties, Empedocles might make soul something beyond the ratios, perhaps Love (a24–26).[14]

It could be supposed that Empedocles has a supervenience conception of soul. A supervenient soul is something other than merely bodily arrangement, something resulting from the proper bodily arrangement. Unlike the epiphenomenal view of soul that does not permit the soul causal efficacy, the supervenience view allows for causal interaction of the body and the soul. Yet Aristotle's objections to Empedocles' supposing that soul could be something beyond the ratios of bodily parts show that Aristotle is not attacking a supervenience view, one that depends upon some codependence and covariation of soul and body, but instead a view of soul as completely distinct from the body, that is, a soul that is in no way an accidental being in conjunction with the body. When Empedocles allows souls to transmigrate (e.g., DK 31B117: "For I have already once become a boy and a girl and a bush and a bird and a [mute] fish [from the sea]"), this hardly fits a supervenience view. Even the *Phaedo*'s argument against the *harmonia* theory, that it does not allow the soul to oppose and rule the body (see *Phaedo* 92e–93a and 94b–e), makes it fairly evident that Plato is hardly taking *harmonia* as a real supervenience view that permits the soul causal efficacy.

Soul could be something other than just mixture or ratio of the body, but Aristotle has some considerations that might keep Empedocles to the view that soul is the ratio.[15] Were soul something beyond bodily ratio by being completely other in the

[14] Aristotle uses the plural (ταῦτα) in 408a24 regarding the perplexities confronting Empedocles because there is the question about chance versus arrangement in the ratio and also the question about soul being the ratio or something beyond it.

[15] Traditional and modern commentators, according to Charlton 1985, 133–134, have Aristotle defending the *harmonia* theory whereas Charlton himself has Aristotle continuing to attack it: "Aristotle rounds off his argument, I suggest, by trying to show that there is no other version of the ἁρμονία theory more plausible than those he has examined." Charlton is correct that Aristotle hardly wishes to uphold the *harmonia* view, but Aristotle may give reasons why Empedocles should maintain it which leave Empedocles saddled with its difficulties.

way Empedocles suggests in talk of transmigration (as in DK 31B117), why should soul be taken away (ἀναιρεῖται) at the same time as the being of the flesh and the other parts of the animal (408a24–26)? The soul that has nothing to do with body could depart any time. If Aristotle were attacking a supervenience view, this objection would have no force, but it does against the view that soul is fully separate. Moreover, if each body part does not have soul owing to its ratio, because soul is not the ratio of a body part, what is it that is destroyed when the soul abandons the body at death (a26–28)? The soul's departure might leave the body perfectly intact. Surely, if it is insufficient to conceive soul merely as the synthesis or ratio of body parts, since this cannot explain psychical functions and operations, nonetheless the eventual account of soul must also explain the composition of the body and its proximity to soul rather than having a completely distinct soul.[16]

The arguments against the *harmonia* theory tend to focus mainly upon its inability to account for certain operations and functions of the soul and unification of the parts of the body. It ultimately fails to account for these because as *harmonia* it is merely an attribute of the body rather than a substantial being. This is a common pattern of argument: a theory does not build enough into its principles to explain some observed phenomena. There is not the potentiality or power in the conception to account for manifest actualities. But such refutations are problematic. There can be dispute about the phenomena that are to be explained, and there can be dispute about whether enough has been said to account for the phenomena. In addition, the proponent of a theory can build refinements into the theory so that its explicative power seems possibly greater. It remains questionable, then, that there is a final refutation. Debates between materialist and nonmaterialist conceptions of soul seem interminable.[17] Though Aristotle speaks of his predecessors' views as impossible and absurd, it is doubtful that he has yet in book i established clearly what the phenomena are and what is needed to explain them. Only in iii 3, for example, will he argue that sense perception and thought are different. His predecessors can always complain that he is unfair to their theories, underappreciating their explicative power and taking them too literally. Ultimately, Aristotle holds to the basic understanding shared with Plato that the higher cannot be explained by the lower (see Plato *Phaedo* 98c–99b and Aristotle *Meta*. ii 1), so he must therefore ensure that he bestows primacy upon soul. But a certain understanding of *harmonia* may do this, if the *harmonia* is conceived not merely as an attribute of body but as substantial being giving unity and functionality to the body along the lines of Aristotle's substantial form.

[16] Presumably the nutritive soul, involved in developing and maintaining the parts of the body, accounts for all the organic parts, even for the bodily parts needed for the higher capacities of the soul, while the higher sort(s) of soul in the living being is (are) prescribing what instrumental parts are necessary and further unifying the more complex body.

[17] Cunningham 2000, 22 notes, "In recent years, given our increased understanding of physics, many philosophers have substituted the term 'physicalism' for the traditional 'materialism'. The reason is that the physical world contains not only matter but also energy. A term like 'physicalism' broadens the claim to say that everything that exists in this world, including the mind, belongs to the realm of the physical."

408a29–b30 Aristotle draws the conclusion from this chapter so far and the latter part of the previous chapter that it is clear (δῆλον) that soul is unable to be either a *harmonia* or in rotational motion (408a29–30). Earlier in the previous chapter (esp. 406a27–30) it was argued that the soul is not in rectilinear motion. Thus the soul, not being a bodily magnitude, is not itself in locomotion either straight or curved, and Aristotle is well along in arguing that soul is no accident of body, so it also cannot enter into qualitative or quantitative change. Why Aristotle here refers particularly to *harmonia* and circular motion is that he still has more to say about self-motion and accidental being. Does soul move itself when the living thing is in motion or an animal is "moved" emotionally or cognitionally? And there remains for consideration soul as self-moving number that has it as accidental being moving itself.

The soul, Aristotle says, may enter into accidental motion (408a31; cf. 406a16–20). Soul moves itself accidentally because it is within the body that it moves (408a31–33). The soul moves the living being, and from the resulting motion the soul is carried along and in this way is an accidental self-mover. The living being is a self-mover since it has the principle of its motion within it; the principle, however, is only accidentally a self-mover because the living body is what is primarily moved. As argued before, the soul is not a magnitude (407a2–b12), and therefore it cannot itself have any motion according to place (κατὰ τόπον, 408a33–34). *Physics* 213b4–5 says that "motion according to place" is locomotion and growth. Hence the only motion in place possible for the soul is accidental motion as a result of its involvement with body. Yet might the soul have the other sort of motions besides locomotion and growth nonaccidentally, that is, alteration?

More reasonably or on the basis of the way we speak (εὐλογώτερον) someone's perplexity regarding motion of soul derives not from possible locomotion and growth but from our speaking of *soul* as pained, delighted, confident, afraid, angry, perceiving, and thinking, that all seem to be motions (ταῦτα δὲ πάντα κινήσεις εἶναι δοκοῦσιν, 408a34–b4).[18] These cases are perhaps alterations, and we speak of them as if it is the *soul* that experiences them (b4–5). Even were these motions, however, they need not be motions of the *soul*. It is not necessary (οὐκ ἔστιν ἀναγκαῖον) that soul serve as subject for motions, despite the way we speak about it, but the animal or some part of the animal can so serve (b5). In the cases of being angry or afraid, and perhaps also in thinking, the soul may give rise to some locomotion and alteration about the heart (b5–11; cf. 403a30–b1). As in connection with growth or voluntary motion, in cases of "passions of the soul," whatever motion the soul undergoes will be merely accidental to it because of its connection with the living body that directly enters into motion.

[18] The first four of these in 408b2 are given in opposing pairs to suggest that they might be motions. But notice Aristotle's reservation about calling these motions: they merely seem (δοκοῦσιν) to be motions (408b4; cf. 406b10–11). They might more aptly be called activities (*energeiai*) rather than motions (*kineseis*), though for present purposes it is motion that is at issue. Here in 408b3, and again in b6, b9, b14, and b25–26, Aristotle uses διανοεῖσθαι for thinking, and only at b24 does he use νοεῖν. Perhaps if διανοεῖσθαι means discursive thinking rather than apprehension of simple intelligible beings more proper to νοεῖν (see *Post. An.* 100b5–17), at least some thought may be motion. When in 408b24 Aristotle uses τὸ νοεῖν δὴ καὶ τὸ θεωρεῖν, he may cover both the apprehension of simple principles and the exercise of knowledge based upon them.

Aristotle's general project has been to show that motion is *impossible* for the soul (see 405b31–406a3), while his present argumentation only discloses that the passions of the soul do not make motion in the soul necessary (408b4–5). It is not necessary since the motion can take place in the animal or parts of the animal rather than the soul itself. This assists the overall argument. If Aristotle presents compelling alternative explanations for all those cases that encourage the supposition that the soul is in motion, that is, he shows that none necessitates motion of the soul, and he also gives good reasons why soul cannot be in motion, then he seems to have established the impossibility of any motion for the soul except accidental motion.

The soul's passions, such as being angry, afraid, and thinking, Aristotle has indicated, may entail motions in parts of the body (408b5–11). It is hardly the task of this current treatment of soul, however, to say what these bodily motions are and how they arise (b11–12).[19] Though we say the *soul* undergoes passions and motions (b1–4), Aristotle contends that to say that the *soul* is angry is comparable to saying the soul weaves or builds a house (b12–13). He does not deny that we can say the soul does these things, but he points to the strangeness of the phrasing and suggests, "It is better perhaps not to say the soul pities or learns or thinks, but the human being due to the soul" (βέλτιον γὰρ ἴσως μὴ λέγειν τὴν ψυχὴν ἐλεεῖν ἢ μανθάνειν ἢ διανοεῖσθαι, ἀλλὰ τὸν ἄνθρωπον τῇ ψυχῇ, b14–15; cf. 402a7–10 and 408b25–27). The *person* undergoes these with soul as cause. Aristotle speaks of humans so that intellectual operations can enter into consideration. In spite of the way 408b14–15 is phrased with the dative, here he is not turning the soul into the instrument for a human being, as the body undergoing motion provides instruments for the soul, but treating the soul as primary cause in virtue of which the human undergoes and engages in these activities. The soul connects with these activities not because motion occurs in it, but because the soul either sets up motions in the body or the bodily motions lead to the soul (b15–18). For example, in sense perception perhaps the motions proceed to the soul from the sensible objects, whereas in recollection (ἀνάμνησις) motions or abidings starting from the soul lead to the sense organs.[20] Aristotle's principal point is that even if these activities are somehow motions and

[19] Since the passions of the soul only receive treatment in scattered locations in the corpus (e.g., in ethics and *Rhetoric* ii), it seems likely that there are similarly scattered treatments of the bodily motions that accompany them. Prominent texts are those dealing with *pneuma* as vital to animal motion (e.g., *De motu* 7–8). However, if motions occur in the sense media and sense organs during sense perception, a topic merely touched upon in this treatise, nonetheless this remains a topic largely exclusively for this treatise, as will be discussed (see esp. on ii 12.424b3–18 and iii 12.434b27–435a10).

[20] Plato suggests that sense perception arises when motion from outside reaches the soul (e.g., *Timaeus* 45b-d, 67b, and *Theaetetus* 184b-d, 186c). Recollection may go for Aristotle the other direction from the soul until motions or states of abiding are set up in the sense organs (ἡ δ' ἀνάμνησις ἀπ' ἐκείνης [i.e., the soul] ἐπὶ τὰς ἐν τοῖς αἰσθητηρίοις κινήσεις ἢ μονάς, 408b16–18; cf. *De mem*. 451b16–18 and b28–31). Perhaps μονάς is best translated as "abiding," to suggest either resting or persisting. Recollection is a process of reasoning that may settle on a *phantasia*, i.e., appearance or recognition regarding what we are trying to recollect, e.g., where we left something. Since *phantasia* may be motion in the sense organs, and recollecting may be recognition due to selection of one of the motions and a settling down of the motions in the senses or the establishment of a pattern of motions, Aristotle speaks of recollection as leading possibly to motions or abidings in the sense organs.

involve motions going toward or starting from the soul, they need not be motions in or of the soul.[21]

Aristotle indicates in this discussion without finally asserting it that enjoying, sense-perceiving, thinking, and so on, may involve bodily motions (locomotions or alterations, 408b5–18). The clear cases are being angry or afraid, which cause heating or cooling around the region of the heart (b7–9; cf. 403a16–b1). These surely occur "with the body" (μετὰ σώματος). Should the case be the same for the more purely cognitive operations, such as sense-perceiving and thinking?[22] The case of thought and mind is especially obscure (408b18–30). Hence Aristotle's general solution, that the motion connected with the soul occurs in the body or animal rather than soul itself, questionably applies for thought. But this may suggest that the solution holds for sense perception and some motions of the sense organs and within the organs are likely during it.

Mind, Aristotle observes, seems likely to be a substantial being within us (ἐγγίνεσθαι οὐσία τις οὖσα), and one that is imperishable (οὐ φθείρεσθαι, 408b18–19).[23] If

[21] Wedin 1988, 10–11 comments, "If we think of the person as a psychological system consisting of a soul and certain physical structures, then Aristotle is recommending that a function or property of the system as a whole be explained in terms of one of its parts or subsystems. Aristotle's admonition against saying that the soul perceives is not a plea for linguistic reform. The idiom is natural enough but will not do when speaking strictly. The point, rather, is that attributing to a part of the system what is properly a function or property of the system as a whole involves mixing of levels. This is true even when the part in question is the one in virtue of which the system as a whole manages the function in question." Wedin suggests that Aristotle continues his strategy of explanation: "Just as the person, as a system, was decomposed, cognitively speaking, into soul and physical structure so now the soul itself is broken down into finer cognitive units – into the so-called δυνάμεις, or faculties of the soul. To explain, in other words, how the soul manages thinking involves, in this model, appeal to some part of the soul in virtue of which it does this. . . . Rather than saying that the soul thinks, we ought to say that it thinks in virtue of one of its parts, namely the νοητικόν, or that which thinks. But since we know that it is the system as a whole that thinks, the correct thing to say is that the person thinks *in virtue of* the faculty of thought. This is because the soul is a complex of related capacities and not something additional. From this point of view one might think of *De Anima* as a whole as pursuing a top-down strategy familiar to cognitivists." We may have some reservation about Wedin's talk of soul as a complex of faculties.

[22] Even if they occur with the body or not without the body (οὐθεν ἄνευ τοῦ σώματος, 403a6), need this mean that motions have to occur in the body along with the awareness constitutive of the cognition? Burnyeat 1995a and 1995b grants that cognition occurs *with the body* – i.e., there must be sense organs, and so on, properly situated – but holds that cognition is purely awareness with no further or accompanying motions in the body. He further claims that this is the traditional interpretation of Aristotle in the ancient commentators. If bodily motions do not accompany all operations of the soul, little of the discussion of soul seems pertinent to physics. But Aristotle's arguments that sense and mind can dull with age and are impacted by diseases and drunkenness, as well as the impairment to sense from too-intense sensible objects, gives evidence that some motions are occurring in bodily organs during cognition. Deterioration of the organs has some detrimental affect on the way motions take place in the organs. And he more directly deals with motions in the sense media and organs in 424b3–18 and 434b27–435a10.

[23] Aristotle says that mind arises in us (ἐγγίνεσθαι, 408b18). Since what arises may perish, this may raise questions about mind's imperishability since it might undergo substantial change. But were mind to arise in us from outside, e.g., from teaching, and from being already fully in existence inasmuch as there is knowledge, this difficulty might be overcome.

there are arguments for the imperishability of mind, and these require its separability from perishable matter, then mind will seem a substantial being. Surely Plato's *Phaedo* presents arguments for the imperishability of soul and mind in particular. If mind is imperishable, it should hardly be vulnerable to substantial change. Yet mind dims with age and so may be perishable (b19–20). But Aristotle proposes that the case of mind and old age might be like that of the sense organs (τῶν αἰσθητηρίων), where if the elderly could gain a new eye, the person would see as the young person does (b20–22). Dulling with age results not from the soul's undergoing change (ὥστε τὸ γῆρας οὐ τῷ τὴν ψυχήν τι πεπονθέναι); rather the bodily organs with which the soul is connected undergo something, as in drunken bouts and diseases (b22–24). Diminished functioning is thus attributable to bodily changes rather than any changes in soul, and hence the soul may be imperishable after all.

Aristotle relies on the thought experiment of organ transplantation to answer the objection that dulling with age shows sense and mind vulnerable. What confidence can he have that age affects the bodily organs rather than the soul since he is in no position to try the experiment of substituting a new sense organ? He nonetheless has some good evidence at hand that goes beyond thought experiment. Drunkenness and disease clearly impact upon both sense perception and thought (408b23–24). But generally the impairment is temporary, and return to sobriety or health restores the previous powers of sense-perceiving and thinking. Aristotle makes the assumption that may seem question begging, but that we probably readily accept, that our return to sobriety or health leaves our basic cognitive power just the same as before, so the soul is unchanged.[24] If our cognitive powers resume with the restoration of the body, the soul has retained the capacities all along and the instrumental body is subject to change and so may impede. He might have illustrated with sleep as well, but the role of the body would be less clear. The soul seems to be subject neither to aging nor to incapacity from disease or intoxication, but the human being is the subject of such disability. Dulling with age in fact tells nothing about how lasting mind is, but it confirms that thinking somehow involves the entire psychophysical complex. Mind, even if a substantial being (b19), is not itself subject or substratum for motions, but as with all psychical operations any related motions occur in parts of the body. Thinking (τὸ νοεῖν) and contemplating (τὸ θεωρεῖν) may fade by corruption of the body, whether temporary as with diseases and inebriation or permanently as with age, but mind as such is unaffected (ἀπαθές) by what occurs to the human being (b24–25; cf. 405b19–21). Thinking (τὸ νοεῖν) may be apprehension of simple beings and principles and contemplating (τὸ θεωρεῖν) putting knowledge to use, so these are perhaps meant to cover all sorts of intellection. This suffices to show that mind need not be vulnerable to perishing and that it therefore may be a substantial being unaffected by its operations.

[24] Soon in 409a9–10 Aristotle asserts that plants and many animals that are divided live and have the same form of soul in the multiple divisions. This is another argument that soul remains the same through bodily change. We might further argue that haircuts, loss of limb, overintense sensible objects, fatigue, sleep, etc., leave the soul the same.

What might be supposed passions of the mind, thinking (διανοεῖσθαι) and loving or hating, that is, cognitive and affective activities, really are passions of the living body or person having the mind (408b25–27). Previously in b14–15 Aristotle said it is "better" to say that the person rather than the soul pities, understands, or thinks, but now he denies altogether that such activities are passions of mind or soul. Always the body or whole animal has some involvement as evidenced by the dulling of mind. The statement is carefully worded: "Thinking and loving or hating are not passions of that, but of that which has that, in which way it has that" (τὸ δὲ διανοεῖσθαι καὶ φιλεῖν ἢ μισεῖν οὐκ ἔστιν ἐκείνου πάθη, ἀλλὰ τουδὶ τοῦ ἔχοντος ἐκεῖνο, ᾗ ἐκεῖνο ἔχει, b25–27). The gender of "that" (ἐκείνου) shows that he speaks of mind, and what has it is the body or person rather than soul, again indicated by gender.[25] Not merely mind but the living body and human being having mind are engaged in thinking and loving or hating, and *in which way the body or person has mind*, that is, because of mind and in relation to the sort of mindfulness. It is only as having mind that certain of these passions are experienced, and the character of the person and intellectual capacity, both connected with body, affect the way thinking and loving or hating emerge. Loving and hating, depending as they do on mind and character and so largely restricted to humans, are vulnerable to whatever affects the person. As the human suffers serious bodily corruption (φθειρομένου), he or she remembers and loves no longer (b27–28). The dead presumably neither love nor remember (cf. 430a22–25), but sufficient degradation of the body prior to death also impacts upon loving and remembering, for these are affections not of mind but of the person that has suffered bodily corruption. That the way in which mind is possessed, which pertains to the body, determines what the person experiences in thinking, loving, hating, shows that these are affections of the person rather than the mind alone. Bodily deterioration destroys not the mind, but that which is common (τοῦ κοινοῦ), that is, the human being, composed of both soul and body (408b28–29). Mind is unaffected (ἀπαθές) and more divine (θειότερόν τι) than that which possesses it and undergoes the passions (b29–30). Even were emotions, sense perception, and thought motions, the motions would belong to the living body or human or animal as subject rather than to the soul or mind.

Aristotle seems to have succeeded in arguing that the animal or human being is the subject for all psychical operations. Not only does this accord with our ordinary way of speaking and serve to protect soul and mind from having to enter into motion, but also it precludes Aristotle's succumbing to the lure of any sort of homunculus. Since it is the animal or person that is perceiving, thinking, loving, and so on, though clearly this is *by means of* the senses or mind, there is no tiny consciousness within that is the true center of awareness. Aristotle does not have to sneak in a further person or animal to explain awareness if the animal or human being is already the primary subject of all psychical operations.

[25] In fact the following lines (408b27–29) may indicate that Aristotle in b25–27 speaks of the human *body* even more than of the human as having mind.

Though the human being perishes, mind is something more divine and unaffected (ὁ δὲ νοῦς ἴσως θειότερόν τι καὶ ἀπαθές ἐστιν, 408b29–30). Mind can be more divine than the person who has it if it has a superior function or is more lasting. In the ethics (see *NE* ix 8.1168b28–1169a3) and metaphysics (see *Meta*. vii 3.1029a26–33) Aristotle similarly contends that the most authoritative part is higher than what it constitutes. His argument is not now for imperishability, however, but only for being unaffected, and hence perhaps also imperishable and divine. It is enough to show that thinking, perceiving, or feeling, or diminishment in the person's ability to do these, need not mean there is any motion or change in the mind or soul but only in body or living being.[26]

This argumentation that not the soul but the animal is the subject of psychical operations or motion aids rejection of the view that soul could be an accident of the body or animal. The soul may retain its powers through bodily disability such that restoration of the body or acquisition of new body parts permits resumption of good functioning. Having such powers and some independence of and imperviousness to what occurs in the body, the soul has a different status from mere accidents. For the *harmonia* account of soul, which may have soul as an accident, it seems clear that changes in the body directly affect the *harmonia*. The way Aristotle argues against change in the soul points to its being substance rather than accident, as befits the nature of every natural being.

The argumentation from 408a29–b30 only establishes the *possibility* that soul is not in motion. For the animal or human to perceive, think, enjoy, and so on, which we speak about as if the soul is moved, it is "not necessary" that the soul enters into motion (b5). The motion, if psychical operations are motions, may pertain to the living being and its body rather than to the soul. But Aristotle quickly concludes that the soul is not able to be in motion (b30–31). It can have no motion in itself but merely accidental motion as the ensouled body is in motion. Apparently his account of the way it is possible for psychical operations and corruptions to occur to the animal and its body as subject fits so well with the previous argumentation that he is ready to say that motion cannot occur in the soul. Soul is not a bodily magnitude, so it lacks locomotion and probably other motions as well. But if it is no accident of the body or animal, being rather some sort of unaffected substance, causing motion in the animal while itself unmoved, then it definitely lacks all motions, except accidental motions. If he can now eliminate all possibility of self-motion, then motion seems impossible for the soul.

[26] Aquinas *In de an*. §§147–149 and 163–166 seems so concerned that Aristotle appears to prove too much, that any sort of soul can be immortal since change is merely change in that which has the soul, that he insists that Aristotle is only arguing from assumptions of those who allow that all soul is immortal, i.e., the Platonists. It very much looks, however, as if Aristotle needs to embrace the argument that soul is unchanged through recovery from drunkenness or disease. In iii 4.429a29–b10 clearly the sensitive power is ἀπαθές as well as mind, though they are unaffected in different ways. That soul is unchanging hardly means it is imperishable. *Metaphysics* vii 8 explains that forms do not come to be or perish through a process in the way in which composite beings having matter do. Nonetheless, principles and causes can be generable and destructible without a process of generation and destruction (see 1027a29–30).

408b30–409a30 Aristotle concludes from the argument of 408a29–b30 and his previous critique of his predecessors in chapters 3 and 4 that soul is unable to be in motion (οὐχ οἷόν τε κινεῖσθαι τὴν ψυχήν, 408b30–31). If generally the soul cannot be in motion, that is, the soul has no motion other than accidentally by being in a body that is in motion, then it should not move itself (b31; cf. a31–34). But a position advocating self-motion for soul, as unpromising as it already appears, remains for scrutiny. This is the self-moving number view, mentioned previously in 404b27–30 as pulling together the fundamental conceptions of soul as mover of the body and as engaged in cognition. Return to this view completes consideration of soul as mover and self-mover and prepares for treating cognition. The advocate of self-moving number, most likely Xenocrates, wishes to view soul especially as mind, because mind is most likely a self-mover, and hence Aristotle's particular concern to deny motion for mind in 408a29–b30. The self-moving number conception leaves ambiguity on the issue of soul as substance or accident. Its advocate probably supposes it makes soul a substantial being. But soul as a *number* moving itself has affinity with the soul as *harmonia* or ratio, so examining it also exhausts the attempts to have soul as accidental being. Rejection of the self-moving number position shores up the denial that soul is an accidental being and removes any remaining possibility of motion for soul.

Aristotle calls this recent theory of the head of the Academy the "most unreasonable" of all (ἀλογώτατον, 408b32–33). We perhaps expect intellectuals to be most critical of those nearest them. Xenocrates' number moving itself is open to two sorts of objections, all the impossibilities of motion in the soul and its own peculiar difficulties of conceiving soul as a number (b33–409a1). The theory may suffer internal tensions. Number seems a formal principle, but once motion pertains to it, it should become a bodily magnitude. Aristotle attempts to explode the theory as both a formal and a material view of soul. The objections proceed from the most general to those based upon more assumptions, that is, as indicated from the formalist to the corporealist construal of the theory. The considerable discussion (*logos*) devoted to this view may show it most unreasonable as being open to lethal attack from several directions – it has in itself all the difficulties of the theories previously considered – but this hardly means that it is the worst of the views considered.

As with many of his predecessors' theories, Aristotle construes the number moving itself position in a pedestrian way. Its advocate probably takes number to mean Form-Number. For the Platonist the whole realm of Forms is alive and a mind, as explained previously. Since the Forms associate with each other, they seem to have self-motion. Number moving itself thus is quite figurative. And if Number actually means some relationship or *logos* of the Forms, then this position can be seen as a major refinement of the *harmonia* view. Whereas *harmonia* has soul as a *logos* of bodily components, but a *logos* rather functionless, the self-moving Number conception makes the soul a *logos* that is more substantial and functional. If interpretation along these lines is correct, the order of treatment of this chapter becomes even more plausible. The most charitable interpretation of this view will have it quite convergent with Aristotle's own conception of soul. Despite Aristotle's

insistence that this is the most unreasonable of the theories of soul, this applies only to its flat rather than the charitable interpretation. By his flat interpretation and questionably fair refutation, he separates out what is figuratively compelling in the view from what taken straightforwardly cannot hold. He will have to reconceive the promising figurative side of the conception.

Much ancient thought about number favors construing number as a definite multiple of units. Because every number is a number *of something*, only integers can be numbers. The first number would therefore be 2 since 1 is not a multiplicity of units but the principle of numbers.[27] Were the soul then literally a number, it should be a definite multitude of units of some sort. Now, units as conceived and employed mathematically are partless and undifferentiated. Aristotle consequently asks how we should conceive a unit moved, and by what and how (409a1–3). Mathematical units as partless and undifferentiated do not enter into motion. As undifferentiated units none can serve specially as mover or moved (κινητικὴ καὶ κινητή, a3), and Aristotle argues in the *Physics* that nothing partless can be moved (240b8, 241a6; cf. 194a1–5). Locomotion is impossible for the partless because such motion requires progressive change in place by parts, and the other sorts of change cannot occur to what is uniform and partless. Thus whatever is composed simply of mathematical units is immovable, except accidentally. This argumentation vitally depends upon Aristotle's rejection of the possibility of self-movers that are partless, and this depends upon his rejection of motion for incorporeal beings. Could partless incorporeal beings be in motion, other than accidentally, they might be self-movers with no distinction of mover and moved, and hence all the units or aspects of the unit would be self-movers.

Further argument (marked by ἔτι δ') continues pushing progressively from units to points to lines to planes to bodies to prove that expanding upon the mathematical conception fails to remove the difficulty about motion (409a3–7). Suppose that soul as a number, that is, a multiplicity of units, were in motion. Lines in motion form planes, and points in motion form lines, the Platonists say (φασι), so the motions of units will generate lines (a3–5). Points are units with position; the soul as number has units, and as located in a body these have position (a6–7). Then if the soul is in motion, it will be generating lines, planes, and even solids also in motion along with it. Aristotle considers this so uncompelling a result that he does not bother to draw the conclusion, which is that generation of lines, and so on, is not the generation of life that we should expect from soul.[28] Or, to state the complaint more fully, animals swim, run, walk, fly, sense-perceive, think, and so on. If the soul's motion only results in mathematical lines, planes, and solids in motion, this has little obvious connection with the variety of animal functions and operations.

[27] For number as a multitude of units, see *Meta.* 1053a30, 1039a12, 1001a26, 1089b1, and b9. This hardly means that the ancients could not treat 1 as a number, but this was not the preferred line. The ancient understanding of number is discussed at length in Klein 1968, where it is shown that number is "ontological" in antiquity, i.e., refers to countable things, whereas the modern view has number as "symbolic" such that fractions, irrational magnitudes, and complex numbers that are not numbers of things can all be treated as numbers.

[28] Compare the interpretations of Aquinas *In de an.* §170 and Ross 1961, 200.

Furthermore (ἔτι δ᾽), subtracting a unit or number of units from a number leaves another number (ἄλλος ἀριθμός, 409a7–10). Were soul a number, and especially if as just suggested as with a number of units or points, subtracting from it should give rise to a different number and sort of soul. But plants and many animals may live when divided, and each division has a soul exactly the same in form.[29] It might be objected that dividing the plant or animal – rather than the soul – hardly takes something from the soul, but this seems precisely what Aristotle highlights. There is no easy way to take anything from the soul, as we take from numbers, and therefore the soul numbers are quite disanalogous to other numbers. We might like Aristotle instead to consider aging, forgetting, sleeping, fainting, coma, and so forth, as subtractions from the soul, but these were mentioned previously (408b19–24) and the relationship to number is still dubious. Souls seem to be *wholes* that are only complete rather than breaking up cleanly, since dividing certain living things results in new living things each having a whole soul of the same type, whereas a number is all the units (πάντα) or the sum (τὸ πᾶν) from which units can be taken rather than a strict whole (ὅλος, see *Meta.* v 26.1024a6–10).

Having allowed the units composing the soul number to have location and be pointlike (409a6–7), Aristotle now permits the units some magnitude: "It would seem similarly to make no difference whether we speak of units or small corpuscles" (δόξειε δ᾽ἂν ὁμοίως μηδὲν διαφέρειν μονάδας λέγειν ἢ σωμάτια μικρά, a10–11).[30] Hence, the units composing the self-moving number conceived as small corpuscles turn out much like Democritus's spherical soul atoms, and especially if the atoms are reduced nearly to points. Reduced nearly to points, the atoms retain quantity (τὸ ποσόν), if little else, this quantity being both the discrete quantity of the number of atoms and the minuscule continuous quantity of magnitude of the corpuscle (a11–13). Thus the self-moving number conception becomes a corporealist view, even if the corpuscles are exceedingly small. In the case of a continuous magnitude that undergoes motion due to itself, something must be mover and something moved, and this must apply as well for the collection of minuscule corpuscles. Need for mover and moved is unaffected by large or small magnitude (a13–15). Consequently, the units of soul as self-moving quantity need to have something moving them (a15–16). Now, since the soul is what moves the animal, soul should be what moves the number, that is, the set of units or atoms, and so there is no reason to take the soul to be both that which moves and that which is being moved; but soul is exclusively that which is mover (a16–18).[31] Could this soul that is exclusively mover be any of the units (a18–19)?

[29] This is the first mention of an experiment to which Aristotle will often return (see 411b19–27 and 413b16–24). Many plants and smaller animals when divided either have each of the divisions grow back into a complete living being or at least the divisions survive on their own for a time; i.e., each division receives a complete soul. This experiment may seem to work against the *harmonia* view of soul as well. Division of body would damage the *harmonia* but should leave the soul completely intact. On Aristotle's references to vivisection, see Ross 1955, 297.

[30] Most manuscripts instead of ὁμοίως μηδέν have οὐθέν in 409a10. An advantage of adding "similarly" is that it might tie this argument to those preceding, especially earlier when units were likened to points (a6–7).

[31] As suggested with regard to 409a1–3, those advocating soul as self-mover are unlikely to have soul divisible into some part that is mover and some part that is moved. For them soul is all completely

For one or another of the point-units to be mover, it must differ from the others, but these differ only in position, and this is insignificant for the purpose (a19–21).[32] This argumentation, which sounds much like that of 409a1–3, differs to some extent because previously the units were considered merely partless units whereas now they are bodily magnitudes, though still lacking sufficient differentiation to permit any to be movers.

But now if the soul's units have become points, that is, they have locations, how will these relate to the points of the ensouled body itself? If the pointlike soul units have position and might be distinguished from the points of the body, then the soul units will nonetheless have the same locations as points of the body (409a21–23). But if two sorts of things may share the same location, why not infinitely many occupying the same place since now the units of soul are not even distinguishable from body by position (a23–24)? Aristotle suggests that things indistinguishable by place, as here soul and body are assumed to have the same place, must be the same things (a24–25). Of course for this to hold he means *extended magnitudes* cannot *at the same time* be in the same place. Soul cannot be just another extended magnitude occupying the same place as its body, yet this may seem what results on the self-moving number view. It seems inexplicable, then, that some set of unit points rather than another set not even distinguishable by location should be said to be mover and soul. And if the number of points of the body seems to be the number of the soul, that is, their number of points match up one-to-one, or the number of points in the body just is the soul, in either case, since every body has points, why will not all bodies have soul (a25–28)? The alternative set up here is that either there are as many unit-points in the soul as there are points in the body, or the soul as number is merely the number of points in the body.[33] And Aristotle insists that all bodies seem to have points and infinitely many points (ἄπειροι, a28). But then if the points have any magnitude, then no finite body could have infinitely many such points, and if they have no magnitude and are infinitely many, then they have no definite number to be number of the soul. Clearly any body has infinitely many dimensionless points, if only potentially rather than in actuality.[34] In 409a24 it appeared that the self-moving number account has infinitely many points in the very same location, and now infinitely many locations belong to every body, so according to the theory infinitely many souls infinitely many times over might absurdly pertain to each body.

self-moving, so Aristotle's seeking to differentiate mover and moved problematically depends upon his own assumptions rather than theirs.

[32] A possible side argument is that were one unit or another capable to be mover, then it would be the soul and the rest of the number of units is otiose (see Simplicius *In de an*. 63,29–64,18). Again number rather than unity would be inappropriate for soul. Yet were soul a single point or corpuscle, how would it divide into mover and moved?

[33] The possibility that soul is just the number of the points in the body has the soul merely an accident of the body, much as the *harmonia* theory that has the soul as composition or ratio of the contraries of the body makes it an accident. Whether the soul has the same number of points as the body or the number of points of the body is the soul's number, if every body turns out to have soul, why need there be souls at all to be movers?

[34] Simplicius *In de an*. 65, 2–3 suggests, then, that soul as a number in ensouled beings will have to be only in pontentiality rather than in actuality.

This argumentation has supposed that the soul might be a number of units related to the number of points in the body, and that all bodies have soul. But now Aristotle can go further (ἔτι δέ), to argue that not only could there be no body without soul but also no soul without body, that is, soul in any way separate from body (409a28–30). Since the points of bodies cannot be separated (χωρίζεσθαι) or released (ἀπολύεσθαι) from the bodies, souls associated with the points of bodies would be incapable of separation or release from them. Presumably Platonists wish the soul to be somehow separate from the body, but this seems prohibited by their present assumptions about soul as self-moving number. The only escape would be if lines divide into points; that is, not just bodies but other mathematical entities are composed of points, because then soul might be separate from body as mathematical entities and limit principles of a body might be separate. At issue is whether soul as self-moving number is a limit principle of body merely as a mathematical entity, such as line or number, or whether it might be the formal principle of body in a way that Aristotle might embrace.

Whether the units composing the number of soul are taken to be simply mathematical units or units having a location (i.e., points) or physical points having some magnitude, motion remains inexplicable. The formalist and materialist interpretations of the self-moving number theory of soul succumb to absurdity. Since some interpretations and refutations of the self-moving number conception have soul as an accidental feature, the argumentation here, along with that given the *harmonia* conception, seems to have exhausted the possibilities for soul as anything but substantial being, and not a substantial being as an extended magnitude.

5

Criticism of Predecessors' Way of Accounting for Cognition

409a31–b18 The first part of chapter 5 completes the examination of the self-moving number theory of soul.[1] In words reminiscent of 408b32–409a1, Aristotle announces:

> It results (συμβαίνει δέ), just as we said (καθάπερ εἴπομεν), that in one way this view says the same as those holding that soul is some sort of fine-grained body (τοῖς σῶμά τι λεπτομερὲς αὐτὴν τιθεῖσι), in another way, just as Democritus stating motion is caused by soul, it has its own peculiar absurdity. (ἴδιον τὸ ἄτοπον, 409a31–b2)

We are getting the result of the previous examination of soul as a number that moves itself. "Just as we said," appearing prior to any indication of what has been said, can refer to the places in which Aristotle has spoken of fine-grained body (λεπτομερής), that is, 405a5–7 and a21–22, or to the passage in which the units in the self-moving number were likened to small corpuscles (409a10–11), or to Democritus's way of having soul as mover of body (406b15–22 and 409a11–15), or to the passage opening the reflection on the self-moving number conception (408b32–409a1), or, perhaps most likely, to the whole previous discussion of self-moving number (408b32–409a30). Resembling many of the thinkers who sought for soul the subtlest and most fine-grained body, the self-moving number view has soul as number composed of units. Aristotle has compared these units to points and even tiny corpuscles, as if Democritus reduced his soul atoms to points (see 409a10–12). But whereas the Democritean fiery soul atoms are corpuscles merged with other atomic corpuscles, Aristotle has been suggesting that the point-units of the self-moving number occupy the same locations as the points of the body that they move. Accordingly he states that soul is in all the perceiving body (ἐν παντὶ τῷ αἰσθανομένῳ σώματι) and it is necessary that two bodies be in the same place, if

[1] The appearances of συμβαίνει, "it results" (409a31, b7, and b12), mark the discussion as summing up consequences. Chapters 4 and 5 were perhaps divided where they are, by whoever divided them, because it is such a lengthy treatment of consequences and this section starts to mention cognition, such as calculations and perceptions (409b16), which leads into the major topic of chapter 5. The surprising and unprecedented length of the replay of the consequences of the self-moving number view perhaps has to do, as indicated, with the genuine power of the view when most charitably interpreted.

soul is a kind of body (409b2–4). Specifying the body as perceptive, perception requiring soul and pertaining to the entire animal body, guarantees that soul is throughout the body with the consequence, as noted before (a21–24), that two bodies will be in the same place. This is the peculiar absurdity of the self-moving number view (see b1–2); the others having soul move the body by itself being in motion do not end up having more than one body in the same place.

Those who say soul is a number do not merely have two bodies in the same place, but many, perhaps as indicated before infinitely many, since they have to acknowledge that many points can be in the same location as any one point (409b4–5; cf. a23–24). The other likelihood following from their view is that every body will be ensouled inasmuch as all bodies have points (b5; cf. a25–27). So long as either soul is merely the number of the points in any body or the soul has the same number of unit-points as the points of a body (see a25–27), these absurd consequences follow. The only escape for them will be to have the number that is soul differing from and other in kind than the number of the points in a body (b5–7). Only by making the soul some peculiar kind of number can they prevent many bodies from being in the same location or every body from having soul. Without elaborating, Aristotle seems to indicate that they have to flee the flat interpretation of number moving itself, but his comment in 409b5–7 about a different sort of number indicates that they well might do so as well as his awareness that he at length abuses a contemporary's theory that could be much like his own.

It results from the self-moving number theory that the living being is moved by number much as Democritus has the animal moved by spherical soul atoms (409b7–11). Because the units of soul number are themelves in motion in place (φερομένας) they differ little from Democritean atoms. Aristotle most stresses the way in which these views have the movers themselves in motion with the sort of motion that they cause. Later (b14–18) he complains that the self-moving number view does not help with the operations and affections of soul, since how will point-units in locomotion and causing locomotion explain other sorts of operations, such as calculations, perceptions, pleasures, and pains?

This view that weaves together (συμπλέξασιν) motion and number gives rise to all the difficulties elicited and also many others similar, for not only is self-moving number an impossible definition of soul but it disappoints as well as an accident of soul (409b11–14).[2] "Weaving together" (συμπλέκειν) has such overtones that Aristotle uses it rather exclusively in reference to Platonic views (cf. 404b29, 406b28, 428a25–26, and 432a11). The evidence for the pronouncement that number and motion do not together constitute the definition of soul's essence or even an essential accident of soul is that the account contributes nothing toward explaining the soul's affections and functions, such as calculations (λογισμούς), perceptions, pleasures, pains (409b14–18). Aristotle has been contending that soul is not itself in

[2] These lines are helpful for understanding Aristotle's logic in dialectical argumentation. If he explodes all the possibilities or likely possibilities for a theory or definition, then he takes himself as justified in calling the theory or definition impossible (ἀδύνατον, 409b14). This accords with Aristotle's previous claim that it is impossible that motion belong essentially or other than accidentally to the soul (405b31–406a3). Dialectical argumentation must therefore be orderly and thorough to establish impossibility.

any but accidental motion (see 408a31–34), so attributing both motion and number to it might offer nothing. Even could this view somehow explain locomotion, it could do nothing with other operations. Aristotle may mention "calculations" to cover both theoretical and practical reflection. That the self-moving number view should contribute nothing to understanding mathematical calculations or the practical thinking that controls voluntary animal motion is especially disappointing. Back in 402b26–403a2 definitions that do not give rise to any insight into the essential accidents of what is defined were labeled dialectical and empty. Moreover, the *harmonia* theory, which has to do with ratio of numbers, cannot account for motion and the other functions of the animal (408a3–5). Hence Aristotle's comment "for just as we said before, neither can we even readily guess from them" (ὥσπερ γὰρ εἴπομεν πρότερον, οὐδὲ μαντεύεσθαι ῥᾴδιον ἐξ αὐτῶν, 409b17–18) how to explain such functions on the basis of such accounts of soul, refers primarily to 402b26–403a2 but secondarily to such passages as 408a3–5. The self-moving number view fails to deliver the essence of soul that could explain its various operations, and because these operations are no kinds of self-moving numbers no benefit derives from taking self-moving number as an accident of soul.

Theories that may conceive the soul as an accident of the body, such as the *harmonia* and self-moving number theories, offer no help in accounting for the soul's functions. Neither ratio nor number seems successful at accounting for the operations for which soul is posited. Most annoyingly neither these theories nor any of those having the soul as an especially mobile body fare well in explaining animal rest and motion for which soul was posited in the first place. Thus running frustratingly into absurdity in attempting to explain how living things move themselves, will the predecessors succeed with cognition?

409b18–410a22 Back in 405b11–12 three defining marks of soul were listed, motion, perception, and incorporeality, to which Aristotle now refers (409b18–19). The arguments so far developed in chapters 3–5 challenge the predecessors' efforts with motion and incorporeality. In order to make the soul most capable of moving things some have the soul self-moving and others give it the finest-grained parts or have it as most incorporeal (οἱ μὲν τὸ κινητικώτατον ἀπεφήναντο τῷ κινεῖν ἑαυτό, οἱ δὲ σῶμα τὸ λεπτομερέστατον ἢ τὸ ἀσωματώτατον τῶν ἄλλων, b20–21). Perplexity and opposition have been seen to plague these efforts, and it only remains to consider the predecessors' forays into cognition (b21–24). Because chapter 2 has disclosed that those emphasizing perception generally compose the soul of the same elements as the universe, "in order that it might both perceive the beings and recognize each thing" (ἵν' αἰσθάνηταί τε τῶν ὄντων καὶ ἕκαστον γνωρίζῃ, b24–25), Aristotle in taking up cognition deals with those composing the soul from the elements. The conjunction here of perceiving and recognizing probably stresses how familiar the soul becomes with each and every thing by being composed of just these things.[3]

[3] It might seem that Aristotle is contrasting the perception of the elements with the recognition of each of the various things that they compose, but in 409b26 *γνωρίζειν* is used in relation to recognizing like by like and this clearly refers to recognizing the elements since Aristotle goes right ahead to claim that there is more to be aware of than the elements (b28–29). Throughout this discussion Aristotle speaks both of

This line of thought, he says, as that attempting to account for motion, necessarily results in many impossibilities (ἀναγκαῖον δὲ συμβαίνειν πολλὰ καὶ ἀδύνατα τῷ λόγῳ, b25–26).[4]

Though Aristotle's arguments regarding cognition could also take motion into account, since cognizing may involve motion and the soul composed of elemental bodies should be capable of motion, he now ignores this. His strategy is probably to suggest that if explaining perception in terms of bodily composition is untenable, then this approach offers no support to soul as bodily and movable.[5] Treatment of the soul as cognitive can concentrate rather exclusively upon the composition of soul from elemental bodies in connection with the like-by-like account of cognition, because Aristotle has already raised some difficulties for other theories, such as the Anaxagorean and Platonic views of cognition (see 405b19–23 and 406b25–407b12).

Making the soul of the elements in order that it can recognize by like by like through being the entities (τὰ πράγματα) it cognizes runs into impossibilities (409b26–28). The soul might know the elements, but the world consists of many and even infinitely more things composed of these (b28–29). By what means will the soul perceive and recognize the composite thing (τὸ σύνολον), such as a god (i.e., a heavenly body), a human, flesh, or bone (b29–410a1)? These are not just a random conjunction of the elements, but each is some distinctive ratio and synthesis (λόγῳ τινὶ καὶ συνθέσει) of the elements as Empedocles illustrates with his account of the formation of bone from a ratio of earth, water, and fire (a1–6, DK 31B96).[6] Were most of the things in the world little more than the elements composing them, a soul composed of elements might give ready access to all there is. But if the various things have a peculiar essence of their own, the like-by-like account mandates that soul also contain all the ratios and the synthesis (οἱ λόγοι ἐνέσονται καὶ ἡ σύνθεσις) to know all things (410a7–8). Probably the plural is used for ratios (οἱ λόγοι) and the singular for synthesis (ἡ σύνθεσις) because ratio refers to the formula of the arrangement and its parts, as bones are parts of humans, whereas synthesis is

perceiving and recognizing, often conjoining them (409b24–25, b30–31, 410a24). His predecessors did not often distinguish sense perception from thought, as Plato surely did (see *Theaetetus* 184b–186e), or any mere sensation from fuller perceptive recognition. Since any such distinctions await later discussion, Aristotle means to be inclusive in speaking of perceiving and recognizing things.

[4] Caston 2005, 293–295 stresses that Aristotle is especially emphatic about the difficulties of the views he now attacks because they might seem close to his own and he particularly has to distinguish them. We have said the same, however, regarding the *harmonia* and self-moving number views.

[5] See Witt 1995, 182, who points out that Aristotle does not criticize this theory on the basis of motion at all, but shows that "it fails on its own terms." That even after rejecting motion for soul Aristotle allows talk of cognition in terms of motion and being affected supports the view that he keeps his treatment as close to the framework of physics as he can. This generally proves extremely helpful for analysis of soul, though it jeopardizes understanding what is most peculiar regarding soul, its activity in contrast with motion.

[6] If Empedocles makes bone of two parts of earth, two parts water, and four parts fire – that is, it contains no air – might this help explain why bone is relatively cognitively deficient? For Empedocles blood, which mixes all the elements (see DK 31B98), is especially perceptive (see B105 and B107).

the product that results when the formula is applied.[7] Each thing is supposed to recognize its like, and hence the soul to recognize all should contain all the elements, the ratios in which they become combined, and the resulting synthesis, that is, the matter, form, and composite. Aristotle suggests that there could be no recognition of bone or human if these are not in the soul (a8–10: these were among the examples in 409b32 and Empedocles was quoted on bone in 410a4–6). But he takes the impossibility of having in the soul such composite things as bone or human, and then switching to a stone or a human, as plain and uncontroversial (a10–11). Perhaps since it might seem that the human components such as bone are in the soul, were soul little more than the body, Aristotle switches to stone (on stone in the soul cf. 431b28–432a1). Similarly on an extreme materialist view it might not seem so strange to have the soul little other than a human, and some accounts of cognition may turn the soul into a homunculus. Introducing stone recalls that the soul capable of recognizing all things would not only have a human within the soul, but everything else whatsoever, so that soul becomes a zoological park, a garden, and a museum of natural history and human artifacts, a true microcosm. Aristotle immediately adds the good and the not good and other similar things as contained in soul to allow for embracing cognition (410a11–13). Mention of the good and not good perhaps jars Platonists along with Empedocles. Having all bodily beings and nonbodily beings in soul in actuality offers a rough time. Plato built the soul from Being, Same, and Other, or the One itself and the first Length, Breadth, and Depth (see 404b16–21 and 406b28–407a2); do such elements cover all the Forms or must all the Forms actually be there in soul? And if human and stone and good and not good have to be in the soul for these to be cognized, then when we cognize good or not good *are* we the one or the other of these? Or if we have both good and not good in the soul in actuality at the same time, as well as such other opposing kinds, will the principle of noncontradiction hold of the soul? The predecessors' explanation of cognition through like by like leads preposterously to soul as having colossally many things, and conflicting things, actually within it. The absurdity cries out for Aristotle's solution: everything is potentially rather than actually in the soul, and during actual cognition the form of the thing cognized is present rather than the enmattered thing.

Going on (ἔτι δέ) to speak in terms of his own categories of being, Aristotle argues that this extensiveness of the soul's components destroys its very being (410a13–22). Not only such things as humans and stones and good and not good have to be in the soul, if it is to cognize all things through like by like, but all other categories of being as well. Rehearsing a key line of his *Metaphysics*, "being is said in many ways" (πολλαχῶς λεγομένου τοῦ ὄντος, 410a13; cf. 1003a33), which means that all the various things designated as beings fall under a variety of different

[7] See the commentary on 407b32–34. Talk of synthesis and ratio in the soul may recall the *harmonia* theory that has soul as synthesis or ratio of the bodily elements – and perhaps many *harmoniai* for all the various parts of the body – but now this is not about soul as harmonizing its own body but about soul as having various things, in fact all things, within it to support its own cognition. Soul having all things within it inverts Anaxagoras's "everything in everything except mind."

genera, Aristotle questions whether soul will not have to be composed of beings of all these different categories of being (410a13–16). Things that are substantial beings, that is, those that are "a this" (τόδε τι), are called beings, as are called beings things that are so much (ποσόν), that is, quantity, such sort (ποιόν), that is, quality, and so on, and soul should contain all these kinds of beings. Since the like-by-like account composes the soul of elements (409b23–24), must not the elements be common to soul and all the categories of being supposed within soul? But it is a fundamental position of Aristotle that there are no common elements for all the categories of being (410a16–17). The way being is not a genus but breaks up into distinct genera or categories of being means that there are no elements common to all beings (see *Topics* 144a36–b3; *Meta*. 992b18–993a10, 998b17–27, 1070a31–b10).[8] If there are no elements common to all beings, perhaps the soul is composed solely of the elements of substantial beings, and substantial being has primacy (410a17; see *Meta*. 1003a33–b19 and vii 1). Yet soul composed simply of the elements of substantial beings will not know the rest of the beings since each genus of being has its own proper principles (410a17–18). For soul to know all things, it must be composed of the elements and principles peculiar to each of the genera of beings, and consequently soul is a quantity, a quality, a substance, and the rest of the kinds of being the elements of which enter its composition (a18–21). The predecessors then have the absurdity of soul with all things within it, and just as menacingly that soul itself belongs to no particular category of being. The project of a general definition of soul becomes hopeless, if the soul does not belong within a single genus but is in each of the categories of being (cf. 402a22–25). Earlier consideration of the soul as accident of body was supporting the view that soul is a substantial being, but the present argument disturbingly forces it also to be in the various other categories, undermining its very being. Those thinkers who have a division of beings where there are not common principles applying across the division cannot explain cognition through like by like without running into such difficulties about the soul's being everything while being nothing in particular (a21–22).

These first two arguments, 409b23–410a13 and 410a13–22, call for reinterpretation of how cognition through like by like works and reinforce the conviction that soul is substantial being. The first about having syntheses and therefore stone and human within soul suggests that it must somehow be like those things it cognizes without just becoming them, and it must be a peculiar sort of substance rather than a congeries of other actual substances. The second about apprehension of all the categories with all their elements compellingly shows that substantial being could hardly be understood in terms of the principles of the other sorts of being and that soul needs access to all the principles of being. Access to these principles must not,

[8] Being is predicated of many, if not all, things, and hence it is universal (see *DI* 7.17a39–40). But for Aristotle there are universals wider than genera. A genus cannot be predicated of its own differentiae, and so if being or one were a genus, since all its differentiae would also be beings or unities, it would unacceptably be predicated of its differentiae. Hence being and one are universals but not genera. This is why the categories of being came to be called the *summa genera*. Membership within the same genus entails shared elements and principles, whereas members of different genera have different elements and principles.

however, turn the soul into other beings besides its own being. Eventually Aristotle has cognition arise by means of forms sensible or intelligible allowing soul to be a substantial being taking on all other forms cognitively without compromising its own sort of being.

410a23–b16 The two previous arguments have considered the consequences of having the soul composed of the elements of what it cognizes. Now Aristotle turns up absurdity (ἄτοπον) inherent in understanding cognition through being affected by the like (410a23–26). Many of the predecessors acknowledge that like is unaffected (ἀπαθές) by like when, for example, objects that are the same temperature or hardness as the flesh hardly act upon it, or if pigment or fragrance is added to something of the same color or odor, there seems to be little effect (a23–24; cf. 424a1–5 and Plato's *Lysis* 214e). In general something like in quality does not change what is like it (see Plato's *Timaeus* 57a). Yet these thinkers make like by like the centerpiece of their account of cognition and hold that cognition, whether perceiving (αἰσθάνεσθαι), knowing (γινώσκειν), or thinking (νοεῖν), is due to being affected (πάσχειν τι) or being moved (κινεῖσθαι) by what is like (410a24–26). They thus embrace seemingly inconsistent propositions: like does not affect like, and yet cognizing takes place through like's affecting like.

This fertile attack working on the general understanding of change as requiring a mover somehow unlike what it is moving prefigures Aristotle's own treatment of cognition beginning in ii 5. Cognition of like by like may seem to undermine itself by eliminating any difference and any mover. The object of cognition must be sufficiently unlike the soul that cognizes it that it can move the soul, but then how does like cognize like? It emerges that soul is affected or moved only in a most extraordinary way. Bodies can be affected and moved in the ordinary way, but soul and its faculties, which are not bodies and substrata for change, cannot be thus affected and moved. A body serving, for example, as substratum for pale or cold may be changed to dark or warm, but soul as incorporeal lacks such qualities. The body with such sensible qualities is not affected by like qualities – and hence the predecessors agree that like does not affect like – but the body will be changed by sensible qualities unlike its own through being assimilated to them. Soul's perceptive power, having no sensible qualities of its own, takes on the form of what it perceives in becoming assimilated to it. As lacking quality of its own, soul receives a form into itself such that its reception is not a change. The soul is raised from potentiality to actuality by taking on the form of its object and is thereby in a way affected, but without undergoing change as occurs in a bodily organ. It is likened to its object when actually cognizing it, without the soul's having been quite like it previously, yet this likening is no change since no previous quality has thereby been destroyed but instead the power of cognizing is being saved by coming into actuality (see esp. 417a30–b7). Through distinguishing body and soul and clarifying the way cognition takes place through being affected by like or unlike, Aristotle can salvage the seemingly inconsistent propositions.

The consistency of the like-by-like account has just been questioned; further perplexities and difficulties pertain to this attempt to explain cognition by recognition

through like bodily elements (410a27–29). For instance, body parts that are particularly earthy, such as bone, sinew, and hair, do not perceive at all (a29–b2; cf. 425a6–7 and 435a24–b1).[9] If the earthy cannot perceive at all, then it cannot perceive its like, as Empedocles and upholders of the view that elements perceive their like expect. This blocks any straightforward construal of cognition through like by like inasmuch as earthy body parts, though ensouled, fail to cognize their like.

This simple-sounding objection is again quite profound. If the earthy does not cognize the earthy, as Empedocles supposes, then what can "like by like" mean? Do the other elements cognize earth but earth not cognize itself? Or is it necessary to avoid solo cognitive elements and have soul a blend or ratio of the elements for cognition to occur? But if one or the other of the elements is not to cognize its like, then will all of them blended together manage to do so? And how would this be anything other than the *harmonia* view restored? Soul should be more than merely a ratio of material components. As *harmonia* applies to health of the body (408a1–3), the ratio of the elements suits the well-conditioned sense organ rather than the sense capacity of soul. The bodily sense organ perhaps blends elements in order to be capable of being affected in the way necessary for sense perception, but the psychical faculty will not be merely a synthesis of bodily constituents (see 424a32–b3 and iii 13).

The argument about earthy things' not perceiving their like, and so being ignorant, leads to this further consideration of ignorance pervading the soul composed of elements (410b2–7). If each element or principle in the soul cognizes its like, then each knows but one sort of thing and is ignorant of all the rest. The ignorance (ἄγνοια) of each thus far surpasses its understanding (σύνεσις), and what causes it to know is the very source of its ignorance (b2–4). Earth, which was observed in cases of bone, sinew, and hair to cognize nothing at all (410a30–b2), may be little worse off than the other elements in that each knows but one thing, its own kind, and is ignorant of all else.

Like-by-like cognition in which each principle recognizes solely its own kind and is ignorant of all else leaves cognitive discrimination inexplicable. If each element picks out only its own kind, how can there be any discerning of differences and comparisons? With no perceptive range and awareness of lack of perception, how can sense perception be a critical power (see 432a15–16) since elements cognizing their like but nothing else lack any discriminative activity? Will this truly allow cognition at all (see 411a2–7 later)? And as later in iii 2 Aristotle considers how the five senses might have us in completely distinct sensory realms such that no sense can perceive another's object in any way, so this like-by-like theory has each component of the soul in its own private cognitive domain. Surely there must be some way to achieve unity of consciousness to allow a central cognition of all that

[9] In the passage from Empedocles quoted by Aristotle (410a4–6) bone was said to derive from blending earth with water and fire. Aristotle considers bone so predominantly earthy that it does not support sense-perceiving at all, whereas Empedocles should allow that by bone bone is perceived since he says by earth earth is perceived (see DK 31B109).

can be cognized for there to be discriminations and comparisons.[10] The sense power perhaps needs to be a blend or some sort of *logos* in order to be discriminative of a range of sensible objects and the senses must join in a central sense for there to be awareness as we possess it.

Perhaps Empedocles goes some way toward overcoming these difficulties by conceiving mortal beings as blends of all the elements (410b4–7). Such blending may permit cognition of everything and through proximity or merging of the components support unity of consciousness. Yet the surprising consequence for Empedocles is that mortal beings composed of all the principles perceiving their like are omniscient, but God has to be the most unintelligent (ἀφρονέστατον) of beings. Empedocles' God as the cosmic stage that has the four roots, earth, water, air, fire, collected into complete unity by Love has Strife remaining outside completely unknown to God so that God seems more ignorant than mortal beings that also have Strife in their composition (cf. *Meta.* 1000b3–6). This argument ignores the point that Strife as pure and outside the sphere of Love should know least of all since it can only know itself; it sticks to the contrast of mortals as combining all things with God that excludes Strife. Can Empedocles adequately explain why mixing the components in God somehow enhances their cognitive power? So long as there is no account of how "like by like" works, that is, what the soul does or undergoes in cognition, but cognition is merely attributed to material constituents, whether these constituents are taken singly or blended, little is clarified about cognition.

And given that for Empedocles all mortal things are composed of elements that are supposed to cognize through like by like, everything should have a soul (410b7–10). It suffices to have one or more of the several basic roots to be ensouled and cognizant. Because no clear restrictions are given regarding when like-by-like cognition takes place, composition from one, some, or all of the roots guarantees cognition. Plants and seemingly nonliving things will have cognition little different from that of animals. Hylozoists who conceive all matter as alive do not tremble at this result, but others should pause at crudely equating any bodily magnitude with soul or endowing it with soul. A more subtle account of cognition and soul than the materialists provide seems needed.

The demand for a better account of soul is reinforced by Aristotle's complaint that these thinkers leave us perplexed about what is the unifier (τὸ ἑνοποιοῦν) of things (410b10–11). The elements as matter require something holding them together (τὸ συνέχον), and whatever this is should be most authoritative (κυριώτατον, b11–12; cf. 416a6–9). Could this unifying factor be something other than soul, since it is impossible (ἀδύνατον) that anything be superior to and rule over soul? It is still more impossible (ἀδυνατώτερον) that anything could take precedence over mind, which is most reasonably said to be oldest and authoritative by nature (εὐλογώτατον γὰρ εἶναι τοῦτον προγενέστατον καὶ κύριον κατὰ φύσιν), yet these thinkers have the elements as first of the beings (410b12–16). Aristotle himself has soul utilizing body for its life functions and mind utilizing soul so that these

[10] The problem of unity of consciousness is already raised prominently in Plato's *Theaetetus* 184–186 in regard to the five separate senses, each having its own objects.

have priority in being and are oldest inasmuch as they have priority to perishable beings. About the role of mind he seems to be agreeing with predecessors such as Anaxagoras and Plato. Yet other predecessors take the elements as fundamental, and Empedocles considers earth, water, air, fire, and Love and Strife the first of beings. It might be wondered whether Love is merely another element or what unifies, and Empedocles ends up having Strife separate each of the other roots into its own kind so that it too seems a unifier (see *Meta*. 985a21–29). Do these thinkers reduce soul and mind to the elements themselves if the elements are first? This conflicts with the *endoxa* that something must unify the elements and that nothing is prior to soul and mind. Previously Aristotle pointed out that cognition of like by like may turn everything into soul (410b7–9), but now if some further unifier would be needed, while elements are first, nothing seems left to be soul. The elements on their own explain neither cognition nor the organizing of the body.

If the elements are first of beings, whether soul is any of these elements or some unified synthesis of them, can making the soul of what it cognizes be the entire account of cognition? If being *X* or made of *X* suffices for cognizing *X*, then any such *X* is always actually cognizing itself. All awareness is self-awareness, through some *X*'s either just perceiving itself or perceiving another *X* the same in kind. Those who use the soul to explain motion tend to make the soul a self-mover; in somewhat parallel fashion, those who explain the soul's cognition through like by like tend to have self-awareness or self-knowledge at the base of all awareness or knowledge (see 417a2–7).

410b16–411a2 Aristotle continues with argument showing that neither these theorists explaining recognizing and perceiving of beings by composing soul of the elements nor those having soul as most capable of causing motion (κινητικώτατον) suitably handle all the sorts of soul (410b16–18). They ignore just how functions extend to the various classes of living beings. Animals that perceive do not all change their places – for example, shellfish lack progressive motion – but only soul most capable of causing motion seems to account for this motion of the animal (b18–21).[11] Why should such animals have soul and yet lack locomotion? Those emphasizing that soul causes locomotion may have no way to include such animals within the class of ensouled beings despite their manifesting other sorts of motions of living beings. Were sense perception implausibly to be simply locomotion, they could account for sense, but still they would need to explain why some animals lack progressive motion. And likewise those explaining mind and perception by soul's composition from the elements, as those emphasizing soul as causing motion, have nothing to say about plants that appear to live though they lack locomotion and perception, or about why many animals lack thought (διάνοιαν, b21–24).[12] Why plants

[11] Themistius *In de an*. 34, 29–35, 2 explains that motions of growth and decline are less solely due to soul than progressive motion.

[12] Surely many of the predecessors were unclear that plants live. In 410b23 the manuscripts generally have φορᾶς οὐδ' (locomotion nor), which Torstrik proposes secluding. The reason is that Aristotle may turn from the motion to the cognition theorists, but retaining these words has the argument applying

function as they do and why only certain animals think seem inexplicable merely on the basis of motive soul or elemental composition inasmuch as the same elements enter into all plants and animals. Clarity about what sorts of beings possess soul is crucial for defining soul in book 2 since a good definition must cover all the types of soul, and perspicacity regarding the extension of the various functions of soul is vital for correctly accounting for them.

Even those making way (παραχωρήσειε) for the difficulty about thought by allowing soul to have mind and sense power as parts cannot thereby speak about all soul, since they have yet to account for plants, and consequently neither can they speak of the whole soul of any being, inasmuch as all ensouled beings must have nutritive capacity (410b24–27). All these philosophical theorists embarrassingly share the inadequacy of the account in what are called the Orphic tales (b27–411a2). These have soul borne through the whole world by the winds and breathed in through respiration. Linking soul and life with breath or spirit may sound promising (cf. 404a9–16), but plants do not have respiration at all and even animals such as fishes do not breathe the air.[13] Thus it escapes the makers of the myths that they ignore many living beings and functions. The Orphics probably concentrate upon the origin and destiny of soul rather than its functions, and so we might excuse their failure to cover all the powers of soul, but what to say for the philosophers who do little better? Looking toward motion and cognition, as the predecessors do, they ignore many ensouled beings and some faculties of soul.

411a2–24 Just having noted the difficulty of capturing the different roles souls play, Aristotle argues for limiting the elements that go into the soul.[14] If elements compose the soul to explain cognition, not all of them need do so (411a2–7). Where there is contrariety among the elements, one of them may serve to judge (κρίνειν) itself and its contrary, much as the straight (τὸ εὐθύ) allows us to know itself and the bent (τὸ καμπύλον), though the bent will not serve similarly. The carpenter's straight rod (ὁ κανών) tests whether something is straight or bent, since whatever is other than the straight is bent. Once we have ascertained that something is bent by comparison to the straight, further comparison to another bent thing may permit determination that something is less, more, or similarly bent, but by the bent just by itself prior to its being assessed in relation to the straight, we do not know either the bent or the straight. Where one element thus serves as criterion or canon for

to both sets of theorists. But both groups of theorists have difficulties with plants, and hence the text should be retained because Aristotle means to disclose this. If motion is not restricted to locomotion, plants enter into motion when they grow, flower, lose their leaves, and so on. Similarly animals without locomotion engage in various sorts of motion when they sense-perceive, desire, feed, and reproduce.

[13] Even if fish could get air from the water taken in through their gills (see, e.g., *De resp*. ch. 2), they still would not be getting air from the winds. Aristotle himself believes respiration is for the sake of maintaining the animal's heat by moderating it. Fish do not need to get air from the water since the water suffices for cooling the animal.

[14] Jannone 1966 does not put a full stop in 411a2 as do other editors, yet this seems to begin a new argument. Bywater 1888, 53–54 supposes that 411a2–7 interrupts a continuous argument from 410b27 to 411a23. But 411a2–7 contributes to 411a7–23 by supporting the possibility of simple bodies as ensouled.

itself and its contrary, while the reverse is not the case, this element rather than the contrary would be needed in the soul's composition. Comprehensiveness in an account of cognition then entails something less than or different from all the elements composing the soul, though a complete account of soul requires that all the major functions of soul be included. Functions are more vital to the soul than material components.[15]

This argumentation hints that discernment involves more than like's acting upon like. In 410a23–25 Aristotle commented upon the strangeness of having perception through like by like if it is also recognized that like does not affect like, and 410b2–4 adds that if each perceives only its like it can cognize nothing else. The example of judging both straight and bent by the straight indicates that care must be taken to provide a suitable criterion for judgment and that discernment requires some opposition or difference. Even when the straight judges the straight, one thing is judging another. In general as a critical faculty sense is picking out or distinguishing perceptible objects from other perceptibles. It will emerge in the account of sense that it is a critical faculty (κριτική) perceiving the differences (διαφορά) within its perceptual range through being itself some sort of mean (μεσότης) as standard (see, e.g., 432a15–16, 418a13–15, 424a2–10, and 431a10–12). If perception is to be a critical faculty discerning differences, perception cannot be limited merely to perceiving the like.

If cognitive soul may get by without all the elements, since a contrary might cognize itself and its contrary, even the quite simple, homogeneous bodies in the cosmic regions may suffice for soul (411a7–24). Some mix soul into the whole cosmos, as perhaps Thales believed all things are full of gods, for he had everything composed of water and observed the lodestone moving iron by means of soul (a7–8; 405a19–21).[16] But then it gives rise to perplexity whether a cosmic region is ensouled. If cosmic air or fire has soul mixed in it, why should they be living things any less than the mixed bodies we call living beings, and especially if the elements in these regions are better in some way (411a9–11)? But then the soul of the air going all the way up to the heavens and seemingly everlasting may seem better and more immortal than that of ordinary living beings, and it may be sought why this should be the case (a11–13). Either to assert or to deny that cosmic regions are living beings produces absurdity and incongruity (ἄτοπον καὶ παράλογον, a13–14). To say the fire or air is alive seems very incongruous for we hardly refer to them as living beings;[17] yet to deny this, if they are ensouled, is absurd (a14–16). That these regions have soul accords with the general principle that the whole is the same in kind (ὁμοειδές) as its parts, as applies to the case of soul since a living thing

[15] Even regarding Empedocles' use of the four elements, Aristotle comments in *Meta.* 985a31–b3 that he really just opposes fire to the other three.

[16] Aristotle speaks here and elsewhere of Thales in a reserved and cautious way (cf. *Meta*. 983b18–27) probably because he has no writings of Thales, if there ever were any, and relies on traditional accounts that provide little justification for Thales' lines of thought.

[17] The term παράλογον appropriately suggests that calling cosmic regions animals goes outside the way we speak about them.

gains soul, securing its life, by taking part of the air (and warmth) of the universe into itself, as through respiration (a16–20; cf. 402b1–3). If living beings thus gain soul and ensouled life from the air and fire, then soul should belong to the whole of air and fire as same in kind to its parts. Such reliance upon homogeneity runs into further difficulty, however, for no living beings live in fire or are made solely of air, and Aristotle may explain why. The outer air is homogeneous (ὁμοειδής), but souls have unlike parts (ἀνομοιομερής) due to soul's having multiple capacities (411a20–21). It will be seen in ii 4 that even nutritive soul in plants accounts for growth and decline, maintenance of life, and reproduction; that is, this faculty of soul has subfaculties. The cosmic region of air as quite homogeneous might have some but will lack others of the nonhomogeneous faculties of soul (a21–22). Only if soul has uniform parts (ὁμοιομερῆ εἶναι), as seems not to be the case, could any cosmic region be ensouled (a22–24).

These considerations again question having soul too closely associated with bodily magnitudes. In particular that air and fire are either souls or ensouled seems dubious. Theorists arrive at such unusual living beings through the assumptions that soul mixes with everything to support cognition and motion, that the whole is homogeneous with its parts, and that taking in parts of the matter as in respiration engenders soul. Aristotle has argued that soul, rather than having homogeneous parts, as it would were it simply a bodily stuff such as air or fire, may have many different parts, such as nutritive, perceptive, and intellective powers (410b16–411a2). Cosmic air and fire lack the diverse powers of soul that would enable them to be genuine ensouled beings. The same would presumably apply to heavenly bodies composed of aether. Thus this argumentation excludes as *ensouled* – though not necessarily as living – any beings other than the usual plants and animals, and thereby it contributes to defining soul while preparing for soul with heterogeneous capacities and requiring heterogeneous bodies.

411a24–b30 Aristotle takes his arguments in this and the two previous chapters in which he has been dialectically examining the accounts of his predecessors to have established that knowing does not pertain to the soul because of composition of elements; nor does motion properly belong to soul (411a24–26). Both lines discredit soul as bodily inasmuch as bodily elements do not explain cognition and the embodied living thing is moved rather than the soul. This argumentation prepares for a view of soul as the substantial form of body rather than a body, synthesis of bodily components, or accident of the body. The last part of book i therefore takes up perplexities with conceiving the soul as the form unifying the body. The treatment of soul has worked around to problems of wholes and parts. If the account of soul must deal with it as cause at least of both motion and cognition, then soul seems to have more than one function and hence has parts. Will the soul as form of the body be a whole while having functional parts, and what will the relationship be of the whole and its parts? These are vital issues for defining the soul and understanding its connection with its essential accidents (cf. 402a23ff.). Aristotle dialectically explores the difficulties that his general account of soul confronts.

The key questions are

> Since knowing pertains to soul and both perceiving and opining, and further having appetite (ἐπιθυμεῖν) and wishing (βούλεσθαι) and generally desires (ὀρέξεις), and motion with respect to place arises in animals due to soul, and further growth and maturity and decline (ἔτι δὲ καὶ αὔξησίς τε καὶ ἀκμὴ καὶ φθίσις), does each of these belong to the whole soul, and by the entire soul we think and we perceive and we are in motion and each of the others we do and we suffer, or others of these by other parts? And to live whether it is in some of these, in one or in more or in all, or indeed something else is cause? (ἢ καὶ ἄλλο τι αἴτιον, 411a26–b5)

Four basic sorts of soul function are listed: cognition, desire, local motion, and nutrition.[18] By inclusion and setting off of growth, maturity, and decline as responsibility of soul, Aristotle first indicates why even plants, as suggested in 409a9 and 410b22–23, may live and have soul (cf. 412a14–15). Now, does the whole soul enter into each of these functions, or are different parts undertaking each (cf. Plato *Republic* 436a8–b3), and is life attributable to each and all of these, or is something else also or instead responsible for life? By saying that "we *do* and we *suffer*" (ποιοῦμέν τε καὶ πάσχομεν), each of these by means of the soul, Aristotle leaves it so far undetermined whether these faculties or operations are active or passive, but his manner of emphasizing that *we* think (νοοῦμεν), *we* perceive (αἰσθανόμεθα), *we* are in motion (κινούμεθα), and *we* do and suffer each of the other things respects the earlier point that the human or living being by means of the soul engages in various tasks (see 408b14–15). Will the living thing employ the whole soul or its various parts in doing or undergoing various operations, and do one or another of these soul operations or all of them constitute life, or is there some other cause of life? The Greek in 411b5 is ambiguous regarding whether life might be attributable to something completely other than soul or to this in addition to soul. Were life due to some cause other than soul, not all living things need be ensouled and not all ensouled things need live. If these are the only sorts of life, soul may suffice for life. But if each of these is a kind of life, perhaps parts of soul by themselves secure an operation that is life rather than the entire soul. Can but one part of soul come into play in isolation or must some or all of the faculties work together? The considerations that Aristotle now offers suggest the unity of soul.

If as some suppose the soul does indeed have parts and performs different functions by different parts, such as thinking (νοεῖν) by one part and having appetite (ἐπιθυμεῖν) by another, what keeps the soul together (συνέχει) or unifies it (411b5–7)? Plato seems especially referred to, his distinguishing of thought and appetite being well known and more readily accepted than distinguishing thinking and perceiving. The question what holds together (συνέχει) bodily components emerged in 410b10–13, and now the issue concerns holding together the parts of soul, if it has parts. It does not seem that the body gives unity to the soul, but the reverse is

[18] Jannone 1966 follows many manuscripts that have βουλεύεσθαι (deliberate) rather than βούλεσθαι (wish) in 411a28. "Wish" fits a little better with Aristotle's going on to say "generally the desires," but since deliberation also can work with desire, either reading is possible.

the case, for upon the soul's departure (ἐξελθούσης) the body dissipates (διαπνεῖται) and decays (σήπεται, 411b7–9). Aristotle denies that decay of body leads to loss of soul (see 408b19–22 about how the aged could see as the young do were they to receive new bodily organs), whereas loss of soul necessarily causes corruption of the body. Soul is lost at death, but soul as such does not undergo corruption through a process as does body (see *Meta.* 1027a29–30 and 1033b5–11). Soul unifies the body rather than the reverse, but need there then be something further to unify the soul? Were something to unify the soul, whatever this is should especially be the soul (411b9–10). What makes the soul one might account for all its functions. And this supposed principle of unification of soul, is it itself just one or does it in turn have parts requiring unification (b10–11)? If it can be just one, why could not the soul be one right from the start? But if it has parts and requires some further principle holding it together (τὸ συνέχον), we begin an infinite regress, unless at some point there is something just one (b11–14). Can soul most fundamentally unify the living thing, both body and its own varied functional parts, by itself having unity?

The issue is how soul can have parts while still being the principle of unity. Problems of wholes and parts are taken up in all their generality in Aristotle's discussion of substance in the *Metaphysics*. In *Metaphysics* vii–viii form has the role of unifying the divisible matter, thereby giving rise to a composite whole (e.g., 1013b21–23, vii 10–12, 1045a36–b7). As unifying the material parts, the form should not itself need unification or there is an infinite regress of unifiers. The form itself is an immediate unity giving unity to the substantial being. Yet the form or soul supporting numerous functions can be viewed as itself having parts. Some parts figure in the very definition of essence in terms of genus and differences. Other functional parts of the soul may be essential accidents, as desire follows from sense perception. Soul has "formal parts" whereas "material parts" compose the body. Thus the soul can be immediately a unity unifying the body while also itself having inseparable formal parts. Of course the unified living body does not have any actual parts so long as it is alive, but the parts are only in potentiality, for when parts become actual they cease to belong to the living thing and to be its parts. A severed limb is no longer a part of the living being. The form of a substantial being, and the soul of a mortal living being, is an extraordinary *whole* somehow having unity and diversity in itself and unifying the composite substantial being as a further whole (for form called "whole," see, e.g., *Meta.* 1013b22–23 and 1023b19–20). The fundamental assumption is that the primary cause must itself somehow have all that it accounts for (see *Meta.* 993b23–31), so whatever applies to the composite must already be in its cause. Body can have parts and be unified because soul unifies it, and soul itself in a way has parts while it itself is straightaway just a unity.

Since the soul somehow has functional parts, should the parts of the soul pertain to special parts of the body: perhaps as the whole soul holds together (συνέχει) the entire body each part of the soul holds together some part of the body (411b14–17)? Encouraging such a view is the way that some functions, such as most of the senses, seem allocated to specific parts of the body. Vision works through the eyes,

hearing the ears, and so on.[19] Generally the parts of the body have functions, so perhaps different functions of soul pertain to different functioning body parts. But if soul divides up completely as the functional parts of the body, the issue how soul unifies the entire body returns along with issues about coordination of functions. And Aristotle can argue that it is impossible that all soul functions localize in parts of the body by contending that locating a part of the body that mind (νοῦς) will hold together and how is hard to conceive (411b17–19). Mind does not seem to require any particular bodily organ; hence at least some special parts of the soul may be unlocalized.[20]

And Aristotle presents what appears good evidence against *any* part of the soul's being strictly localized. Divided plants and even some divided animals, such as the insected (τῶν ἐντόμων), may continue to live (411b19–22; cf. 409a9–10).[21] Plants permit asexual reproduction through clippings; the severed part of an insect perceives and is in local motion for some time.[22] In the pertinent cases, each of the severed parts of the plant or animal receives a *whole* soul rather than just part of the soul as it would were soul allocated entirely to body parts. Despite soul's having functional parts, in these cases of dividing plant or animal, the soul divides not into parts, as does body, but only into whole souls the same in form though differing in number (411b20–21).[23] Thus soul, having a plurality of functions, is in a way indivisible, dividing only into wholes the same in kind as itself, performing its functions as a whole by means of the various bodily organs. Severed parts of an insect do not survive long or complete a regular course of life, Aristotle suggests, not because of a failure of soul, but because they lack the other bodily organs the

[19] But if the basic sense, touch, is under consideration, nearly the whole animal body is sensitive (see 409b2–3), though the hands are perhaps most critical. Commentators, e.g., Themistius *In de an*. 37,2–6, suggest that Aristotle may rather have in mind the way Plato in the *Timaeus* locates the rational, spirited, and appetitive parts of soul in different parts of the body.

[20] Even if Plato locates the rational part in the head, this is hardly the obvious location since Aristotle himself and the earlier tradition tend to suppose the heart has a better claim. Such disagreement suggests that taking a part to associate with mind challenges even the wise, for why and how mind holds together some part is at a minimum unclear.

[21] Insected animals include much more for Aristotle than our six-legged animals with bodies having head, thorax, and abdomen. Such animals as spiders and earthworms would be included (see *HA* 487a30–34 and 523b12–21).

[22] King 2001, 69–70 contends that for Aristotle the severed portion of an animal in order to survive must include the animal's middle, that is, the region fundamental for nutrition and sense perception. Plants have limited centralization, allowing for ready division, but the animals become increasingly centralized; i.e., the soul becomes increasingly localized in a central bodily organ (yet see *De Juv.* 468b9–15).

[23] Aristotle discusses different sorts of oneness or sameness, e.g., in *Metaphysics* x. There is being one in number (e.g., a single animal), one in form (e.g., two animals of the same species), one in genus (e.g., two animals of different species), and one by analogy (e.g., an animal leg and a table leg). Typically what is one in number is so by having one and the same matter, as this plant or this animal. But God, lacking any matter, can still be one in number (see 1074a31–37). However Aristotle is ultimately to explain souls differing in number, at least it is clear that souls the same in form will differ in number by being the soul for different bodies, so that one can speak, e.g., of the soul of Socrates and the soul of Diares.

soul could use to preserve the life (ὄργανα γὰρ οὐκ ἔχουσιν ὥστε σώζειν τὴν φύσιν, b22–24).[24] Body parts may be absent, but soul only exists entire and operates through whatever parts of the body it has available to it. This argumentation relates closely to and may gain some strength from the previous argument about soul's readiness for renewed functionality when a defective body part is replaced or there is a return to heath and sobriety (408b19–24).[25] Both sorts of argument show soul unaffected and immovable in virtue of itself; the argument here from division of plants and animals especially emphasizes the soul's unity. It is sufficiently important and compelling that Aristotle reuses it subsequently (see 413b16ff.).

The text of 411b24–27 is disputed, though perhaps little rides on the exact text, for compatible interpretations can result from any of the proposals. A possible text is the following:

ἀλλ᾽ οὐδὲν ἧττον ἐν ἑκατέρῳ τῶν μορίων ἅπαντ᾽ ἐνυπάρχει τὰ μόρια τῆς ψυχῆς, καὶ ὁμοειδεῖς εἰσιν ἀλλήλαις καὶ τῇ ὅλῃ, ἀλλήλων μὲν ὡς οὐ χωριστὰ ὄντα, τῆς δ᾽ ὅλης ψυχῆς ὡς διαιρετῆς οὔσης. But no less in each of the parts [of the divided plant or animal] belongs all the parts of the soul, and the same in kind they [i.e., the souls in each of the severed parts of the plant or animal] are to each other and to the whole [soul before it was divided], [the souls are the same in kind as each other] since the parts of the soul are not separate from each other, and [the souls are the same in kind as the whole soul prior to division] since the whole soul is divisible [into new whole souls the same in kind].

Aristotle is saying that though the severed part of a living being may be unable to survive long because needed bodily organs are missing, the soul in the severed part is always complete since the functional parts of soul only occur together as a whole package. The soul attained by each surviving part of a divided living being will be the same in kind (ὁμοειδεῖς) as the soul possessed by any other surviving divisions and as the soul of the original undivided being (cf. 402b1–3 and 411a16–21 on ὁμοειδής). Each soul can only be the same sort of whole package of functional capacities.

Each part of a severed body that lives for any length of time has the entire soul since the parts of soul do not separate from each other within a living being and so are not divided from each other when the living being is divided. But back in 410b18–24 it was proposed that plants are alive and ensouled while lacking perception, whereas animals have perception, though some sorts of animals lack progressive

[24] This is the first important appearance of the soul's role in saving a form of life. In crucial sections, esp. 416b14–17 and 417b2–7, it will become clear that life itself is viewed as a kind of saving itself rather than a sort of motion. Saving is not being in motion or resting but the way of being of life, i.e., activity complete at every moment and continuable.

[25] Can Aristotle show in general that soul for function *x* persists even without the bodily organs that enable it to perform the operation *x*-ing? He has perhaps done so for perceptive soul in 408b19–24 and mind may not need any special bodily organs. What about nutritive capacity? Maybe the way severed parts of plants grow roots and resume ordinary plant life suffices to show that absence of body parts need not mean incapacity of soul. The inability of severed parts of animals to grow back parts for nutritive functioning need be no more surprising than the inability to grow back other specialized bodily organs, such as legs or wings. And he may further argue that if perceptive life in animals presupposes nutritive life, then if severed animal parts can perceive, they must also have nutritive capacity (see 411b27–30).

motion possessed by most others, and most animals lack mind possessed at least by humans. Therefore the functional parts of the soul do, in some way, separate from each other. They are not separate within the soul of a living being – with the possible exception in some way of mind – but they separate among the different types of living beings. The principle operative in plants must be shared by plants and animals because both maintain themselves, grow, and reproduce (411b27–29). But this shared principle of soul can be separate from the capacity for perception since plants only have this principle while animals add the further capacity for perception. No animal that has perception can be without the principle shared with the plants, but plants manage without perception (b29–30). Comparable cases could be made for the perceptive part in relation both to power of progressive motion and the intellective part, but Aristotle seems only to need to acknowledge a way in which parts of soul can be separate. And he may be most interested in supplying a possible argument that nutritive soul belongs even to the severed parts of insected animals so long as they perceive, if in fact all perception presupposes nutritive capacity. This clinches the case that soul exists only as a whole.

Perhaps too Aristotle does not add the analogous cases of perception and mind and locomotion because of something exceptional about the principle possessed by plants. Every mortal living being must possess this principle, and this is the only principle of soul that likely must always be in operation. Any animal may temporarily cease to sense-perceive or not enter into locomotion, and humans may for extended periods not think, but the principle shared with plants must seemingly always operate within the individual plant or animal (or any surviving severed part of a plant or animal). Even if this capacity is relatively dormant in frigid weather or in hibernation, the principle is always keeping the living being alive, that is, saving life. Each individual mortal living being depends upon this principle during the whole time that it is alive (see 416b14–15).

Aristotle's argumentation about the unity of soul and its parts touches on important metaphysical notions of divisibility, separability, actuality, and potentiality. If the soul of a particular living thing is indivisible and the parts inseparable from each other because the divided parts of a living being will each receive a whole soul, this means that the whole soul is potentially divisible into comparable wholes. When the body is undivided, the soul is actually undivided and only potentially divided further into wholes.[26] Because a severed part of the living thing receives a whole undivided soul, we must not suppose that it has a whole soul before being divided off, any more than we allowed that the soul actually divides itself into the various parts of the body, or we bizarrely have as many souls in the body as there are parts of the body or severed souls. The soul is an indivisible whole within whatever body it resides. Still, certain faculties of soul can operate through particular bodily organs, and there is a way, as Aristotle has disclosed, that the parts of soul are separate

[26] Comparably in reproduction only living beings with whole souls arise, even if they may sometimes have defective bodies. In the process of coming to be, however, the nutritive soul must soon be in actuality while any further possible capacities of soul may still only be in potentiality (see *GA* ii 1.735a8–26 and 3.736a32–b5).

when we turn to classes of living things. Here there are priority and separability in being: that part of soul is prior or separate in being that can be without the others but the others cannot be without it.[27] The principle of soul in plants is most separate in being of the parts of soul since it can be without any of the higher capacities of soul but not vice versa. If mind is separate, it seems separate from body insofar as it does not require a particular bodily organ. Mind separate from soul would be mind that is not ensouled.

The issues raised here at the end of this dialectical treatment of the predecessors return Aristotle to some of his concerns right at the beginning in 402a23ff.: whether the soul has parts, whether these are homogeneous, and the priority of whole or parts. The likening of Aristotle's procedure to Socratic dialogue corresponds well with this because his cross-examination of his predecessors, like that found in Plato, is progressive while also circling around to just the issues that launched the investigation. Establishing correct principles is most vital. The fullness and profundity of examination of the predecessors prepare well for Aristotle's own accounts of soul and its faculties.

[27] Aristotle discusses priority in being in *Meta*. v 11.1019a1–4. What can be without other things but the other things cannot be without it, which is priority in being, is also the most crucial sense of being separate (see 1017b17–21 along with 1017b23–26).

BOOK 2

I

Definition of Soul

We expect from book 1 that Aristotle will begin with the general account or definition of soul (see 402a7–10). Since soul is the subject matter of the present investigation, the definition of soul will provide the primary principle. Unlike most of his predecessors who concentrated exclusively on animal or even merely human soul, Aristotle aims for an account that applies as widely as possible, that covers every instance of ensouled being. He thus makes a decision regarding questions raised back in 402b3–10 about how wide the definition should be and what should be the order of the inquiry. His is not merely *a* general account of soul but the most general or common account. An advantage of such general definition is to keep the project at its proper level. Neither will Aristotle go below the level of the soul in an attempt to reduce soul to nonsoul; nor will he go above soul generally to speak only of mind. Since the definition is so general, applying to the various sorts of soul even beyond a genus such as animal, it will not be definition in the strictest sense (*Metaphysics* vii 4.1030a11–12 claims that strictly only the species of a genus has an essence and definition). Nevertheless, the worth of this definition, besides the clarity it gives to soul as principle of body and the living being, is the platform it provides for accounts of the soul's faculties occupying the rest of the treatise. It seems plausible that only on the basis of some definition of the wider kind, soul, could the faculties or types of soul be fully understood. The whole work, then, may be viewed as an account of the soul: book 1 prepares for it, the start of book 2 develops it, and the rest of the work tackles what follows from it, ramifying and confirming the account. The general account of soul is only an outline or sketch (see 413a9–10) because it awaits its complete realization in the accounts of its various faculties.

If a most general account of soul cannot be produced, it is doubtful that there is here a definite subject matter for investigation. The location of such an account shows that talk of soul has validity, and validity beyond merely the various capacities of living beings. Development of this most general account of soul guarantees that the different faculties that will also receive accounts, such as nutritive, perceptive, intellective, and motive faculties, are all possible or necessary capacities of soul. How should it be explained that all souls necessarily have nutritive capacity and that

other capacities of soul are in various ways analogous to each other and connected were they not all faculties belonging to soul? Perhaps the most general account of soul is hardly first in the order of discovery, but it is surely crucial for understanding the faculties of soul and their relationships to each other and to soul. And since the general account of soul clarifies the relationship of soul and body, it prepares for appreciating the relationships of the faculties of soul and the diverse bodily organs that serve them. Hence for adequate and perspicuous accounts of the soul's faculties, there must first be this most common account of soul.

To develop a general definition of soul is no light undertaking. Difficulties confronting the project were disclosed back in i 1. Cognizant of these difficulties, Aristotle not only works out the general definition in ii 1, but also proceeds in the two following chapters to resolve its difficulties. He investigates further the key notion in the definition, the notion of life, and he shows that soul constitutes a sufficient unity of parts that a suitably unified definition applies to it.

The general definition works out well for Aristotle because ensouled beings are all living beings. The soul will seem to be what provides life to a mortal living being, for eternal living beings may do without soul. The life provided by soul is minimally the sort of nutritive life first found in plants. Higher living beings may also have perceptive life and even intellective life. Life enters into the general account of soul and the types of life engaged in by mortal living beings correspond to the parts or faculties of the soul since living requires the operation of these faculties. Thus the general account of soul serves as it should to define what soul is and to help explain the faculties that form its parts.

412a3–11 After a brief transition from the first book, the predecessors' offerings concerning the soul having been considered, Aristotle announces that he takes up again inquiry into what the soul is (412a3–5). Whereas back in 403b24–25 he spoke of the beginning of the investigation (ἀρχὴ δὲ τῆς ζητήσεως), he now speaks of taking up the determination of what soul is "again just as from a beginning under way" (πάλιν δ' ὥσπερ ἐξ ὑπαρχῆς, 412a4); the insertion of ὑπαρχή, which can mean beginning or existing, indicates that his new beginning is in connection with what he has gained from the reflection on his predecessors. He seeks what the soul is by providing the most common account of it (κοινότατος λόγος αὐτῆς, 412a5–6).[1] The choice of "most common" suggests that this account will be common to the various kinds of soul that may already be in mind and treated initially as if they are all on the same level (cf. 416b32–33 and *PA* 639a15–19 and b3–5). It is assumed that a common account is possible, justifying calling all the kinds of soul soul. Even if some capacities of soul have some priority to other capacities, ensouled beings

[1] The καί in 412a5 (cf. 402a13) should be taken as epexegetic. Aristotle is not speaking of two projects, determining what the soul is *and* giving the most general account of it, but rather he is explaining how he will go about determining what soul is, by giving it its most general account. Everson 1997, 3 insists that Aristotle is not defining soul since soul as the form or essence of body can itself have no essence. Yet for Aristotle essence is precisely what is defined. In the strictest sense only the lowest species of substantial beings have an essence and definition (see *Meta.* 1030a11–32), but more widely much else can have an essence and be given an account or definition.

are all ensouled beings so that a common account of soul can be sought. Similarly a common account can be sought for the five senses, or a common account of bodily organs possessed by different genera of animals, such as heart and stomach, but by contrast Aristotle will not seek a common account for being in the *Metaphysics*. Subsequent to arriving at the most common account, one should go on to more particular accounts of the kinds of soul.

Apparently in line with his project of determining what the soul is, Aristotle starts to speak of substantial being among the sorts of being (412a6). Without now justifying the point – soul is not mentioned again until 412a17 – he apparently assumes that the soul is in the category of substance (*ousia*). As indicated, his start on the definition of soul connects with what preceded (see 412a3–4). He is engaged in the program set out earlier (402a7–10) and aided in placing soul in the genus of substance by his arguments in book I (see, e.g., the rejection of soul as mere *harmonia* of the body in ch. 4, along with 408b18–29, 410a13–22, and 411b6–14). Were soul not a substantial being, it would have a cause higher than itself inasmuch as other beings depend for their being upon substantial beings; yet soul is posited to account for certain operations. Since his predecessors rightly consider soul an inner principle moving the body and giving perception to animals, soul satisfies Aristotle's own account of nature, and nature is a substantial being (see *Physics* 192b33 and 193a9–10). Elsewhere, Aristotle simply takes for granted that soul is the substance of ensouled things (see *Meta.* 1035b14–16).

The assumption that the genus of soul is substantial being will also be justified by its plausibility as Aristotle proceeds. But merely placing soul in the genus of substance leaves much to clarify since substance means many things and may extend more widely than ensouled beings. Form, matter, and the composite of both are among the sorts of substantial being (412a6–9).[2] In working to specify the sort of substance appropriate as soul, he develops the difference for the definition by genus and difference.

The analysis of substantial being into form and matter utilizes technical terms developed in other treatises. Matter, Aristotle says, is "that which in virtue of itself is not a this" (ὃ καθ' αὑτὸ οὐκ ἔστι τόδε τι, 412a7–8). He explicates "in virtue of itself" in *Posterior Analytics* i 4 and *Metaphysics* v 18. By matter in virtue of itself Aristotle means matter considered as it is itself without form. In virtue of itself matter is not "a this" (τόδε τι), but in virtue of being informed or having a form it will be "a this." Matter cannot cause itself to have determination, but it depends upon form to determine it to be something definite. Considered in itself matter underlies form or serves as substratum for change. Matter thus underlies becoming and being through receptivity to form. Illustration of matter by artifacts, such as a bronze sphere, permits ready distinction of bronze matter from the form sphericity

[2] In 412a7 Aristotle indicates that one sort of *ousia* is "as matter" (ὡς ὕλην). If this connects with the λέγομεν at the start of the sentence, then Aristotle may be indicating some disdain for matter as substance (see Smyth 1956, 582 [2579] about ὡς with verbs of saying). Hence ὡς is not used subsequently with μορφήν and εἶδος. For a use of ὡς with ὕλη and even μορφή outside the context of a verb of saying, see, e.g., *Phys.* 199a31, 200a27, a31, 207b35, and 208a3.

that also appears in other materials (cf. *Meta.* vii 11). Such matter, bronze, is not in virtue of itself spherical, yet it is already something determinate and informed, that is, bronze. We may therefore understand that there are various levels of matter. When Aristotle speaks of matter as it is in virtue of itself, he performs a thought experiment either of stripping away from matter any formal principle whatsoever (cf. *Meta.* vii 3) or of just taking away from it its highest level of form. Matter in virtue of itself can thus be nothing determinate at all and in no way "a this," or the matter can be such as bronze in a bronze sphere that in virtue of itself is not spherical. Hence Aristotle says in *Metaphysics* 1042a27–28: "By matter I mean what not being 'a this' in actuality is 'a this' in potentiality" (ὕλην δὲ λέγω ἣ μὴ τόδε τι οὖσα ἐνεργείᾳ δυνάμει ἐστὶ τόδε τι). While not intended as an account of *all* matter, this well captures the matter of substantial being (cf. 1038b4–6), and so fits perfectly with *De anima* ii 1. It is possible to consider high-level matter, such as a plant or animal body, as it is apart from the soul that informs it, even while it is presently being informed. The matter here is the body as potentiality for its ensouling form. Since Aristotle has referred to matter that is not in virtue of itself "a this," that is, a substantial being, he speaks of matter that becomes a sustantial being in virtue of its substantial form.

The notion "a this" (τόδε τι), that the matter is not in virtue of itself but which is entailed by the form (μορφὴν καὶ εἶδος, καθ' ἣν ἤδη λέγεται τόδε τι, 412a7–9), appears in several Aristotelian contexts (for Platonic precedent, see, e.g., *Timaeus* 49d–50a). In the *Metaphysics* being "a this" and separate (χωριστόν) are the criteria for substantial being (e.g., 1017b25, 1029a27–28, 1042a27–29). "A this" perhaps refers initially to what can be pointed out, and hence in *Categories* 3b10–23 the best instances of "a this" are ordinary substantial beings such as a dog or a plant readily pointed toward as substrata for the other categories of beings.[3] When in the *Metaphysics* Aristotle analyzes substantial being into its principles, he further refines "a this" so that it picks out the *form* of a substantial being as determining it as just what it is (e.g., 1017b24–26 and 1042a28–29). Form itself is most strictly "a this" because as a result of it as principle ordinary substantial beings are "a this" (see *Meta.* ii 1.993b24–31 for principles having in a higher degree what they cause in other things). Therefore Aristotle says here in 412a8–9 that form – for which he gives both μορφή and εἶδος – is that "in virtue of which something is already said to be a this" (καθ' ἣν ἤδη λέγεται τόδε τι).[4] What in this nonmetaphysical context is stated to be "a this" in virtue of form is the particular ordinary substantial being,

[3] "A this" (τόδε τι) might contrast with "such" (τοιόνδε, *Meta.* 1003a5–11, 1033b19–24) or a "such a sort" (ποιόν τι, *Cat.* 3b15–23). Both these latter expressions refer to universals, things predicated of many, rather than something one in number, as does "a this."

[4] The conjunction of μορφή (*morphe*) and εἶδος (*eidos*) is common in Aristotle (see, e.g., 407b23–24, 414a9, *Phys.* 193a30–31, b4). In the previous appearance in 407b23–24, he refers to *eidos* and *morphe*, but here and later in 414a9, it is *morphe* and *eidos*. Ackrill 1997, 166 suggests that the conjunction prevents the reader from supposing that *eidos* in the sense of species is meant, but it is used instead to mean the form of a particular being. Putting *eidos* first fits with this suggestion. But when *morphe* is first, the emphasis is perhaps more upon the contrast with Plato's sort of form. *Morphe* means the configuration and functionality of a thing, so that Aristotle is stressing that he means form intimately united with matter rather than any separate form.

such as a dog or a human, to which its form gives determination as the substantial being that it is. This is the composite of form and matter that is the third sort of substantial being.

The technical terms that Aristotle is using to explicate soul have their fullest explication generally in the *Metaphysics*. Nonetheless, it is unnecessary to hold that the present definition of soul presupposes that treatise. Most of the notions that he is using appear in the *Physics* and should be intelligible to the student of physics. Perhaps only "a this" has no role there, but it enters into the *Organon*. Hence, the student of the *De anima* might be expected to be fairly familiar with the notions utilized to get to the most common account of soul.

In addition to the technical terms form, matter, in virtue of itself, and "a this" that he is employing to clarify the types of substantial being, Aristotle links matter with potentiality (δύναμις) and form with actuality (ἐντελέχεια) to facilitate investigation of the differences of soul and to elucidate the relationship of soul and body. He says, "Now matter is potentiality, form actuality; and this in two ways, one as knowledge (ἐπιστήμη), the other as thinking (θεωρεῖν)" (412a9–11; cf. 402a25–26). Matter as not "a this" in virtue of itself is potentiality for form and thus "a this" in potentiality. Potentiality and actuality, perhaps the most fundamental of all Aristotle's notions, appear prominently in the *Physics* and are fully treated in *Metaphysics* ix. Their full clarification pertains to first philosophy since actuality and potentiality apply to all beings as being, and as encompassing every genus of being are incapable of easy definition in terms of genus and difference. Yet much can be said about them, especially through analogy. Analogy here allows Aristotle succinctly to indicate that form might be actuality in two ways: in one way like knowledge and in another like theorizing. This is the distinction between a disposition or state (ἕξις) and the exercising made possible by that disposition (taken up in detail only in ii 5). The condition of having knowledge but not using it is one sort of actuality, and theorizing by way of the knowledge another sort of actuality. As actuality, form could be like either of these.

Though the distinction of actuality into that like knowledge and that like theorizing is crucial for the account of soul that must cover plant and animal souls, this distinction applies most evidently to animal life. Only with sense perception and knowledge does the distinction come fully into its own, and hence Aristotle deals with it thematically only when he begins to discuss sense perception in ii 5. There surely are analogous distinctions. For example, a sharp knife not presently in use is actually a cutting tool, and the knife may be put to actual use. In *Physics* 255a30–b31 the way the elemental bodies are set in motion to their natural places is elucidated through comparison to learning and having knowledge. He says the way the knowledgeable person exercises the knowledge if nothing hinders applies similarly (ὁμοίως) for natural beings, for example, that fire burns if nothing hinders or what is light goes upward (*Phys.* 255b2–11). Aristotle introduces the distinction here in the *De anima* through analogy, but through analogy to the clear case of knowledge. In referring to actuality, he says "the one *as* knowledge and the other *as* thinking" (τὸ μὲν ὡς ἐπιστήμη, τὸ δ' ὡς τὸ θεωρεῖν, 412a10–11; cf. a22–23). When he justifies speaking of the soul as actuality resembling knowledge in 412a23–27, he speaks of sleeping contrasted with being awake, which could apply only

analogously to plants. We shall have to see whether plants seem like animals asleep, so that the condition of their soul resembles knowledge, or since they are living the plant life and continuously nourishing themselves, they seem to be in actuality like theorizing.

In the definition of soul, Aristotle uses one of his terms for actuality, ἐντελέχεια (*entelecheia*), rather than the alternative, ἐνέργεια (*energeia*). These terms, both probably coined as technical terms by Aristotle himself, are difficult to distinguish and are sometimes used by him nearly interchangeably. Nevertheless, examination of all the appearances in this treatise discloses that he limits himself to *entelecheia* here in the definition of soul, while he tends to use *energeia* to speak of the operation and condition of the faculties of soul and their objects. It seems that *entelecheia* as stressing the condition of completeness or having the end fits well with speaking of the soul's being in relation to the body, while *energeia* with its suggestion of working busily does a good job for speaking of the operations of the faculties of the soul and their objects.[5]

412a11–19 The terms for analysis of substantial beings having been introduced, Aristotle proceeds through the substantial beings to determine which is soul. The most evident substantial beings are bodies, and of these the natural bodies especially seem to be substances, for these are principles of the others (412a11–13). The explanation offered, "for these are principles of the others" (ταῦτα γὰρ τῶν ἄλλων ἀρχαί, a12–13), could explain *both* why bodies are the evident substantial beings *and* why natural bodies have precedence among bodies. Throughout the *Metaphysics* Aristotle repeats that the obvious substances are bodies (1017b10–14, 1028a10–15, 1042a7–11, 1069a28–33). These are obvious because, as when we say Socrates is pale, Socrates is a father, Socrates is in the Lyceum, and so on, we predicate other beings of bodily beings as their substratum (ὑποκείμενον, 1017b13–14). Since other kinds of beings depend for their being upon bodily beings, they are principles of the nonsubstantial beings. In another way, when bodily beings are divided into natural and artificial bodies, natural bodies serve as principles of the others because artificial bodies derive from natural bodies.[6] Natural bodies enter into artificial bodies as their matter.

[5] Most of the passages in which *entelecheia* appears are 402a26, 412a10, a21, a27, b5, b9, b28, 413a6, a7, a8, b18, 414a17, a18, a25, a27, b15, 417a9, a21, a29, b4, b5, b7, b10, b13, 418a4, b12, b30, 419a11, 422b1, b16. Most of the appearances of *energeia* are 414a9, a12, 415a19, 416b2, 417a13, a14, a16, a18, b19, b20, b22, 418b9, 419b5, 424a2, 425b26, b28, b31, 426a3, a5, a6, a11, a13, a16, a24, 429a24, b6, 430a17, a18, a20, 431a1, a5, a7. And *energein* (ἐνεργεῖν) appears in 412a26, 416b19, 417a12, a15, b1, 425b29, 427a7, 428a13. For more discussion of these terms, see the commentary on ii 5.417a6–9.

[6] Bos 2001, 188–189 wishes "natural bodies" here to mean the elementary natural bodies – earth, water, air, fire – rather than the more complex natural bodies of living things. But since there are additional possibilities for natural bodies (the various stones, metals, etc.), the text goes on immediately to divide natural bodies into those with life and those without life, the elemental bodies are dubious substances (see *Meta.* 1040b5–10), nothing in the text has prepared for such a restriction, and Aristotle elsewhere hardly restricts natural bodies to elemental natural bodies, this reads too much into the text. The purpose for so restricting natural bodies, according to Bos, is to have soul as vitalizing principle of the internal heat of plants or the *pneuma* of animals (which can be taken as elemental), rather than as the vitalizing

For his purposes in this context Aristotle need further consider only natural bodies since they are principles of the others and it seems unlikely that artificial bodies have soul. In the background is the supposition shared with the predecessors that soul has to do with the motion of bodies. Natural bodies have an internal principle of motion whereas the motion of artificial bodies results from what is natural in them or external forces. Hence, if soul is a mover, looking toward natural bodies for soul is plausible. That Aristotle continues by distinguishing a certain class of natural beings as living beings, living because they perform certain natural functions, strengthens the conviction that artifacts, lacking their own motion and life, are quite posterior substances.[7]

Among natural bodies those having life seem the substances most promising for soul (412a13–16). Other natural bodies seeming to lack life, such as fire and stone, may have no need for soul. Plato too could say that soul bestows life to a body (see *Phaedo* 105a–b, *Phaedrus* 245e, and *Republic* i 353d), but what things have life is unclear, as is the role of the body. Life is here assumed by Aristotle to belong to what has through itself nutrition and growth and decline (τὴν δι᾽ αὐτοῦ τροφήν τε καὶ αὔξησιν καὶ φθίσιν, 412a14–15). He uses the minimal requirement for life of mortal living bodies: they engage in nutritive life through their own power (cf. 411b27–30 and 413a30–32). He is introducing the necessary and sufficient conditions for ensouled life that he will only arrive at through argument in 413a24–b2. These conditions for life controversially attribute life to plants, and without their needing to have any cognition or progressive motion. Many predecessors' positions differ greatly. They tend to limit life to animals, or if they include plants they assume that plants have some sort of awareness.[8] Recall that Democritus and perhaps the Pythagoreans look for life especially in respiration (see 404a9–17). Aristotle corrects these tendencies by modifying the criteria of motion and perception for life (see 403b25–27).[9] He instead focuses upon self-motion due to nutrition and

principle of the entire visible body. But does not the critique of the *harmonia* view in i 4 seem to attack the view of soul as too closely related to some elemental bodily part(s)?

[7] In *Meta.* vii 16.1040b5–10 Aristotle rejects as substances nonliving natural bodies, such as earth, water, air, fire, because they are mere heaps and lack real unity. He also rejects the parts of living bodies as substances if they would not survive as separated. Artifacts, composed of nonliving natural bodies, some of which may formerly have been parts of living bodies, also lack requisite unity inasmuch as they do not tend to maintain themselves as do living organisms. If what really qualifies as substantial being turns out to be living beings, soul as substantial being pertains only to living being.

[8] Consider this passage from [Aristotle] *On Plants* 815a10–24: "Life is found in animals and plants; but while in animals it is clearly manifest, in plants it is hidden and not evident. For before we can assert the presence of life in plants, a long inquiry must be held as to whether plants possess a soul and a distinguishing capacity for desire and pleasure and pain. Now Anaxagoras and Empedocles say that they are influenced by desire; they also assert that they have sensation and sadness and pleasure. Anaxagoras declared that plants are animals and feel joy and sadness, deducing this from the fall of their leaves; while Empedocles held the opinion that sex has a place in their composition. Plato indeed declares that they feel desire only on account of their compelling need of nutriment. If this be granted, it will follow that they also feel joy and sadness and have sensation." Here we see controversy about plants and the tendency to assume that life requires cognition of some sort, and so all life is perceptive life.

[9] He approaches closer to Plato who in several dialogues connects soul with life and does not take too limited an approach to life (see, e.g., *Rep*. 353d, *Soph*. 249a, *Phaedrus* 245c–e, and *Phaedo* 105c–d). Even Plato, however, has to assign awareness to plants (see *Timaeus* 77a–c).

growth and decline (and eventually in 416b14–17 saving itself appears even more apt than self-motion). Growth and decline through itself are added to nutrition through itself to stress self-motion (cf. 413a22–28). Growth and decline in virtue of the being itself enter into the life of all ensouled living things especially but not exclusively when young or aged. Animals typically grow in youth and decline when aged, but plants obviously do both throughout their lives, and we might say that hibernating animals and animals gaining and losing weight do so to some extent as well. When Aristotle includes τροφήν (nourishment or maintenance) along with growth and decline, this may refer not just to what contributes to growth and decline but more generally to the ongoing operation that keeps any living thing alive so long as it lives in contrast to the more occasional growth and decline; hence there is already distinction of subfaculties within nutritive life. Natural bodies having a life of nutrition, growth, and decline through themselves especially seem to be substantial beings (412a15–16) because these tend to maintain the unity of the being as what it is.

That this living natural body is a *composite* substantial being (οὐσία δ' οὕτως ὡς συνθέτη, 412a16) means in this context that it is a natural body together with life, that is, a combination of substantial form and matter. There are natural bodies lacking life, but those under consideration have been said to be sharing in life (μετέχον ζωῆς), and thus they are composed of natural body and at least nutritive life.

Why should Aristotle turn toward living bodies for soul? This point is here left unexplained, but it becomes a topic of the next chapter. It surely was anticipated by discussions of the previous book, as indicated, and it fits generally within his thought. For Aristotle all natural bodies have in their nature a principle of rest and motion. Of the simple bodies, earth, water, air, or fire, each has its own natural motion explicable by the nature of the body. Such motion, as seen from the discussion of book 1, however, falls below the level of soul. Only *self*-motion requires soul. Nonliving natural bodies have an internal principle of rest and motion, but this is not a principle of *self*-motion (see *Phys*. viii 4). The most widely shared level of self-motion is self-nutritive life. Only at this level does soul become necessary. Soul again is posited to explain certain functions of bodies. Self-motion seems promising for the account of soul, but self-motion is in the class of what we usually call life, and hence clarity about soul will soon require more clarity about life. From the standpoint of the *Metaphysics*, where only living beings ultimately seem to be substantial beings, soul as substantial being must pertain to living beings.

There is nothing easy about comprehending the connection of soul with life. Problems emerge from below and above. From below the question can be raised why any natural body might lack self-motion and life. Fire appears to nourish itself and to grow and to decline, so perhaps there is no real distinction of natural bodies into the living and nonliving. Can life resist being just motion of bodies, and is self-nutrition peculiar to living things? Not until 415b25–416a18 is this finally resolved. The problem from above is that gods are certainly alive. Will gods having self-motion and imperishable bodies, that is, the heavenly bodies, require nutrition? If not, do they have ensouled life? If some divine beings lack bodies entirely, does the whole approach to soul through bodies collapse in their case? Incorporeal gods live

a life of thinking, and if this should not be described as self-motion, life cannot just be self-motion. To avoid the difficulties, Aristotle supposes that ensouled bodies will be *perishable* bodies that are *self*-movers, and thus they have self-nutrition, growth, and decline. Mortal self-movers must have nutritive life. Self-nutrition in fact constitutes the necessary and sufficient condition of *ensouled* life. Aristotle's predecessors might have looked toward it, rather than just motion or perception as the mark of soul. Self-motion eliminates nonliving beings as ensouled, and nutrition eliminates the gods.[10] The life functions of gods do not require soul. Aristotle does not speak of gods as having soul even if they are alive (on the gods' life, see *Meta.* xii 7.1072b26–30).[11]

Aristotle has insisted that every living natural body is a substantial being, and a composite substance (συνθέτη), composite as a natural body with life (412a15–16). Since he seems now to have gotten to a substantial being that is ensouled, Aristotle can determine what is the soul. As a composite being, the living natural body has form and matter for in the case of any definite sort of bodily being the matter must receive determination through form (see 412a7–9). Soul is the substantial form of the living body.

Aristotle argues that soul cannot be body:

> Since it is indeed a body of such and such a kind, for it has life, the body would not be soul; for the body is not among the things in virtue of a substratum, but rather it is substratum and matter (ἐπεὶ δ' ἐστὶ καὶ σῶμα τοιόνδε, ζωὴν γὰρ ἔχον, οὐκ ἄν εἴη τὸ σῶμα ψυχή· οὐ γάρ ἐστι τῶν καθ' ὑποκειμένου τὸ σῶμα, μᾶλλον δ' ὡς ὑποκείμενον καὶ ὕλη, 412a16–19).[12]

This concise argumentation aims to eliminate both the composite body and its matter as candidates for soul. Since there are *living* bodies, if it is assumed that soul pertains to these and that not every body has life, soul cannot merely be body. Body may live or not live; consequently, something beyond body itself accounts for its life. Body is not what is predicated of a substratum to explain life, even living body is not so predicated, but body exists as substratum and matter of which life is predicated. Soul must be explaining why this body is such and such, that is, has

[10] The gods are also eliminated by the point soon introduced that soul pertains to a natural body having life *potentially*. Since gods are immortal, there is no potentiality regarding their life (cf. Simplicius *In de an*. 87, 8–12). As said in *Meta.* 1050b20–28 and 1069b24–26, they have matter merely for locomotion. Self-motion is not a good way to eliminate the gods since Plato supposes the gods have self-motion. The later definition in terms of body with organs also eliminates the heavenly bodies. Bolton 1978, 260–261, however, supposes that these definitions intend to include the stars as ensouled. He even thinks that Aristotle wishes to view the prime mover as ensouled (262).

[11] That Aristotle has to avoid attributing soul to bodies that lack self-nutrition explains why he does not in either *De caelo* or *Metaphysics* attribute souls to the heavenly spheres (*DC* 285a29–30 does not go against this point). This should not make us suppose, however, that the spheres are simply bodies naturally in circular motion. Inasmuch as this circular motion is attributed to desire to be like the gods, the spherical heavenly bodies must have something analogous to soul capable of desiring. Such has to be the case because the spheres revolve at different speeds and in different directions. Neoplatonists wishing to reconcile Plato and Aristotle readily suppose that soul can either animate mortal bodies or lead a life apart from body, though Aristotle's text hardly warrants immortal souls.

[12] The textual variations of 412a16 do not affect the sense.

life. Soul can hardly then be either body or living body. As just body, it would not explain why body has life, and as the composite living body, soul would also explain nothing. This would merely say vacuously that a living body is such because it is a living body (cf. *Meta.* vii 17.1041a10–28). For soul to provide an account of the life of the body – that is, it is posited to explain certain functions – it cannot just be the body or the composite living body.

Why does Aristotle argue so tersely on such a crucial point? Perhaps the merest sketch suffices for his purposes since book 1 attacked the possibility that soul is a magnitude or body that could be in motion. If this has already been shown impossible, there is little need to belabor the point. But he is making the crucial assumptions: that life presupposes soul in the mortal being and that soul is a principle. The assumption that life connects with soul receives attention in the next chapter, and the assumption that soul is principle governs the whole treatment and may therein receive confirmation (see 402a6–7). Were Aristotle more explicit about the assumptions, much of the argumentation might seem question begging, and hence it behooves him to be brief and focused on the immediate issue. Body of any sort having been eliminated as candidate for soul, there remains as substance to serve as soul for the living natural body only its form. Soul is substance as form of a living natural body; this is genus and difference of the account. But rather than putting it quite this way, which would define soul as a form of the composite being, he elaborates the difference to enrich the account. The notions potentiality and actuality enter from 412a9–11 to complete the task of definition.

412a19–27 All has been prepared for the first definition: "It is necessary therefore that soul is substance as form of a natural body having life in potentiality" (ἀναγκαῖον ἄρα τὴν ψυχὴν οὐσίαν εἶναι ὡς εἶδος σώματος φυσικοῦ δυνάμει ζωὴν ἔχοντος, 412a19–21). In this definition the genus is substance and the difference "as form of a natural body having life in potentiality." Since the genus is substance, the form cannot be in any other category of being but substance. But only those substantial forms are souls that are forms of natural rather than artificial bodies, and of natural bodies that are living bodies. The special turn of phrase here, "natural body having life in potentiality," has been prepared for by 412a7, where it was said that matter in virtue of itself is not "a this" and a9, where matter is called potentiality. Matter as such could only have life in potentiality. This allows Aristotle to demarcate the matter clearly from the form while limiting what sort of body is ensouled. Not just any body, but only that which is in potentiality a living thing can be ensouled and living. In speaking of the body having life *in potentiality*, Aristotle refers just to the body as matter in relation to form rather than as composite. This potentiality is the potentiality of the body *presently actualized* by the soul (cf. 412b25–27 and 413a2).[13] Considered just as it is in itself, body or matter, even when ensouled, is

[13] Talk here of having life "in potentiality" when the living being is actually alive parallels the way Aristotle in the *Metaphysics* speaks of the parts of a whole living being as parts only "in potentiality" so long as they are joined to the whole, e.g., 1019a7–11, 1023b32–34, 1040b14–15. Similarly, he says of the proximate matter of a composite substance, "and by matter I mean that which, not being a 'this'

potentiality. Prior to being ensouled and after ceasing to be ensouled matter does not thus have life in potentiality. Compare how in ii 4 predigested food is not yet food; food must have been assimilated so that it can become part of the living body before it is having life in potentiality.

The soul is the substantial form of the matter capable of being alive. Aristotle prefers to say that soul is the form of such and such a sort of body, that is, a natural body having life in potentiality, rather than to say, as might have been expected, it is the form of such and such a sort of composite, that is, a living natural body. The natural body having life in potentiality, that is, body as matter, is substratum for the substantial form, whereas the composite, that is, the living natural body, is substratum for further accidental forms, such as being pale or five feet tall. He could readily enough say that form is either the form of the composite or the form of the matter: he speaks explicitly of soul as principle of the composite in 415b7–8 and b11–12. In the definition itself, however, he speaks of the form of the matter in order to prepare to understand the relationship of soul and body.[14] An account

in actuality, is in potentiality a 'this'" (ὕλην δὲ λέγω ἣ μὴ τόδε τι οὖσα ἐνεργείᾳ δυνάμει ἐστὶ τόδε τι, 1042a27–28). So long as the matter is under consideration, as matter it is only the potentiality for form. Regarding a nonliving composite being during the time it is a composite being, such as a bronze sphere, we may say that its sphericity is the form of the bronze being *spherical in potentiality*, and similarly the bronze prior to being made spherical is spherical in potentiality. Ackrill 1997, 170 complains, however, in view of Aristotle's "homonymy principle," i.e., that a severed limb or a corpse is only a limb or a living thing homonymously or equivocally, that "Aristotle's definitions of *psuche* resist interpretation because (i) the contrast of form and matter in a composite makes ready sense only where the matter can be picked out in such a way that it could be conceived as existing without that form, but (ii) his account of the body and bodily organs makes unintelligible, given the homonymy principle, the suggestion that this body or these organs might lack or have lacked *psuche*." But why need we grant the general claim that matter must be capable of existing without the form? Ackrill 1997, 176–177 himself contrasts "chemical" processes in which the constituents disappear in a new product with other sorts of processes where the matter remains much as it was prior to undergoing change, though he still objects, "Where things or materials are produced, whether in nature or by technology, by chemical action, the matter-form analysis is in difficulty" (177). But the difficulty seems only in our comprehension rather than in this view of matter and mixture. For in "chemical" process, i.e., mixing or blending, the constituents preceding the process differ only in potentiality from the material component in the result that still is the result only in potentiality. In practical life as well, the "matter," i.e., the passions of the person or the population, are changed along with the imposition of "form," i.e., character or the *politeia* (see Polansky 2000, 330–331). Ackrill seems insufficiently sensitive to the levels of matter and hence the way the proximate matter is in potentiality to form whether this proximate matter is something that can precede being informed or only comes to be when informed. Linguistically, Aristotle could say about matter either that matter "is *X* in potentiality" or that matter "has *X*-ness in potentiality," e.g., the ensouled body is a living being in potentiality or the ensouled body has life in potentiality, but talk of *having X*-ness in potentiality applies better to matter already informed by *X*-ness. Hence he chooses to define soul as the first actuality of a natural body *having life in potentiality* rather than of a natural body *being a living being in potentiality*.

[14] Whether the definition has soul as form of the composite or matter causes disagreements among interpreters. See Themistius *In de an*. 42, 27–35 for the former, faulty view and Simplicius *In de an*. 87, 1–6 and Aquinas *In de an*. §§213 and 221–223 for the latter, correct understanding. It is hardly unusual for Aristotle to have alternative accounts of something, one or another of which is the primary definition, but it seems more appropriate to define substantial form with reference to matter rather than to the composite that it is already composing, so that there results the circular definition soul is

of soul that appears completely to avoid mentioning body or matter might also be possible: soul is substance as form bestowing nutritive life and perhaps perceptive, intellective, and so on, life (see 413b11–13). This defines soul in terms of its parts, the various life-bestowing kinds of soul, but then matter may already be implicit inasmuch as most sorts of life pertain to an embodied being.[15]

Is talk of "body having life in potentiality" when the body is presently ensouled allowing potentiality and actuality in the same respect at the same time? To avoid this some commentators propose translating δυνάμει as "possibility" instead of "potentiality."[16] The proposal serves no purpose since sufficient distinction is already present here. The body ensouled in actuality is the composite living body, whereas the body having life in potentiality is the peculiar analytic concept of matter that in itself is not "a this," or only "in potentiality a this." We may think of the body as it is in itself apart from soul, that is, as "proximate matter." This is not to take away completely from the body its functionality and to leave a body only equivocally, as in the soon to be considered cases of removing functionality from the ax or the eye so that we have left only ax or eye in name (see 412b13–22). A broken ax or blind eye cannot function. But the body considered as it is when ensouled is the very potentiality for being ensouled and functioning. A broken ax or blind eye is not similarly a body presently capable of functioning. Some lower-level matters, such as homoeomerous tissues, can precede and follow the existence of the living being, but the complex organic body with its anhomoeomerous parts having various functions can only be as a living being.[17] It is only serviceable proximate matter when fully formed.

Even artifacts permit similar ways of speaking. In the case of a bronze sphere, we may say that the *bronze* has sphericity in potentiality or it is a bronze sphere in potentiality, though we would not say that the actual composite bronze sphere is a bronze sphere in potentiality or has sphericity in potentiality. Now the bronze may exist before or after it has sphericity, and we may say that this bronze has sphericity in potentiality before or after it is spherical, but we can also say that it has sphericity in potentiality even while it is informed so as to constitute a bronze sphere. The bronze that is not presently spherical may become spherical: its potentiality is the potentiality for becoming and for being the informed bronze. Bronze has the potentiality to be spherical as bricks have the potentiality to be a house, whether or not

the form of the informed body. When later in 415b7–8 and b11–12 he speaks of soul as principle or substance of the living or ensouled body the topic is not so much the general account of soul but how soul explains the various sorts of life.

[15] Aristotle could not merely stop with soul is substance as form bestowing life since such a definition might appear to attribute soul even to God.

[16] See Charlton 1993, 205–213 and Themistius *In de an*. 42, 27–35. It might be better to speak of the body of the seed as having life merely as possibility since the body of the seed just has the potentiality of becoming the living body in potentiality (see 412b26–27 and the way that in *Meta.* ix 7 the seed is said not yet to be potentially a human, as earth needs first to become brick before there is potentially a house).

[17] That the completely functional body can only be in potentiality when the living thing is alive seems problematic for Ackrill 1997, 169–178. See n. 13 this chapter and the discussion in Mirus 2001 for some answer.

the bronze is currently spherical or the bricks are presently composing a house. In contrast a seed yet to germinate merely has the potentiality to have the potentiality to be the living thing of which it is the seed. Justification for this way of contrasting potentiality and the potentiality for the potentiality will appear in 412b26–27.

The basic general definition of soul has emerged: "soul is substance as form of a natural body having life in potentiality." Because he can draw more from this definition, especially regarding the relationship of soul and body, Aristotle continues to elaborate upon it. He first links form to actuality: "The substance [here meaning substance in the sense of form, i.e., soul] is actuality. Therefore it is actuality of such a sort of body" (ἡ δ' οὐσία ἐντελέχεια. τοιούτου ἄρα σώματος ἐντελέχεια, 412a21–22). Soul as form is actuality in accord with 412a9–10, which announced that matter is potentiality and form actuality, points that can be taken over from the *Physics* or *Metaphysics*. Previously he distinguished two sorts of actuality, as knowledge and as theorizing (a10–11), that he now repeats and prepares to utilize (a22–23).[18]

Were Aristotle inclined to appeal to the *Metaphysics* directly, he could take it as established there that substantial form as such can only be in actuality along the lines of knowledge rather than theorizing. Form correlates with matter, and as actuality it has priority to matter as potentiality. But the sort of actuality that form as form is is analogous to knowledge. Form enables the composite being to have any of the affections or operations that pertain to it, but the form contributes as potentiality for these affections or operations. Consider how he asserts in *Metaphysics* ix 8.1049b8–10 that nature is potentiality as an internal principle of motion, where here by "potentiality" he means like the actuality knowledge. That form as form has the status of actuality or potentiality such as knowledge explains why Aristotle never refers to God as form but more properly as actuality or activity. Form correlates with matter, and hence is analogous to knowledge as actuality, but divine thinking of thinking is activity like theorizing but with no mere potentiality leading to it.

Without appealing to the *Metaphysics*, Aristotle argues that it is manifest (φανερόν) that soul is actuality in the sense of a disposition such as knowledge on the

[18] The background of Aristotle's distinction of two types of actuality is the "aviary" model in Plato's *Theaetetus* 197a–200c. There Plato distinguishes wild birds outside the aviary, birds already caught but loose within the cage, and birds that someone has regrasped. The birds within the cage that we may readily regrasp are like dispositional opinion or knowledge, whereas the grasping of a bird is like thinking or theorizing. Aristotle takes over the distinction but revises the terminology. Plato had initially made the distinction by contrasting clothes not worn and clothes that we have on our body. "Having" in the sense of wearing clothing or having the bird in one's hand is therefore highest actuality. Aristotle instead uses "having" (ἔχειν, ἕξις) primarily in the sense of disposition (see *Meta.* v 20). Despite all the indications in context that Aristotle is distinguishing sorts of actuality, King 2001, 42–48 contends that the "first actuality" in the definition of soul refers to the first actuality in the process of generation of a living thing, and this is nutrition or nutritive soul. It is when the living being first can nourish itself that it is alive. This is categorially problematic since it substitutes either a type of soul, nutritive soul, or its operation where we expect a reference to substantial being as form. Nonetheless, as will be shown later, the reference to generation in 412a26–27 will be crucial for clarifying the way the first sort of actuality can apply generally to mortal living beings.

grounds that sleeping pertains to what has soul as does being awake (412a23–24). While the awake animal is in actuality in the way theorizing is actuality, the sleeping animal is in actuality comparable to having knowledge but not using it (a25–26). Since the sleeping animal is ensouled – that is, soul animates even when some functions are not operating – soul should clearly be an actuality like knowledge capable of being put to further use. Aristotle exploits the obvious fact that animals can be either sleeping or awake while yet alive and ensouled in order to argue that soul is actuality in the way knowledge not presently being used is actuality. But plants for Aristotle also live and have soul without sharing in sleeping and waking (see *De somno* 454a15–19). Does the distinction in kinds of actuality clearly apply then as well to the nutritive sort of soul of plants and animals?[19] Does the nutritive capacity not have to be in continuous operation throughout the mortal life of the living being? Now some subfaculties of the nutritive faculty, the capacity for growth and reproduction, are not always in operation, so that a distinction of two types of actuality like that of waking and sleeping may fit them, but the capacity for maintaining the life of the living being seems operative for the whole life. Even if there are rather dormant periods, such as in the dead of winter and hibernation, still so long as the living being is living the nutritive soul seems to be operating at some level. A living thing must always maintain some heat and moisture inasmuch as death is to have become cold and dry (see, e.g., *De juv.* 469b18–20). *Metaphysics* 1048b27–28 and 1050a34–b2 speak of living as activity, that is, actuality like theorizing. Yet in the *De anima* Aristotle clearly holds that plants and animals have nutritive *capacity* (θρεπτικόν) in analogy with perceptive and intellective capacity (see, e.g., 413b5, b7, and b12). If the nutritive capacity is always operating in mortal beings, is it appropriate for Aristotle to say in general of soul, including nutritive soul, that it resembles knowledge as to actuality? Is his most common account of soul really appropriate?

Could it just be that since the nutritive faculty breaks up into subfaculties as do the other higher faculties, and some of these subfaculties only operate occasionally, therefore this permits him to speak of nutritive *capacity* and to view the soul generally as having the status of knowledge as to actuality? Or is it because no ensouled plant or animal is eternal, as evidenced by its growth and decline, that any of its operations must be viewed as deriving from a capacity for the operation? Actuality not deriving from such capacity for it would have to be eternal. These points may be in the background; Aristotle offers with regard to the two sorts of actuality that "prior in coming into being in the case of the same person is knowledge" (προτέρα δὲ τῇ γενέσει ἐπὶ τοῦ αὐτοῦ ἡ ἐπιστήμη, 412a26–27). If actuality such as knowledge precedes its utilization, and this extends to all faculties of the soul, then soul should have the status of actuality like knowledge. The case seems easy for

[19] Hicks 1907, 312 has some awareness that the absence of sleeping and waking in plants may present difficulty for the inclusion of plants under the most common definition of soul, but he offers no real effort of resolution. Though Aristotle does deny that plants sleep, he allows that their condition is analogous to sleep (see *GA* 779a2–4). Of course animals have many affections of soul and body while sleeping, and even beyond dreaming (see, e.g., 779a11–19).

sense perception, intellection, and locomotion. Animals surely have the capacity for these before using them. The potentiality for these faculties exists well before they emerge more completely in the process of generation (see *GA* 735a15–26). But what about nutritive life? If we go back to the seed we arrive at a condition where such life is only in potentiality. Seeds can remain in this condition of potentiality for a long time. Perhaps this goes back too far in the genesis of the living being since the definition of soul may not apply to the seed. But in the process through which the seed is fertilized and starts to develop, the fetus attains a heart or analogous bodily organ through which it begins to grow and maintain itself. By his turning to genesis Aristotle seems to make a case that even with the nutritive soul, capacity precedes operation so that the most common account of soul that views soul's status as an actuality like knowledge suits the soul of all ensouled beings.[20]

There might still be some question about the disposition such as knowledge being prior in coming into being to the operation such as theorizing (412a26–27). In other contexts Aristotle contends that we learn by doing. For example, moral virtue, expertise in arts, or athletic skill derives from doing good deeds, attempting the art, or trying the sport (*NE* ii 1.1103a31–b25; cf. 430a19–21 and 431a1–3). Hence the actuality of doing something gives rise to and is prior to the disposition for doing it. Nevertheless, the actuality of the learner is not full actuality as with the developed disposition of the knowledgeable person. A person who does not yet know something can hardly be using *this* knowledge, even if using other knowledge in the effort to attain it. Similarly the person acquiring moral virtue cannot act fully in accordance with virtue as does the good person. Consequently, in one way we may say that actuality precedes disposition – we learn higher abilities by trying to do them and practice makes perfect – but in another way the disposition is prior in genesis to any full utilization of this disposition. Since sense perception does not have to be learned, but the animal can exercise it once it has this capacity operationally, Aristotle most plausibly suggests that possession of the disposition precedes exercise of it (cf. *NE* 1103a26–31). And the same should apply as indicated for the strict full utilization of the rest. This priority in coming to be of the dispositional condition such as knowledge may justify calling this actuality "first" (ἐντελέχεια ἡ πρώτη, 412a27); consequently commentators have called the other actuality as theorizing "second" actuality.

412a27–b9 Having clarified what sort of actuality the soul is, Aristotle can substitute "first actuality," meaning actuality like unutilized knowledge that is prior in genesis, for "substance as form" to arrive at a second definition of soul: "hence soul is the first actuality of a natural body having life in potentiality" (διὸ ἡ ψυχή ἐστιν ἐντελέχεια ἡ πρώτη σώματος φυσικοῦ δυνάμει ζωὴν ἔχοντος, 412a27–28). As first actuality, that is, actuality of the prior or first sort comparable to knowledge, the soul

[20] Once Aristotle has treated the nutritive faculty as in ii 4, he might extend the argument in 412a26–27 about knowledge having priority in genesis to claim that since food causes nutritional operation, the faculty of nutrition is only a potentiality requiring something to raise it to full actuality (see 416b19–20 and cf. 417a2–9).

bestows life on the body, this life consisting in further actualizations or operations of the living being. Since he has sufficiently emphasized that soul is substance and substance is form, Aristotle can leave it at saying that soul is actuality of the first kind of such a sort of body. Only in this preestablished context does first actuality suffice for substantial form. Substituting first actuality for substance as form in the definition intimates what is later called the "hylomorphic" conception of the relation of soul and body (*hyle* = matter and *morphe* = form). This conception puts soul and body, form and matter, in unity without losing the distinction by viewing one as actuality and the other as potentiality. To shed light on the relation of soul and body seems the purpose for the series of definitions of soul. He defines soul not as the form of the composite but rather as the form of the matter to highlight this relationship. Matter suitable to be ensouled appears not as low-level matter very distant from soul, but that developed matter closest to soul, that is, "proximate matter," natural body having life in potentiality.

One may hesitate over whether natural body having life in potentiality refers to low-level or high-level matter; Aristotle's talk of such body as an organic body (ὀργανικόν) removes any ambiguity (412a28–b1). "Organ" (ὄργανον) means instrument or tool; ὀργανικόν probably means "instrumental" or having the power of an instrument. The body is organic through being composed of parts that provide instruments for the soul.[21] The matter of living things needs complex formation to subserve soul's tasks. This applies to plants and to animals. The first level is tissue, homoeomerous material such as wood, flesh, or bone, and these tissues in turn compose organs, anhomoeomerous parts such as trunk, leg, or stomach (see, e.g., *Parts of Animals* ii 1). The body thus organized and capable of life is far removed from the elemental bodies (cf. *Meta.* 1044b1–3).[22] Even the relatively simple parts

[21] Everson 1997, 64 and Menn 2002, 108–112 attack the view that ὀργανικόν means having instruments or being composed of instruments, for they say that the term is only used to mean "instrumental" or being an instrument, except in commentators on Aristotle who have misunderstood this passage. Since, however, every ensouled body is an instrument of its soul, and it is an instrument of instruments inasmuch as any ensouled body is complex and has parts that are instrumental, ὀργανικόν can well mean that the body is an instrument of the soul and is composed of further instrumental parts. Observe the way 412b1–4 proceeds to speak of the parts of a plant as instruments (*organa*). Aristotle likely chooses ὀργανικόν to go beyond indicating that natural things work for an end (see *Phys.* ii 8). Where something is instrumental, some agent must be using it as an instrument. Artifacts and parts of living things will thus be instrumental. The discussion of organic and nonorganic bodies in Shields 1999, 136–137 leaves out Aristotle's crucial insertion of *natural* organic body.

[22] Aristotle says that bodily instrumental parts are anhomoeomerous (*PA* ii 1.647a4–5) and composed of homoeomerous tissues (646b30–35). He distinguishes instrumental parts (τῶν ὀργανικῶν μερῶν) from sense organs (τῶν αἰσθητηρίων), because the sense organs in their most sensitive part are homoeomerous and simple. For example, the sensitive part of the eye is primarily water and the ear primarily air. Nevertheless, the entire eye and entire ear are instrumental parts of the body composed of more than one homoeomerous tissue. Aristotle perhaps does not call the body simply the instrument of the soul, but he rather suggests that the living body is a complex system of instruments, because no completely simple thing, e.g., an atom, or even any homoeomerous material could be all there is to the body of a mortal living thing if many bodily parts are needed subserving others and working in concert (see 647a22–24 and ii 10). Heavenly bodies would not then seem to be instrumental. Some danger of speaking of body just as tool of the soul, as Plato does in *Alcibiades I* 129c–e, is that it may separate soul too much from the body.

of plants, the leaf, pericarp, fruit, root, serve as instruments (412b1–4). Some of these offer protection, some provide for drawing in food, some are the result of residue, and so on. Surely the more complicated parts of animals, some of which are analogous to those of plants, as the mouth of an animal to the roots of the plant, serve as instruments.[23] Aristotle has selected the simplest instrumental body, that of plants, and emphasized the way one part of the plant serves as instrument of another to make clear that an instrumental body is a set of instruments, one instrumental part's using another as instrument, such that no nonliving *natural* body could be thus instrumental. Since plant and animal bodies are organic bodies, the ensouled body is not low-scale matter but in closest proximity to the soul ready to cooperate with it. Conceiving the body as instrumental in its internal interrelations and for the various tasks of the soul puts the body into the closest relationship with soul; Aristotle holds true to the project of positing soul to account for certain functions of living beings.

With this clarity about the body, and having extended what he says to plants and animals to suggest comprehensiveness, Aristotle can offer the third major definition of soul: "If one ought to say something common in the case of all soul, then it would be the first actuality of a natural instrumental body" (εἰ δέ τι κοινὸν ἐπὶ πάσης ψυχῆς δεῖ λέγειν, ἐντελέχεια ἡ πρώτη σώματος φυσικοῦ ὀργανικοῦ, 412b4–6). The preface to the definition, indicating that it offers what it is common to all soul, seems appropriate because he has shown that both plants and animals have instrumental bodies, and soul should extend no further. He has been seeking the most common account of soul (κοινότατος λόγος, 412a4–6), and since his present account is clearly something common to all soul (τι κοινὸν ἐπὶ πάσης ψυχῆς, b4), it is seemingly the preferred definition. "Natural" still belongs in the definition since artificial bodies can also be instrumental. But "life" is no longer needed because other than artifacts, only living, perishable bodies are instrumental or organized. Leaving life out of the definition perhaps makes even less disputable that plants are ensouled inasmuch as they surely meet the requirement for instrumental bodies. And this definition does not have to insert "in potentiality," thereby avoiding the seeming circularity and backwardness of defining an actuality in terms of potentiality.

The body having been conceived in such close relationship with the soul, as unified instrumentally by it, their unity stands out. The organized body is instrumental as a system of instruments. Some instrumental parts obviously enter more crucially into particular soul functions than others. For example, eyes play a more important role in vision than do ears or feet, and the heart and *pneuma* may serve as primary instruments in all soul function for those animals that have them. Aristotle's account of soul might perhaps, then, be taken as first actuality of certain instrumental parts

[23] For more on the analogy of roots of plants to the mouth of animals, and so the reversal of up and down, see 416a2–5 (cf. *Phys.* 199a27–30). Leaf shelters the pericarp and that the fruit. The pericarp (περικάρπιον) is that which surrounds the "fruit" (καρπός) of the plant. Here the "fruit" strictly means the seeds of the plant, so the pericarp would be what we call the fruit of edible fruits or the shell of nuts. In *PA* 655b33–656a3 Aristotle explains the relative simplicity of parts of plants as due to their lack of locomotion and few operations. Nonetheless, this lowest class of living things has organized bodies (cf. Simplicius *In de an.* 91, 5–14 and Aquinas *In de an.* §§231–232).

rather than of the entire body.[24] Yet since all parts of the living body are unified in the living thing, and all serve coordinated functions, the whole body being instrumental for the soul, the soul as itself a unity should be first actuality of the entire living body. Perhaps, however, Aristotle leaves open the possibility for saying that the first actuality of an instrumental part, such as the eye, is soul, since only so long as it can function will it remain an instrumental part, and this is likely to be when it has its place in the natural organized body of a living being.

Aristotle comments that we should not seek whether soul and body are one, thus confirming a key purpose of the series of definitions to illuminate the relationship of soul and body (412b6). They are one like wax and the figure it takes, and generally like matter of each thing and that of which it is the matter (b7–8).[25] If form and matter are one even in a waxen artifact, this should be much more the case for a natural living being. Soul and body unity accords with his wider thought on unity of actuality and potentiality. Form and matter are one, "for while one and being are said in many ways, actuality is prominently said" (τὸ γὰρ ἓν καὶ τὸ εἶναι ἐπεὶ πλεοναχῶς λέγεται, τὸ κυρίως ἡ ἐντελέχειά ἐστιν, b8–9). Almost anything is "one" or "being," though in many different possible senses of unity and being. Yet the most crucial sense of unity or being, that which has priority, is as actuality. What is one or being in actuality either is in itself one and being or is joined with what is so in actuality. It gives unity and being to what is only potentially one and being. The soul is in virtue of itself one and being, and because of it the body is unified and the composite of soul and body is one and actuality. The unity of form and matter explicable in terms of actuality and potentiality is hardly a unity of completely separate things on the same level, but the soul is actuality and it is the cause of whatever unity and being there is of body and the composite living being.

Stressing the proximity of body to soul mitigates the difficulty of defining the essence in terms of matter, or actuality in terms of potentiality. There should be some hesitation in defining soul as the actuality of such and such a body (cf. *Meta.* vii 10.1035b14–27). This appears to define form through matter: the cause is defined in terms of what it causes. Having soul the actuality of the instrumental natural body, that is, placing the matter close to form and keeping potentiality out of the

[24] Everson 1997, 67–68 says, "The living body which features in these characterizations is not the body of a plant or animal, that is a body which has organs, but a body which has a relevant capacity, that is a body which is an organ," which means that soul is not the form of the entire body but of "those parts of the body which are the loci of psychic capacities." See also Bos 2001, which goes further to claim that soul is the vitalizing principle of connate *pneuma* or its analogue. Such interpretations ignore how nearly all body parts are instrumental, as just suggested by the mention of plant parts in 412b1–4. And the arguments for such interpretations have to appeal to texts outside the *De anima*, while having grave difficulty with 412b17–27. Moreover, if we look outside to *Physics* 258a27–b4, Aristotle argues that the self-mover, though potentially divisible in body, is in actuality indivisible, so that the entire living body composes the self-mover, and hence it should be ensouled.

[25] Translators disagree as to whether σχῆμα in 412b7 is an impression in the wax or an external figure into which the wax is shaped. Perhaps Aristotle deliberately has this ambiguity in order to suggest the way soul is both in the matter and the matter is in it. Comparison to wax and figure also helps clarify that the generalization to matter and that of which it is the matter (ὅλως τὴν ἑκάστου ὕλην καὶ τὸ οὗ ἡ ὕλη) probably refers to the form more than to the composite.

definition, lessens the difficulty of explaining the higher in terms of the lower. Book 1 spent much effort proving soul is no sort of body, but also complaining about having soul in any arbitrary body. Aristotle keeps soul in closest proximity to body by having soul as its form, principle, actuality. It thus accomplishes what the predecessors hoped for from it, explaining functions of living things, without the absurdities their views entailed. Each kind of soul – whether we mean each soul function, such as vision or hearing, or the various souls of the different species of plants and animals – requires a special sort of body to provide its necessary instruments.[26]

The three general definitions of soul adumbrated by Aristotle emphasize that soul is the form or actuality of such and such a sort of body. If this holds, then nonembodied gods must lack souls. Perhaps they are alive and thinking, but they need not be ensouled (see *Meta.* xii 7 and 9). Definition of soul in connection with body leaves no room for incorporeal gods to fit into the definition. And we expect that emphasis on instrumental body also eliminates corporeal, heavenly divine beings as well. Since these heavenly bodies are largely just aether, they are more simple bodies than those possessed by any mortal living beings or even than any natural sublunary body. *De caelo* 270b1–16 rejects growth, decline, alteration, coming into being, and perishing for the heavens; hence they are dubiously instrumental ensouled bodies.

412b9–413a10 Subsequent to a major effort of definition, Aristotle typically illuminates its sense and offers additional justification for it. Consider the way in *Nicomachean Ethics* the chapters following the definition of happiness in i 7 dialectically defend the definition by showing how it fits the *endoxa*. Since his account of happiness in the ethics can be shown not too distant from what people say about it, such dialectical justification is fairly easy. Aristotle's general definition of soul, however, does not connect quite so readily with the *endoxa*. His account is deeply enmeshed in a set of concepts from the rest of his philosophy, particularly his physics, which in its analysis of the factors involved in motion delivers the notions form and matter and actuality and potentiality. To a great extent, despite his obvious debt to his predecessors and derivation of his concepts from theirs, his technical notions are first fully thematized and in some cases even named by Aristotle himself. What will those uncomfortable with his conceptual framework make of his definition of soul? In book 1 he tried to undermine competing frameworks. Now after his definitional effort he attempts to win understanding and support especially by clarifying the relationship of body and soul involved in the definitions.[27]

[26] Modern functionalist philosophies of mind may suppose that anything that adequately emulates their functioning, whatever it is made of, has functional equivalence and is in effect a mind or soul. Aristotle's hylomorphic theory, with its emphasis upon the unity of soul and body, cuts against this view. Yet Aristotle has some relaxation on the requirements for the body when he allows that plants and animals even when divided still function, he has different types of plant and animal bodies support the same or analogous functions, and he has mind possibly separate from body.

[27] Soon there is additional demonstration of the necessity for definition of Aristotle's sort; again the comparison to the *Ethics* is apt. Though the general definition of happiness amounts to something like

Aristotle asserts that what the soul is has been stated universally (καθόλου); that is, he has arrived at the most common account of soul: it is substantial being according to account (οὐσία γὰρ ἡ κατὰ τὸν λόγον), that is, substantial form, and it is the essence of a certain sort of body (τὸ τί ἦν εἶναι τῷ τοιῳδὶ σώματι, 412b10–11; cf. b19–20).[28] The primary sort of account is definition and definition most strictly defines essence, so these ways of stating things make clear that soul as substantial form is what is primarily defined and serves as essence of a particular sort of body. A body having life potentially cannot be alive without its actuality and form, the soul. This may be clarified through comparison of an artificial instrument (ὄργανον), such as a double-sided ax (πέλεκυς), to a natural living body (b11–12).[29] The substance of the ax, the essence of the ax (τὸ πελέκει εἶναι), would be analogous to the soul of a living body. Take away this essence, and there could no longer be an ax except equivocally (ὁμωνύμως, b12–15, and cf. b21). What cannot function as a thing of its kind is only equivocally given the name of the kind. The essence of ax cannot just be its shape since then glass or wax shaped as an ax might be an ax. Instead the essence concerns its capacity to function. How the essence of the ax might perhaps be separated (χωρισθείσης) from it so that it would remain an ax just in name is if its functionality were destroyed, for instance, by age, by use, by damage. Loss of functional capacity is loss of essence as the kind of thing able so to function. This is the main point of the comparison to soul, that the ax's functionality cannot be separated from it while it is an ax.[30] The soul, Aristotle says, is the essence and

human life lived in accord with virtue, this is only filled in by the accounts of the moral and intellectual virtues. Similarly the general definition of soul will only be filled in and sustained through accounts of nutrition, sense perception, intellection, and locomotion, i.e., the main capacities of soul (cf. 402b16–403a2). Only when he shows how no operation of soul occurs without body does he secure his general account.

[28] Ross 1961, 213–214 complains that οὐσία . . . ἡ κατὰ τὸν λόγον is "a difficult phrase, for which nothing in what precedes has prepared us," and he goes on to suggest that in properly defining ax or a living being no mention should be made of the matter composing it, the definition being strictly in terms of function. But it is incredible that Aristotle is not here elucidating the definitions already given but developing a further definition. More appropriately οὐσία . . . ἡ κατὰ τὸν λόγον means substantial being in the sense of form, which in the case of a mortal living being just is the soul (cf. 412b19–21).

[29] Since we make artifacts, and they have a function determined by us, their form is more obvious to us than natural forms. Does the double-sided ax, common in warfare slashing in either direction, suggest the present effort to slice away misconceptions about the soul? Or does Aristotle allude to Anaxagoras DK 59B8, who pertinently asserts that the things in the cosmos are not separated from each other by an ax? Also there is some irony in illustrating the relation of life to body with an instrument of death (cf. Heraclitus DK B48, where there is play on the similarily of βίος [life] and βιός [bow], which can both save life and cause death).

[30] Ackrill 1997, 171–172 raises questions about what losing capability means. Is a blunt ax still an ax, or a functional carburetor removed from a car still a carburetor? Aristotle is aware of such questions since earlier he spoke of drunk and sick men temporarily incapable of functioning (see 408b22–24). At present he seems concerned with complete loss of functionality, as when the ax is quite broken. A dull ax can still function, but poorly, as might be the case for an aged or sick animal. A carburetor removed from a car can be compared to a severed bodily organ. Some of these manage to survive, as Aristotle recognizes (411b19–27). An organ or body has life potentially just when ensouled and functional, and the artificial instrument is properly named when it can function. Most artifacts suffering even massive damage can be repaired or rebuilt whereas higher living beings often cannot be thus restored.

logos not, as the ax, of such an artificial body but of such a natural body that it has its principle of motion and rest within itself (b15–17).[31] Artifacts receive their characteristic motions from external sources or the natural parts of themselves; the natural being derives its motion from within itself. This passage clearly enough indicates that the soul is the nature of the living natural body, that soul serves as essence of the body by bestowing functionality upon it, and that only the natural body that is functional is ensouled and a living body.[32]

Shifting from comparison with an artifact to comparison with a part of the living being makes the meaning of the definition clearer still (412b17–18). The part chosen, the eye, is tied to a special capacity of soul.[33] Were an eye the animal, that is, were the living eye treated as the living composite as was the ax, its soul would be its vision or its dispositional capacity to see. As soul is the first actuality of a natural body having life in potentiality, so vision is the first actuality of a natural eye having vision in potentiality. Vision is the very being of the eye in respect of its account or form (οὐσία ὀφθαλμοῦ ἡ κατὰ τὸν λόγον), and the eye is the matter for vision (ὕλη ὄψεως, b18–20; cf. b9–10). The "eye" meant here is not so much the composite, living eye, but the operable bodily part considered as in potentiality having vision parallel to the natural body having life in potentiality. "Eye," like "body," can mean the composite or its matter (cf. 413a2–3), and in 412b18 the composite, living eye was intended and here in b19–21 just its matter. Take away vision from the eye and it is an eye in name only (ὁμωνύμως), much as an eye in a marble statue or a drawing (b20–22). Parts correspond to the whole body, as Aristotle says, "for what the part [of the soul, i.e., vision] is to the part [of the body, i.e., the eye], so the whole faculty of sense is to the whole sensitive body as such" (ἀνάλογον γὰρ ἔχει ὡς τὸ μέρος πρὸς τὸ μέρος, οὕτως ἡ ὅλη αἴσθησις πρὸς τὸ ὅλον σῶμα τὸ αἰσθητικόν, ᾗ τοιοῦτον, b22–25). The "whole" here is the whole faculty of sense and the whole bodily apparatus involved in sense perception. He speaks of such wholes rather

[31] Bolton 1978, 260–261 takes 412b15–17 to be a new definition of soul, but then he has the problem that all natural bodies seem to be ensouled. Also, b9–10 speaks as if the definition has already been given. Cohen 1995, 70n15 discusses "now it is an ax" (νῦν δ' ἐστὶ πέλεκυς) in 412b15 as possibly meaning either (a) since the ax does not have a soul it is just an ax, or (b) since it is not alive the ax may remain such even if it becomes disfunctional. He defends (a), and this seems right if we understand it to mean that now only so long as it is functional is it an ax, in direct opposition to sense (b). Both ax and living being are vulnerable to disfunctionality and so ceasing to be these things. But the natural living being, having a principle of motion and rest within itself, can seek to regain its functionality while the artifact cannot restore itself but depends upon a human for any restoration.

[32] An artificial tool in use by an animal is not thereby ensouled, e.g., an ax or a walking cane. Perhaps then even artificial transplants serving as organs, e.g., an artificial hip replacement, would not seem ensouled.

[33] In 412b17 Aristotle uses θεωρεῖν for considering a part. This is the term he contrasted in 412a10–11 and a22–23 with ἐπιστήμη to distinguish operation from disposition. Clearly now our souls are in operation in trying to understand soul. And since *theorein* derives from seeing, we are going to be seeing the eye and its function. We recall from 411b19–27 that some plants and animals live when divided since each segment receives a *whole* soul. The eye, of course, not only permits vision but also touch, and so should have a complete soul. Yet the eye as eye has capacity just for vision. The purpose of choosing a bodily part closely linked with a specific soul function is to reflect more closely upon the relationship of body and soul by analogy to the part and its functional capacity.

than the whole soul and whole body since the functionality is clearer. The whole soul breaks into faculties, such as nutrition, sense perception, intellection, yet to be discussed, and the sense faculty itself analogously breaks up into subfaculties that are more obvious, the five senses. He mentions the "whole sensitive body *as such*" to emphasize that the body is only sensitive, that is, capable of sense perception, when ensouled, but otherwise it is sensitive equivocally, and also to allow that sense pertains just to the sensitive body since some parts of the body, such as hair and bone, may be insensitive (see 410a27–b2 and 435a24–b1).

That the eye and whole bodily sensitive apparatus are only sensitive when ensouled assists in understanding that bodily matter generally is properly matter for soul right when it is ensouled and functional. Not when soul is lost to the body does the body have potentiality to live but when the body is ensouled and actually alive (ἔστι δὲ οὐ τὸ ἀποβεβληκὸς τὴν ψυχὴν τὸ δυνάμει ὂν ὥστε ζῆν, ἀλλὰ τὸ ἔχον, 412b25–26). Finally, these crucial lines should make completely transparent the strange phrase "natural body having life in potentiality," which figures in the definition of soul (412a20–21 and a27–28). The definition applies to the body that is currently functional and ensouled. The "natural instrumental body" or "natural body having life in potentiality" is the body of the actually living being considered just as that which can be ensouled. It is the body of the composite, and as it is in the living composite being, and not either the composite or the body as it is when not ensouled, that is meant. A seed or a fruit that is not yet fully animated and alive is not *such* a body having life in potentiality but only such a body *in potentiality*; that is, a seed does not have life in potentiality as a functioning living body but is only in potentiality a body thus having life in potentiality (τὸ δὲ σπέρμα καὶ ὁ καρπὸς τὸ δυνάμει τοιονδὶ σῶμα, 412b26–27).[34] Seed and fruit, that is, the seed prior to fertilization before becoming a fetus and the fruit that has yet to find its way into fertile soil, that therefore cannot presently function as living beings and nourish themselves and grow on their own only have the potentiality to develop into the sorts of bodies that are ensouled (cf. *Meta.* 1048b37–1049a16).[35] Thus the

[34] Menn 2002, 106n31 opposes this interpretation. He states, "For some reason the standard view, going back to pseudo-Simplicius and Philoponus, is that Aristotle is saying that the σπέρμα (whatever exactly he means by that here) is only *potentially* a body potentially having life. But the more obvious interpretation, that the σπέρμα (embryo?) *is* a body potentially having life (τοιονδὶ σῶμα = ὥστε ζῆν), is presupposed at Alexander *De anima libri mantissa* 103,7–10. It would do no harm to my overall interpretation if the standard view here is right, but Alexander's interpretation seems much more likely." What Menn calls the standard view must be correct since there would be little point in referring to the seed and fruit here other than to contrast their potentiality with that of the currently functioning ensouled body of a living plant or animal.

[35] This fits well with *GA* i 19.726b1–18, where Aristotle argues that seed (*sperma*) is a further development of the useful residue blood, and blood is not *from* all the parts of the body but what is going *to* all the parts of the body to nourish them. The seed has the power even beyond blood to make all the parts of the body. Hence Aristotle says, "the semen (*sperma*) of the hand or of the face or of the whole animal really *is* hand or face or a whole animal though in an undifferentiated way (ἀδιορίστως); in other words, what each of those is *in actuality*, such the semen is *potentially*." The seed is presently only *indefinitely* the various parts of the ensouled body that it has the potentiality to make, so living bodies are at quite a different level from the seed. Moreover, ii 1.735a4–9 says that seed partakes of

body having life in potentiality is precisely the body of the living thing, while seed and fruit are only the potentiality for becoming such a suitable body for life. There are at least two sorts of potentiality in play in this discussion: the sort of potentiality that the living body has when it is being maintained or saved as the living body that it is and the potentiality of what has to undergo substantial change before it would be ready to be such a living body.

Clarity regarding Aristotle's definition of soul requires grasping this type of potentiality and the two levels of actuality: as knowledge and as theorizing, or as being asleep and as being awake (see 412a21–26). These can be elucidated by completing the ax and eye analogies to the soul-body relationship. The ax's cutting (τμῆσις) or the eye's seeing (ὅρασις) is actuality (ἐντελέχεια) like the animal's being awake (ἐγρήγορσις); that is, these are actualities as operations of dispositional actualities (412b27–413a1). Vision (ὄψις) and the power of the tool to cut (ἡ δύναμις τοῦ ὀργάνου) are actualities as dispositions like the soul ready for the operational actualities. And the body, of the animal, eye, or ax, is the being in potentiality (τὸ δυνάμει ὄν, 413a2; cf. 412a20, a28, b26). Thus he has lined up operation, the functional disposition allowing for the operation, and body's potentiality as substratum for this functional disposition. The animal composed of body and soul is like the eye conjoining eyeball and the faculty of vision (ὁ ὀφθαλμὸς ἡ κόρη καὶ ἡ ὄψις, 413a2–3). Here "eye" (ὀφθαλμός) means the ensouled eye, as it usually did earlier in 412b18–20, though in b20 it seems to mean just the matter of the eye. Consequently when he wishes clearly to speak of the eye's matter, the homoeomerous material enabling it to function, Aristotle uses ἡ κόρη, the term usually translated as "pupil." Κόρη means "girl," and evolved to mean "pupil" because of the figures seen reflected in the pupil of the eye. Were the pupil the only functioning part of the eye for vision, the pupil might here be intended, since this alone would be the material part of the eye. But most likely the inner transparent fluid part of the eye is meant, and because "eye" (ὀφθαλμός) now refers to the composite rather than just the body part, he employs κόρη for the matter of this living eye.[36]

Given the definition of the soul and the analogies disclosing how soul and body are one, Aristotle observes that it is not unclear (οὔκ ἄδηλον) that the soul is not separate (χωριστή) from the body, or at least if it is divisible into parts some of these parts cannot be separate from body (413a4–5). Soul unites with body much as a function like vision or capability of cutting unites with what supports it, eye or ax. If soul divides into parts (see 402b1), some of its parts obviously require for their functioning specialized body parts as instruments, and so such soul parts that are the actuality of parts of the body are not separate from the body (413a5–6). Vision and eye readily instance this. But if there is some part of soul that is not

soul but only *potentially* since unfertilized seed is not yet engaged in the life of nutrition and growth by itself, and even very newly fertilized seed may not yet have the organs of the mature living being. See n. 13 this chapter regarding the contrast in the way matter for processes that are not "chemical" may precede those processes whereas what results in a chemical process does not thus precede the process.

[36] Cf. Sorabji 1995, 209–210 and see *De sensu* 2 esp. 438a5ff. and *GA* v 1.780b23–25. *PA* ii 1.647a5–8 emphasizes that sense takes place in homoeomerous parts. Eyeball or eye jelly seems to work for κόρη in 420a14 and 425a4. But see Miller 1999, 189n21.

the actuality of a body part, and hence does not seem to require any special bodily involvement for its operation, it might be separate (a6–7; cf. 402a9–10, 403a3–19). Mind was previously suggested as thus possibly separate.

Several times previously Aristotle has insisted that a body incapable of functioning merely shares the name of one capable of functioning, so that the body is only of the appropriate sort to be ensouled when it is actually ensouled (412b13–15, b20–21, b25–26, 413a2). He has spoken of the essence of the ax being separated (χωρισθείσης) from it (412b13–14), the leaving aside (ἀπολειπούσης) of vision from the eye (b20–22), and the throwing away (ἀποβεβληκός) or losing of soul by the body (b25–26). These refer to clear ways that the form could at some time be separated from the matter so that the body would not function in its characteristic way. This is not the way he now speaks of being separate. Shifting terminologically from such verbal usages that amount to a destructive removal of the essence with resultant loss of functionality, he takes up an adjectival form for separate (χωριστή) that raises the possibility of some enduring aspect of soul essentially uninvolved with body yet still functional.

Since some part of the soul might turn out to be separate, Aristotle adds, "Still it is unclear if the soul is thus the actuality of its body as a sailor of a ship" (ἔτι δὲ ἄδηλον εἰ οὕτως ἐντελέχεια τοῦ σώματος ἡ ψυχὴ ὥσπερ πλωτὴρ πλοίου, 413a8–9).[37] The pertinence of the remark perplexes commentators. Back in 406a5–10 sailors in a ship illustrate the way things may be moved in virtue of another rather than in virtue of themselves. The context of the earlier remark differs, and he has now switched to the singular, "sailor," to illustrate the soul as a whole, so there is here just a weak echo. A nearer echo is "unclear" (ἄδηλον) here in 413a8 to "not unclear" (οὐκ ἄδηλον) right above in a5. The "not unclear" indicates certainty that the bulk of the soul is not separate, with "unclear" indicating uncertainty as to whether soul is actuality as a sailor of a ship. This locates the sailor remark in the context of the possibility of separation: though soul generally is not separate from body, some part of soul could be separate inasmuch as it is not the actuality of some part of the body. Mind suggests itself. Were this leading part of the human soul not the actuality of any bodily part, would this impact upon the way the whole human soul forms the actuality of its body? Previously ax and eye were compared to body, and their functional capacities to soul. Now if a ship instead of a hand tool or body part is compared to the human body, might its actuality be a sailor, particularly the one governing the ship, rather than simply capacity to sail through water (cf. 416b25–27)? The sailor image may fit the unique human soul since vision of the eye and capacity for cutting of the ax seem too humble, because only some sort of homunculus suffices for mind. The sailor of a ship reaches the right level for the human soul and the ship too is something human. A sailor *as sailor* belongs in the ship, perhaps not separable from it, directing various aspects of it and thus its

[37] The text of 413a8 should follow the codices without the ἢ often inserted by editors that makes being actuality as sailor in a ship an alternative to not being separate. This misconstrues the sailor in a ship as a view of the soul. Cf. Menn 2002, 105n30.

actuality, but still with some sort of separateness. Perhaps analogously the user of an ax as user might in fact be its actuality rather than merely the ax's functionality? Thus the sailor imagery begins reflection upon the special way human soul's functionality, through its possession of mind, relates to the human body.[38]

Aristotle's comment upon what he has accomplished, "In this way in outline (τύπῳ) let it be differentiated and sketched concerning soul" (413a9–10), indicates his project's aim and satisfaction with the general account of soul.[39] The chapter has managed a definition by genus and difference that captures much more aptly what the predecessors had sought.

The notion of the separate (χωριστός) that has been discussed in connection with 403a12, 403b10, 411b26, 412b13–14, and 413a4 warrants comment because of its crucial role as Aristotle adumbrates his positions. Were soul somehow separate, this might undermine the definition so far worked out by severing the relationship with body and suggest that soul is immortal. If the soul or some part of it is separate, soul might be without body or a part of the soul without the rest of the soul and then have no dependence upon that from which it is separate. Now what can "separate" mean for Aristotle? Obviously it can mean being in a place distinct from another place, likely its original literal meaning (see 413b13–15). From this derive more metaphorical uses. Something may be separate from another thing in account when its definition need not include that other thing (see also 413b13–15). More importantly still, separate comes figuratively to mean separate or prior in being, that is, what can be apart from other things or independent of them while the others cannot be without that (see *Metaphysics* 1019a1–4). In the *De anima* it will be seen that nutritive soul is thus separate from the rest of the powers of soul and contact sense from the distance senses. In 413a31–32 he says, "It is possible for this [the nutritive capacity] to be separate (χωρίζεσθαι) from the other powers, but the others from this is impossible in the mortal beings" (cf. 413b5–7). Plants merely have nutritive capacity, so this kind of soul can be on its own, and animals that add perceptive power must necessarily also have nutritive capacity. Thus to be separate is to be capable of being apart from the others where the others cannot be apart from it. As has been seen, however, some part of the soul could possibly be separate in a different way. If mind is not the actuality of any part of the body,

[38] Descartes, in spite of viewing the soul as a separate substance from the body, famously denies that the soul merely dwells in the body as a sailor in a ship (see *Meditations* vi). It is part of his anthropology that the soul is so intimately connected with the body that when the body experiences something the soul may immediately do so as well, rather than as happens on a ship that a part can be damaged without the sailors noticing. Descartes takes the sailor imagery to emphasize separation from body, rather than functionality, a possibly faulty interpretation of Aristotle. For the ancient interpretations, see Rodier 1900, ii 187.

[39] Bolton 1978, 259 discusses the way a definition "in outline" is inaccurate because based on what is intelligible to us rather than what is intelligible absolutely. *DA* ii 2 may show that what is lacking is clarity about life. But it seems likely that this is an outline primarily because there still is little clarity about the functions of soul for which this most common outline account prepares the way. We are getting the outline sketch of soul that awaits being filled in by the accounts of the soul's "parts."

it will be separate from the body and have a kind of separation from the rest of the soul rather unlike the way the nutritive soul is separate from the other powers of soul.[40]

Separability enters importantly into the way Aristotle considers the various functional parts of the soul. Since every ensouled being shares in the nutritive function, but not every ensouled being perceives or thinks, Aristotle will first take up nutrition. Though all animals that perceive must have the sense of touch, Aristotle's order of treatment of the five senses goes in reverse of their separability. The treatment of mind will reflect constantly upon its sort of separation. Where Aristotle orders his treatment based on separation, as in considering nutritive soul first, this is not a case of explaining the higher by the lower in the fashion of materialists since he does not go below types of soul and does not simply explain the higher on the basis of the lower, though he will follow out analogies so far as he can. He proceeds from the more widely shared capacity, which therefore seems more essential to soul and more closely connected to the general definition of soul, to prepare for exploring what is peculiar about the more restricted capacities. And the treatment of mind that deals with the way it is separate, that is, independent of a bodily organ, may give a different slant to what is most characteristic of soul on its own.

From the standpoint of a general account of soul, the more widely shared functions, for example, nutrition and touch, are more separate. The higher capacities presuppose the lower but not vice versa. This gives some methodological priority to the lower faculties. Yet the lower faculties subserve the higher faculties in animals having them: nutrition preserves perception and perception contributes to thought. The more widely shared capacities of soul connect more closely to body as body. The higher the type of soul, the more complex and subtle its relationship with the body. This greater complexity or subtlety seems to be progressive separation from matter just as matter.

[40] Aristotle in the *Metaphysics* has more extended senses of separation in being. The principle or cause of what depends upon it for its being is separate, and hence substantial being as that upon which the other categories of beings depend is separate in being (see, e.g., 1028a33–34). A substantial being in the sense of the composite, such as a dog, is prior to or separate from its accidents since it can be without them, whereas they cannot be without it. And Aristotle can even speak of the form that is the principle of a substantial being as separate (see, e.g., 1017b24–26), meaning that the form has some priority of being to the composite and can in a sense be without it. The form of dog is separate from the composite, from any particular dog (e.g., Argos in *Odyssey* xiv 29–36 and xvii 290–307) since, so long as some other dogs are alive, there will be the form dog. Thus soul as substantial form is somehow separate in being from the body or composite. Plato was thus not wrong to make the forms separate; he perhaps erred by having the form so separate in being that there is a form whether or not there are any instantiations. Forms of imaginary things, such as unicorns; forms of extinct things, such as dodo birds; and forms of actually existing things would differ little, assuming there are so many forms.

2

What Is Life?

Though at the end of chapter 1 Aristotle announces satisfaction with the outline sketched of soul (413a9–10), this definition stands in need of shoring up at a crucial point, the assumption that only *living* natural beings are ensouled. He has stated, "By life I mean both nutrition through itself and growth and decline" (412a14–15); what justifies the assumption that soul links with life and with nutritive life in particular (a concern going back to 411a26–b5)? Is the account of soul adequately embracing of the various sorts of life so that it is truly the most common account of soul (κοινότατος λόγος, 412a5–6)? This chapter takes up the causes of life and argues that soul serves well as such cause. If having nutritive capacity is sufficient for life, and the other faculties of soul also sufficient for life are in succession such that they presuppose the nutritive capacity, then nutritive capacity that belongs to every ensouled being is the necessary and a sufficient condition for mortal life. And since the other sorts of life that he considers link with nutritive life, soul can account for all the kinds of life of mortal beings. Were plants denied life and animals the only ensouled beings, a quite different account of soul would perhaps be needed concentrating upon cognition, so that the hylomorphic theory would be less likely to emerge. And were the kinds of life completely separate from each other, there would not be a unified soul and no most common account applying to every soul could be given.

413a11–31 The chapter opens with a passage resembling *Physics* 184a16–b5 about the need for investigation to start from what is more obvious to us to head toward the more obscure though intrinsically more intelligible (413a11–13; see also *NE* 1095b2 and *Meta.* 1029b4).[1] Perhaps only now in ii 2 does Aristotle begin to move from the more obvious to us to the more intelligible. Arguably in defining the soul in ii 1 he has proceeded from what is obvious to us, natural living bodies and their functioning, to an account of what is more intelligible but obscure, the soul as principle. Though the production of the definition in ii 1 might seem abrupt and

[1] Charlton 1970, 51 aptly notes that Aristotle may not always make the same point by similar-sounding passages.

based upon difficult principles, such as substance and actuality, in some way these are rather clear to us, at least as having gone through book 1 and familiar with the *Physics*. What remains especially obscure in the definition is the notion of life, which ultimately as the wider principle most pertinent to divine being, is still more knowable than soul. It is therefore appropriate to call attention to the way the present inquiry tries to give greater intelligibility to the accounts of the soul. When Aristotle says that "one ought again thus to approach it [i.e., the soul]" (413a12–13), he does not mean that he is launching a search for a new definition of soul, but rather that he should clear up remaining obscurity in the common definition so far attained and thereby justify it. Investigating life and its causes allows him to begin to speak of the various functions of soul vital for the complete filling in of the account of soul.

The definition of soul may have ascertained only *that* (τὸ ὅτι) the soul is such and such, and not *why*, or the cause (τὴν αἰτίαν) that determines that it must be such (413a13–16: see *Posterior Analytics* ii 1 on the distinction of *that* and *on account of what*). Thus most definitions, Aristotle explains, merely announce that the definiendum is such and such but do not elucidate why this is the case. They resemble the conclusion of a syllogism without much clarifying the middle term that is the reason for connection of the terms in the conclusion. This possibility is illustrated through comparison to defining squaring (ὁ τετραγωνισμός) as "that which is equal [in area] as an equilateral right angled figure to an unequal sided rectangle" (413a16–19). Such a definition just tells us what we are looking for, the conclusion of the search, a square equal in area to a rectangle, but not how to go about accomplishing the squaring and why it works.[2] But to learn that squaring is finding the mean proportional of the sides of the rectangle (ὅτι ἐστὶν ὁ τετραγωνισμὸς μέσης εὕρεσις) – if the sides of the rectangle are b and c, then we seek some side a for the square such that $b \times c = a \times a$ – explains how to do it and why.[3] Similarly the definition of soul already developed might be like a conclusion to a syllogism in need of more on the middle term as cause to explain why that definition is appropriate.[4]

[2] Ross 1961, 217 comments on the "peculiarity" of defining squaring here not as a problem to accomplish but as a theorem or result. Has Aristotle not done so to emphasize what a definition that only offers the conclusion might be like? A somewhat similar use of the example of squaring to illustrate knowing can be seen in *Metaphysics* 996b20–22. In 413a14, a16, and a18 Aristotle uses ὅρος such that in its first two appearances it may mean either term or definition, and only its third appearance seems to have to mean definition. Some terms, such as "biped animal," are also a definition or *logos*.

[3] A Greek mathematician might locate the mean proportional by putting the sides of the rectangle on a straight line and drawing a semicircle around the line as a diameter. Then the mean proportional is the vertical length up to the semicircle from where b and c meet (see Euclid vi 13). Square numbers are those having a mean proportional (square root) as an integer. That Aristotle illustrates the account of soul by locating the mean proportional (μέσος), and subsequently in ii 11 it becomes revealing to view sense as some kind of a mean (μεσότης) may be of interest. Moreover, the way the unequal sides of a rectangle become related by squaring may be suggestive of the way the definition of soul joins body and soul. The example of squaring recalls crucial passages in Plato's *Theaetetus* (see Polansky 1992, 53–58, 100–101, and 238–239). Aristotle perhaps uses ὅτι both in 413a13 and a19 to call attention to the way in the first use we only say the "that" and not the cause while in the second we say that something is the cause and this we already know quite well.

[4] In *Post. An*. ii 10.93b38–39 and 94a7–9 Aristotle distinguishes among definitions, that which is merely like a conclusion of demonstration and that which gives the cause. For example, thunder is noise in the clouds is like a conclusion but indicating that the noise is from the extinguishing of fire in the

We may relate the illustration of squaring to the case of soul. In his definition of soul Aristotle has pulled together life and body. Soul somehow serves as the middle term uniting these or soul somehow is the mean proportional of body and life. Yet without more clarity concerning life or the kinds of life with which soul is concerned, what the squaring amounts to is unclear. What he does is to fill in his sketch of soul by giving more of an account of the way soul pertains to life as its cause in mortal beings. He justifies how he introduced life, and in particular self-nutritive life, into the definition, so that the definition developed as the most common account of soul (κοινότατος λόγος αὐτῆς, 412a5–6) is not found wanting. By gaining some sense of the magnitude of life, that is, its possible varieties as constituting types of soul, he assures us that his account of soul can square with all the kinds of life as cause for these. He is thus not changing the definition but justifying it through enabling us to see some more about why it works.

In the early stages of the definition of soul, the progression from substance to bodies to natural bodies to living natural bodies (412a11–16), only when the stage of natural bodies having life is reached do souls enter. Life distinguishes ensouled from nonensouled bodies – recall that the predecessors looked to motion in place and perception – and now Aristotle insists on the role of life: "Let us say, then, taking it as beginning of the investigation, that the ensouled is distinguished from the nonensouled by living" (λέγωμεν οὖν, ἀρχὴν λαβόντες τῆς σκέψεως, διωρίσθαι τὸ ἔμψυχον τοῦ ἀψύχον τῷ ζῆν, 413a20–22). This beginning is not just offered now as a novelty, but it captures what appeared in the previous chapter in defining the soul. Soul links with life, and leaving life unexplicated would allow obscurity in the definition of soul precisely where we should have something eminently intelligible. Though initially unclear, ultimately life is more knowable than soul (a11–12).

Supplying an account of life requires recognition that "to live" is said in many ways (πλεοναχῶς δὲ λεγομένου τοῦ ζῆν, 413a22).[5] Possessing any of these qualifies for life: mind, perception, motion and rest in place (i.e., progressive motion), and motion of nutrition and decline and growth (a22–25; cf. 411a26–30).[6] These are just

clouds provides the cause. So squaring is most fully defined as producing a square of the same area as a rectangle by finding the mean proportional. Which of these does the definition of soul resemble? Bolton 1978, 263–264 says that only a "nominal definition" has been provided in ii 1 with merely a sufficient rather than also a necessary condition for soul.

[5] Besides the term ζωή for life, the Greeks also have βίος. Keyt 1989, 17 observes that the terms are sometimes used interchangeably, but he concludes that "ζωή is more closely tied to the different faculties of the soul than βίος. In Aristotle ζωή seems to refer to different expressions of life whereas βίος often refers to different occupations or careers." In *Categories* 1a2–3 ζῷον is Aristotle's example for equivocals.

[6] Hicks 1907, 323 note on 413a22 questionably says that ἕν τι means that life occurs only where some one of these capacities, i.e., the nutritive, belongs. This would ruin the claim that life is said in many ways. Though Hicks supposes that only if the Greek were ἕν γέ τι could the phrase be read as "one or other," the commentators read it the way that Hicks denies. In fact Aristotle attributes life to God though God lacks nutritive capacity (see *Meta.* 1072b26–30; cf. *De caelo* 292b29). Yet Hicks correctly observes that Aristotle is driving toward nutritive capacity as essential for mortal life but he is ahead of the argument. Intriguingly, life is said in many ways, but death means just one thing. See *On Youth* and *On Respiration*, where all the forms of death amount to losing heat and moisture, i.e., suffocation. Since for all mortal

some of the possible ways to be said to live since he could add others, including reproduction, dreaming, *phantasia*, desire, though these all link closely with those he sets out. Thinking is the most interesting sort of life: in mortal beings it derives from mind, but God's life of thinking should not in this way depend upon any potentiality. Aristotle lists possible levels of life, whereas in 412a14–15 he gave what turns out to be the necessary and sufficient condition for ensouled life, self-nutrition. Any being with any one of these ways of life is alive, though it can only be ensouled through nutritive capacity. Some living beings have just one of these, as plants merely have nutritive capacity and some gods simply have thinking. Plants and gods are alive, but gods, as lacking nutritive capacity, are not ensouled. Life extends beyond mortal, embodied, ensouled being, but divine life as thinking is the subject of first philosophy. What Aristotle needs to ensure is that his most common account of soul comprehends the kinds of mortal life and serves as their cause.[7] He thus manages to have soul explain motion and perception so that his account of soul includes what the predecessors focused upon as distinctive of soul (see 403b25–27).

Aristotle has listed several ways in which "we say something lives" (ζῆν αὐτό φαμεν), including "motion as nutrition, and both decay and growth" (κίνησις ἡ κατὰ τροφὴν καὶ φθίσις τε καὶ αὔξησις, 413a23–24).[8] Who is included in the "we" who say this?[9] By emphasizing that nutritive functioning and growth involve motion, he goes some way to agree with those predecessors who attribute motion to soul. Yet some thinkers could doubt that nourishment proves life, if they deny life to plants or allow that even fire grows and is fed.[10] Perhaps an advantage of listing many sorts of life, besides that it is true, is that most will accept some of these as genuinely life. Nutrition and growth and decline have to be the most crucial if plants have only these and plants live. But that plants live still needs argument. Now all the things

things the various sorts of life depend upon nutritive life that requires heat and moisture, to lose these is death. A plant or animal's death is fundamentally nutritive death. This is quite reasonable if nutritive life is necessary and sufficient for mortal life.

7 Shields 1999, 183 emphasizes that for Aristotle God is alive and that recognition of this prevents him from embracing too "biocentric" an account of life. Shields goes on in pp. 188–193 to argue that for Aristotle life is a "core-dependent homonym" and the core is being a "native intentional system." This is intended to apply to God as well as to plants, which are intentional systems the intentional states of which are not representational. It may be doubted that Aristotle in the *De anima* need seek an account of life that applies beyond mortal life.

8 The wording here might be compared to that in 412a14–15: ζωὴν δὲ λέγομεν τὴν δι' αὐτοῦ τροφήν τε καὶ αὔξησιν καὶ φθίσιν. The earlier passage assumes that there are nutrition and growth and decline *through itself* that now he cannot be assuming, but he has to show that these take place through the living being itself. The position of the τε καί (both . . . and) varies in the passages and the arrangement in 413a24–25 perhaps assumes the view to be developed in ii 4 that nutritive life involves a faculty of subfaculties. Putting decline prior to growth may also set off growth from nutrition.

9 Aquinas *In de an*. §255 emphasizes that the four named levels of life, nutritive life (as in plants), sensitive life without progressive motion (as some shellfish), sensitive life with locomotion (in the complete animals), and intellectual life (in humans), are from Aristotle's own considered position.

10 Matthews 1995, 187–188 raises similar questions with regard to reproduction. Sound reproduces with echo, visual appearances reproduce with mirrors, and (unknown to Aristotle) viruses reproduce, yet none of these seems alive, so Aristotle must be thinking of some suitably restricted sense of life functions.

that grow (τὰ φυόμενα πάντα) seem to be alive because they have the capacity for motion of growth and decline due to themselves (a24–26). The name here used for growing things, τὰ φυόμενα (a25, a33, b8; cf. 434a26), from φύω (to grow); which links with nature (φύσις) and the usual word for plant (φυτόν), is picked initially to cover anything that grows, both plants and animals, so as not to beg the question that plants live. Aristotle must show that natural growing things have nutritive life differing from the sort of growth, decline, and nourishment engaged in by nonliving things; that plants are therefore living things; and that all the other sorts of life possessed by mortal beings presuppose nutritive life.[11] Talk of "growing things" allows for the question whether the elemental bodies should be included along with plants and animals as things that grow. Soon, however, in 413a33 τὰ φυόμενα while still meaning growing things refers especially to plants, and the usual term for plant (φυτόν) returns in 413b16 and b18. Whether "we" who are taken to attribute life to possession of various capacities extends beyond Aristotle himself matters little so long as he gathers all the distinctive forms of life of mortal beings, proves that nutritive life is life, and proves that the other sorts of life somehow depend upon it.

Aristotle's predecessors may neglect plants among things that have life and soul, thus failing to relate psychology properly to natural science, to provide a most common account of soul, and to understand mortal life. Now do nutrition, growth, and decline in fact suffice for mortal life and prove necessary for it, or might a nonliving thing such as fire grow and feed itself? First he points out that the growing things he deals with have nutrition in themselves and growth and decline according to contrary places (413a26–28). This intends to contrast them with other bodies that do not nourish themselves and especially elemental bodies such as fire that tend to their own natural place rather than contrary places (see *De caelo* i 2). A snowball grows as it rolls down a hill rather than nourishing itself. And, not only do the self-nourishing and growing things he considers have motions in the opposed directions up and down, but also they grow in the other directions as well (οὐ γὰρ ἄνω μὲν αὔξεται, κάτω δ' οὔ, ἀλλ' ὁμοίως ἐπ' ἄμφω καὶ πάντῃ, 413a28–29; cf. *Phys.* 214b8–9 and 255a5–11). This surely contrasts motions due to self-nutrition of plants and animals with motions of the elemental bodies. Fire merely goes up, earth down, and air and water similarly; for each the motion is only in one direction. Even a forest fire only spreads as new trees are heated and take flame; the fire itself always tends up. The growth of living things, since it occurs in *all* directions, cannot reduce to the motions of the elements, but must be self-motion (*Phys.* viii 4 denies that the elemental bodies are self-movers). Nutrition goes on throughout the life of mortal living things, and they live so long as they take in nourishment (ὅσα ἀεὶ τρέφεταί τε καὶ ζῇ διὰ τέλους, ἕως ἂν δύνηται λαμβάνειν τροφήν, 413a29–31).[12] Even if fire seems to need to keep feeding itself, as long as it is not in its natural place, the

[11] Plato's *Timaeus* 77b–c credits plants with life because of possession of appetitive soul, which enables them to perceive the pleasant and painful and to desire.

[12] Aristotle adds διὰ τέλους not to refer to his own view of the purposiveness of nature – the phrase is found in other authors (see LSJ τέλος ii 2c) – but to emphasize that nutritive functioning must occur throughout the entire course of life, so mortal life clearly requires nutritive capacity.

other elemental bodies do not feed themselves.[13] Thus begins Aristotle's extended argument, only completed in 415b25–416a18, to restrict self-nutrition and growth and decline to living things under soul's direction. His argument is basically that the extraordinary motions of certain kinds of growing things are unlike ordinary motions of natural things and can only be viewed as a kind of life.

He is arguing that self-nutrition causing motion in all directions *suffices* to mark things as alive; he now also launches the argument that it is *necessary* for mortal living things. Thus self-nutrition constitutes the necessary and sufficient condition for the life of ensouled beings. If he locates the necessary and sufficient condition for ensouled life, Aristotle has shown the definition of soul properly causal. Soul is the first sort of actuality of a natural body having life in potentiality or of a natural instrumental body because soul accounts for life as self-nutrition in the body suited to this. Only when natural bodies that grow, decline, and nourish themselves are considered, those that have life, has the level requiring soul been reached. Though this is often a less striking life function than locomotion, cognition, or respiration, since such other functions of living beings presuppose it, this should have been the criterion for soul (403b25–27) that must be accounted for to explain life in mortal beings. Soul is the cause at least accounting for nutrition, growth, and decline and thereby uniting, that is, serving as the mean proportional of, life and the suitable body.[14] And since the higher kinds of ensouled life presuppose nutritive life, that is, they cannot be without it, his account of soul encompassing nutritive and the further sorts of life is truly the most common account.

413a31–b10 Reflection upon the separability of parts of the soul, that is, their succession, establishes the necessity of self-nutrition. Aristotle says that the capacity for growth, decline, and nourishment in mortal beings may be separate from the other capacities but not the others from this (χωρίζεσθαι δὲ τοῦτο μὲν τῶν ἄλλων δυνατόν, τὰ δ' ἄλλα τούτου ἀδύνατον ἐν τοῖς θνητοῖς, 413a31–32). Since it is impossible for any mortal being to lack the nutritive capacity, it is the necessary condition for mortal life. Mention of *mortal* things recognizes that immortals, that is, gods, live without nourishing themselves, growing, and declining, and therefore without being ensouled.[15] Evidence that capacity for growth, decline, and nourishment is separate is that some growing things (τῶν φυομένων), that is, plants, live by this

[13] Epicurus, and perhaps the earlier atomists, have the atoms composing bodies in constant motion, even when the bodies composed of them appear at rest, thereby muddying the distinction of life and nonlife. Aristotle just has, among perishable things, living beings in constant motion, their internal bodily motions caused by their surroundings and the direction of the motionless soul.

[14] Discussion of the various faculties of soul might also be like squaring: encompassing line segments representing object and bodily organ, e.g., sensible objects and bodily apparatus or food and bodily apparatus, within a semicircle so that a mean proportional, i.e., soul faculty, might appear to draw them together.

[15] In *Meta.* iii 4.1000a9–19 Aristotle amusingly but dismissively refers to mythical tales of the gods surviving forever by tasting nectar and ambrosia.

power alone (a32–b1).[16] *Life* (τὸ ζῆν) belongs to all mortal living things (τοῖς ζῶσι) because of this nutritive principle, but an animal (ζῷον) is such first because of sense perception (b1–2). Even animals lacking progressive motion, and so in this way seeming plantlike, since they have sense, "we say are animals and not alone live" (ζῷα λέγομεν καὶ οὐ ζῆν μόνον, b2–4). We do not say they only live but are animals, which of course means that they do live as animals. The very word animal (ζῷον) links closely with to live (ζάω). So surely animals with progressive motion along with the others we usually speak about as animals and not merely as alive. What Aristotle stresses here is that nutrition is the ground requirement presupposed for life so that when we get to higher sorts of life, animal life, we typically say that we deal with *animals* rather than merely with *living* things. Even our ordinary way of speaking confirms that though life extends from nutritive life up to the divine life, the basic sort of mortal life is the life of nutrition, growth, and decline presupposed by the further sorts of life.

It is the *same* nutritive power giving life to all plants and animals, that is, all growing things, since plants have but this one power and all mortal living beings are said to live by this principle (διὰ τὴν ἀρχὴν ταύτην, 413a33–b2; cf. 411b27–30). Surely this does not exclude the possibility of different species of plants and animals. The souls of plants and animals, while sharing this same capacity generically or analogously, will apparently have it differently for the different kinds of plants and animals. Plants in particular, which have but this one power of soul, must have it specifically differently for the different sorts of plants. This touches on issues raised in 402b1–9 about whether soul has parts and is not homogeneous (ὁμοειδής) and differs in species (εἴδει) or in genus (γένει).

Animals are such in the first place on account of perception (διὰ τὴν αἴσθησιν πρώτως, 413b2). Perception *first* demarcates animals since most other capacities that also may belong exclusively to animals, such as *phantasia*, desire, and progressive motion, presuppose and derive from sense perception, and some animals can be without some of these others, such as shellfish, which do not change their location (b2–4; cf. 410b18–21). Mind that also belongs to some animals, though differing in kind, will be seen to have some dependence upon perception. Touch, Aristotle adds, is the sense that is *first* as belonging to all animals (413b4–5). This sense is first as presupposed by any others, if there are any others, and as capable of being apart from the other senses. Those animals lacking locomotion, and therefore not much in need of distance senses, still require contact sense. Much as nutritive power (τὸ θρεπτικόν) can be separate (χωρίζεσθαι) from the other powers of soul, while they cannot be separate from it, touch (ἡ ἁφή) can be separate from the other powers of sense (b5–7).[17] This parallel separability supports the likelihood that nutritive

[16] In ii 12.424a32–b3 there is some explanation why plants do not have sense perception, and also in iii 12.434a27–30 and iii 13.435b1–4.

[17] The single term for nutritive power (τὸ θρεπτικόν) initially appears here in 413b5 because previously Aristotle has referred to nutrition and growth and decline in order to allow for a group of subfaculties, to indicate a connection with motion, and to make for an easy link with growing plants. That in 413b7–8

power is separate from the others such that they depend upon it and thus necessary and sufficient for life. Touch is the necessary and sufficient condition for animal life, as self-nutrition is for plant life and so mortal life generally (b7–9). The account of soul as the most common account clearly must cover nutritive power and the power of touch and thereby encompass plant and animal life. It should be at least the cause of these. Later, Aristotle says, he will consider why nutritive power, separate from the rest of the powers, belongs to all living things, and touch, separate from the other senses, belongs to all animals (b9–10). He has in mind attempts to offer the final causes for these capacities, that is, explanations of why such functional capacities are necessary (initially in ii 4, but most crucially in iii 12–13).[18]

413b11–414a3 By determining the necessary and sufficient condition for mortal life, self-nutrition, Aristotle has justified his use of life in the definition of soul. The most common definition of soul will be further justified and filled in if it can be shown to cover all the levels of living ensouled being. Through determining the extent of life beyond nutritive life and by assessing the separability of functions, he ensures that his definition encompasses all the possible levels of ensouled life. If there are multiple powers of soul, some of which might be separate, what sort of unity does soul have? Common definition would seem to demand unity of what is defined, and it will if there are but several main sorts of life and these can all fit together so as all to be caused by soul. In any ensouled being there is one unified soul rather than a multiplicity of souls.

An account of soul that escapes defining the soul or form in terms of body or matter could be offered. A strictly *formal* account of soul as the principle of nutritive capacity, sensitive capacity, intellectual capacity, and motion makes no mention at all of body (ἔστὶν ἡ ψυχὴ τῶν εἰρημένων τούτων ἀρχὴ καὶ τούτοις ὥρισται, θρεπτικῷ, αἰσθητικῷ, διανοητικῷ, κινήσει, 413b11–13).[19] Perhaps while listing the

he adds that θρεπτικόν is the part of the soul possessed by plants not only reaffirms that this part is separate but also explains how he uses the unusual term (cf. Hicks 1907, 325). *Threptikon* is the term he is using to encompass all the psychical capacities of plants and the comparable capacities of growing things generally. The term for touch (ἁφή) is used for contact in *Physics* v 3.226b23. The sense of touch is a contact sense, but so is the sense of taste (see 414b11, 421a18–19, 434b18–24). All animals having touch also have taste. At this early stage, then, he can be speaking of contact sense as well as sense of touch.

[18] The note on this passage in Rodier 1900, 199 shows that most ancient commentators understood what will be shown later as why nutritive power is separate from the other powers and why touch is separate from the other senses, but these cannot be shown without consideration of why all mortal living things require nutrition and why animals need sense perception.

[19] Aristotle here lists the soul's capacities in the order in which they will be considered in this treatise. Back in 413a23 he introduced νοῦς for a sort of life whereas now he refers to διανοητικόν as a capacity of soul (b13). Perhaps *nous* as giving the truth about unchanging principles is something divine and beyond the simply mortal and ensouled (see later b24–27), whereas *dianoetikon* more assuredly points to intellectual capacity of soul. In 414b18 Aristotle speaks of both thought and mind (τὸ διανοητικόν τε καὶ νοῦς), perhaps, respectively, faculties for discursive reasoning and for the apprehension of first principles though perhaps either term can also be used widely to cover all intellectual capacity. In 415a8 he conjoins λογισμόν and διάνοιαν. Since in 415a11–12 he refers to theoretical intellect (νοῦς), there should also be nontheoretical intellect.

rest as capacities (using -ικον), Aristotle merely says that soul may be marked out by motion since motion can stand widely for any other capacities of soul not otherwise listed, and not solely progressive motion. This formal account of soul has its own difficulties, even if it includes all possible faculties of soul: circularity inasmuch as the whole seems defined in terms of its parts, failure to exclude gods as ensouled, and revealing of nothing about the relationship of soul and body. Hence Aristotle does not offer this as his most general definition but as an illuminating formula. Including the functional parts of the soul in its formula improves over most other thinkers' accounts of the soul that do not assist grasping the essential attributes (see 402b16–403a2).[20] He starts off listing these functional capacities because he will show that they cover all the main types of ensouled life and that soul truly can be the principle to all of these.

Having named major functional capacities of soul, nutritive, perceptive, intellective, and motive, and in fact those he considers adequate for covering all the capacities of mortal life, Aristotle considers how they relate to each other and the soul: is each of these a soul or are they parts of the soul, and if parts are they separate by account alone or also in place (χωριστὸν λόγῳ μόνον ἢ καὶ τόπῳ, 413b13–15; cf. 402b1–10)? This takes up the issue pervading this treatment of life: if different sorts of life entail different powers, can soul serve as principle for all of them? Were the powers of soul either distinct souls or separate in a way beyond separate in account, the previous argument for necessary and sufficient conditions for life might be undermined. Aristotle must consider the relations of the powers of soul with the soul – show how they are unified while still distinct – to sustain his understanding of life and soul. These important arguments remain less than crystalline because accounts have yet to be developed of each of the powers of soul. Yet he shows that the capacities considered are the crucial levels of life of mortal beings if other possibilities, reproduction, *phantasia*, memory, dreaming, desire, and so on, are included within one or another of these.

The relationships are not difficult to determine in some cases, he says, but perplexing in others (413b15–16). Surely the nutritive power can itself be a soul since it is all that plants have. When some plants are divided, each separate bodily division may live and receive the entire soul. Thus the plant's soul is one in actuality, though potentially many, since each divided part has a whole soul (413b16–19; cf. 409a9–10, 411b19–30). Therefore the nutritive power is a complete soul, and it seems unlikely that the plant soul is very localized inasmuch as each division of the plant receives a whole soul. Surely the most common definition of soul covers this sort of life and soul. Similarly for those animals that survive division, such as insects, each part of the divided animal has sense perception and motion in place (413b19–22). Thus even such higher soul capacities are together in unity, presumably also with nutritive power, since to have higher powers each part of the animal must survive at

[20] Bolton 1978, 267–268 takes the account in 413b11–13 to be the real definition of soul in contrast to those offered in ii 1. This cannot be correct, inasmuch as it would be a definition of a whole in terms of its parts and would not exclude other possible principles of the life functions; e.g., a natural body also is principle of these life capacities.

least for a time, and nutritive power is the necessary condition for mortal life. The most common definition of soul should also serve as principle for animal life.

That division of some plants and animals leaves soul intact in the severed parts serves as an argument not only against localization of soul, but also for unified soul rather than distinct souls. Unified soul justifies the most common definition of soul. If nutritive power were a distinct soul separate from perceptive soul in an animal, we should expect that some division of the animal would continue to live without any perception, thus being some sort of plant, and even more absurdly the reverse, perception without nutritive power. Aristotle argues that sense perception must accompany any higher powers in animals. Division of animals, where any severed parts survive, must have unified soul; that makes it seem necessary to conclude that each mortal living being has a single soul perhaps with parts. Since the parts of soul all remain together in spite of division of the animal, they seem separate in account rather than separate in place. This is crucial for maintaining that mortal life manifested at different levels presupposes nutritive life and unified soul to account for these levels of life.

Aristotle argues that sense perception brings with it *phantasia* and desire (ὄρεξις) since sense perception allows for pain and pleasure, and these, especially when an animal is in pain, necessarily give rise to appetite (ἐπιθυμία, 413b22–24). Mention of these further capacities' necessarily joining with perception, even for the severed parts of insects, supports the view of soul as a unity of parts rather than separate souls, and with these parts separate in account rather than place. If all these functions join together, then they have to be indivisible parts of a single soul, unless we could somehow explain why, though there should be numerous souls in the same living body, these are inseparable and work in concert. There would have to be some principle organizing the various souls, and then it presumably would be the soul (cf. 411b5–14). Though some bodily organs rather than others support specific soul functions, as eyes support sight and ears hearing, that divided animals still perceive, desire, and change location, even if lacking suitable body parts to support each of these, goes against localizing soul. Touch, the basic sense, is deployed over most of an animal's body, preventing restriction of perception generally to any single part. Divided animals probably lack suitable sense organs, beyond those for touch, rather than the capacity of soul needed to engage in perceiving. Procuring a suitable bodily organ presumably restores to the animal each type of perception (cf. 408b20–24). Thus the way the body is instrumental need not require the localization of soul. Also, that these sorts of life unite with and flow from perception helps with the case that the four named sorts of life mentioned by Aristotle in 413b12–13 form a complete set.

The brief argument that sense perception implies *phantasia* and desire (413b22–24) reappears rather more fully in the next chapter (414b1–16), though there *phantasia* remains in doubt. Here Aristotle argues, "if sensation, also *phantasia* and desire; for, where there is sensation, there is also both pain and pleasure, and, where these, necessarily also appetite" (εἰ δ' αἴσθησιν, καὶ φαντασίαν καὶ ὄρεξιν· ὅπου μὲν γὰρ αἴσθησις, καὶ λύπη τε καὶ ἡδονή, ὅπου δὲ ταῦτα, ἐξ ἀνάγκης καὶ ἐπιθυμία, 413b22–24). Sense perception involves pain and pleasure, and these must give rise to appetite.

He merely assumes that appetite (*epithumia*) is a kind of desire (*orexis*), which is made explicit later (414b2). Pain and pleasure necessarily occasion desire as moving causes and final causes. The passage mentions *phantasia* without including it explicitly in the argument. Perhaps sense perception by itself does not extend to pain and pleasure but *phantasia* is required for these? This seems quite unlikely, however, inasmuch as perceiving some things will be painful or pleasant: the very activity of perceiving can hardly be distinguished from the pleasure and pain.[21] Otherwise it would not be manifest that sense perception entails pain and pleasure, especially if not all animals have *phantasia*. Instead Aristotle may suggest that perceived pain or pleasure provokes appetite, and appetite generally depends upon *phantasia* to present an object not yet grasped. If desire is for what the animal does not have, then *phantasia* enters into the appearance of the object of desire. The fundamental desire of the animal for food or drink derives especially from pain, and *phantasia* of the craved object may depend upon previous perceived satisfactions. That Aristotle puts pain before pleasure (cf. 414b4–5 and 434a3) and merely mentions *phantasia* fits with this, but the account of *phantasia* remains for iii 3 and locomotion for iii 9–11.

The types of life so far considered, nutritive, perceptive, and what follows closely upon perception, have been argued to fit together tightly so that soul is unified and permits a common definition accounting for these kinds of life. But going on to intellectual capacity, Aristotle comments, "Concerning mind and the theoretical power (περὶ δὲ τοῦ νοῦ καὶ τῆς θεωρητικῆς δυνάμεως) nothing yet is manifest (φανερόν); it seems to be a different kind of soul (ψυχῆς γένος ἕτερον εἶναι); this alone is possible to be separate (χωρίζεσθαι) just as the eternal from the perishable" (413b24–27). Possibly mind, and especially that mind capable of theoretical rather than practical thought, is not merely a part of soul but something distinct, and so far from being localized in the body or separate just in account, it rather could be totally separated from the soul of a mortal animal. The words ψυχῆς γένος ἕτερον εἶναι might alternatively be translated "another kind *than* soul," which fits even better the view that mind is not intrinsically part of soul but something divine. The more questionable it is that mind is a part of soul, the more doubtful it becomes that the common account of soul covers all levels of life. That mind alone of the possible capacities of soul can be separate as the eternal from the mortal makes its situation in relation to the soul particularly difficult, but this can be ignored for now.

That the rest of the parts of the soul (τὰ δὲ λοιπὰ μόρια τῆς ψυχῆς) besides mind cannot be separate has already been shown by the example of dividing animals, since each segment of the insect has the entire soul (413b27–28). The remaining parts of the soul referred to might be any of the other soul parts, or those such as *phantasia*, desire, and locomotive capacity that follow upon sensitive capacity. These parts of the soul except mind – and speaking of the remaining parts of soul indicates that mind may be a part of soul – must differ in account without being separate (χωριστά) in the way some predecessors suppose (b28–29). They can be

[21] Plato seems sometimes to include pleasures and pains among the perceptions themselves (e.g., *Theaetetus* 178d–e).

separate neither locally nor in being, if any severed part having perception must also be alive and any further functions are dependent upon sense perception. Some predecessors say, however, that the various parts of the soul are separate (cf. 411b5–6). Materialists reducing soul to body and bodily motions inevitably localize the capacities of soul; Plato in *Timaeus* 69c–72d locates parts of soul in head, chest, and abdomen; views allowing transmigration might also have separate parts of soul. Such views threaten the most common account of soul.

That the functional parts of the soul differ in account, while not being separate in other ways, is manifest (φανερόν, 413b29), Aristotle says, in contrast with the obscurity about whether mind might be separate (see b24–25). Thus, while the most common account of soul can cover any soul, inasmuch as the capacities of soul tend to have but limited separation, nonetheless each of the various capacities can receive its own account, as he will be going on to provide in much of the rest of this treatise. He offers two arguments for diversity of capacity. The first argument is that the powers of sense perception and opinion must be other than each other, if the activities perceiving and opining are other (αἰσθητικῷ γὰρ εἶναι καὶ δοξαστικῷ ἕτερον, εἴπερ καὶ τὸ αἰσθάνεσθαι τοῦ δοξάζειν, b29–31). Different activities or operations emerge from different dispositional powers, and this argument applies for the various powers of soul (b31–32). If potentiality is defined in terms of the actuality (see *Metaphysics* 1049b12–17), then diversity of actualities has to mean some distinction in the account of the potentialities. But until we can be sure that perceiving and opining differ, we cannot base on this a distinction of the respective powers. Is it clear that these activities differ? In the background of Aristotle's argument is Plato's effort to distinguish the powers of opinion and knowledge in *Republic* v 477c–478b. Plato differentiates powers by their object and what they accomplish (δυνάμεως δ' εἰς ἐκεῖνο μόνον βλέπω ἐφ' ᾧ τε ἔστι καὶ ὃ ἀπεργάζεται, 477c9–d1). Since sense perception and opinion may have overlapping objects (see, e.g., *Sophist* 264a-b and *Timaeus* 28a and c; cf. 428a26–b4), these powers might be distinguished by their activities. So long as thinking and perceiving have yet to be distinguished, however, as occurs only in *De anima* iii 3, this argument for distinguishing the powers awaits confirmation. Perhaps Aristotle illustrates with the distinction of perceiving and opining, difficult as this may be, because it is hard to say what activity to use for the nutritive power that includes growth, decline, reproduction, and so on. Also, he may wish to suggest that though sense perception and opinion differ in account, they needly hardly be separate other than in account in those beings capable of both.

The second argument tries what appears a different approach. Though the powers of soul are not separate locally within a living being, they can be separate insofar as different types of living beings have different powers of soul (413b32–414a4). Some animals have all the powers of soul that have been mentioned, some merely some, and other animals have but one of the powers.[22] If "all" includes mind,

[22] Ross 1961, 218 complains with Philoponus that in 413b32 Aristotle should refer to living things (τῶν ζώντων) rather than animals (τῶν ζῴων) because only plants have merely one part of the soul (see b33). Some commentators think that Aristotle may use ζῷον not merely narrowly for animal but more

humans are meant. Aristotle perhaps wishes to call attention to the way mind can be joined with other faculties in humans since this suggests that the most common definition of soul can apply to all ensouled beings. Other animals lacking mind may have the rest of the powers of soul down to just a single capacity, the power of sense, if Aristotle really means to be speaking only of animals. When he adds, "this makes the difference of the animals" (τοῦτο δὲ ποιεῖ διαφορὰν τῶν ζῴων, b33–414a1) he may mean either that possession of the various powers of soul makes for the various sorts of animals or that the single power of sense perception differentiates all the animals from the other class of living things, plants. The later promised discussion of the cause for the different faculties occurs in iii 12–13 (414a1). Aristotle adds regarding sense perception in particular that some animals have all the senses, some but some, and some only the one most necessary sense of touch (a2–3). Attention to the separateness of the senses in parallel with that of the rest of the powers fits with his limiting the discussion to animals. This whole line of argument based on the distribution of powers of soul might seem quite compelling until it is noticed that it either begs the question or reduces to the first argument. That different sorts of animals have different powers of soul, if used to argue that these powers of soul differ in account, presupposes that we recognize either the different powers or their different activities. Hence this argument actually differs little from the first argument. That further arguments demarcating some of the powers of soul remain to be provided in later chapters should hardly cause surprise. Nonetheless, there is continuing suggestion that the common definition of soul can apply even to animals with minds.

Aristotle says that some animals have all the senses, others some of the senses, and some but one sense (414a2–3). Could he really allow that any animal naturally having one of the distance senses naturally lacks any of the others? In such passages as *Metaphysics* 980b22–24, he suggests that bees and some other animals cannot hear, and there is some question whether moles have eyes (see 425a10–11; *HA* 533a2–15; *Meta.* 1022b25–27). Most likely for him, however, animals generally tend either to receive just the contact senses or all the distance senses together with the contact senses (see iii 1). Therefore the statement that some animals have some senses (414a3), if this means more than the contact senses but fewer than all five senses, can rarely be true, except in exceptional species such as the mole or as a result of defect or injury to an individual animal. With merely five senses, there still may be a wealth of types of animals, as there is marvelous variety of plants though they all have the same sort of soul generically. That a common account for animal and sense could apply whether all, some, or one sort of sense belongs to animals

widely for living thing, so that the ζῷα having just one of these faculties would be plants (see Simplicius *In de an.* 103,19–22). Perhaps, however, Aristotle means to be speaking strictly of animals since the real issue is still mind, and therefore only considers faculties beginning with sense perception, so that if some animals have sense, and the desire it entails, but lack progressive motion and mind, these animals have but *one* of the faculties in question. This fits with the passage and coheres well with his paralleling the general argument with the particular argument of the different senses. Rodier 1900, 204–205 gives this solution.

helps the case that a common definition of soul might apply for any sort of ensouled living being.

414a4–28 To justify the definition of soul, Aristotle has been tracing the various sorts of life and the ways in which the functional parts of the soul are united and separated. The argumentation has tended to make the capacities of soul parts of a united soul that can therefore receive a common definition. But there is a related question about how the powers of soul can be parts of the soul while the soul is still form. Were the parts or powers of soul to inhere in the soul as bodily parts or powers inhere in the body, the soul might be matter or substratum rather than the form of the matter, and again the parts of soul might seem separate with consequent damage to the account of life. The soul's relation to its functional capacities requires some clarification. If Aristotle can show that he aptly has soul explaining the operations of living things, his common definition is sustained. It works out that soul is the cause by which the animal engages in the life functions.

Aristotle points out that that "whereby" (ᾧ) we are said to live and to perceive may be either of two things, analogously to the case of that whereby we know: by knowledge or by that which possesses it, the soul (414a4–6). By referring to our functioning in these three ways, *we* live (ζῶμεν), *we* perceive (αἰσθανόμεθα), *we* know (ἐπιστάμεθα), he allows for three major levels of ensouled life and human life in particular: nutrition, sense perception, intellection.[23] Yet again, as in 413b1–4, living seems especially applicable to the basic life of nutrition. Knowing occurs obviously because of knowledge and because of soul, much as being healthy is a result of health and of some part of the body or the whole body (414a7–8). These cases are presented as clearer than the cases for nutrition and perception, and to raise the question whether soul is substratum for its powers as body is for health. If health can pertain even to parts of the body, as we might have a healthy eye, perhaps soul or life functions can pertain merely to parts of an animal. All the operations of living things are due to powers readying for them and that which has these powers. The power, such as health or knowledge, is a form (μορφὴ καὶ εἶδός τι καὶ λόγος) and actuality of what is receptive to it (ἐνέργεια τοῦ δεκτικοῦ, a8–10). By the conjunction of *morphe*, *eidos*, and *logos*, Aristotle emphasizes that the powers are formal and in the way he understands this, as inhering in some substratum (cf. book 1, ch. 3, n. 36). And such powers, knowledge and health, are likely relational beings (see *Physics* vii 3), and therefore *logos*, which can also mean ratio, has further significance. These powers are actuality of what is receptive to it when actuality is understood dispositionally, as is knowledge rather than theorizing (cf. 412a10–11, a22–23). Knowledge is the actuality of what is receptive to it, that capable of knowledge (τοῦ ἐπιστημονικοῦ) and health the actuality of that capable of health (τοῦ ὑγιαστικοῦ). Since knowledge and health can be viewed as dispositions produced by some moving causes (τῶν ποιητικῶν) in something receptive

[23] Aristotle's three levels here, life, sense, knowledge, may be compared and contrasted with Augustine's in *De libero arbitrio* ii 3: existence, life, understanding.

(ἐν τῷ πάσχοντι), they will be in what undergoes them, as generally motion and actuality are in that which is moved (see *Physics* iii 3 and *Metaphysics* ix 8.1050a23–b3). The body undergoes health, but that by which we first live, perceive, and think is soul (ἡ ψυχὴ δὲ τοῦτο ᾧ ζῷμεν καὶ αἰσθανόμεθα καὶ διανοούμεθα πρώτως, 414a12–13). "First" (πρώτως) is inserted because soul has these powers and operations in virtue of itself, while the animal has them in virtue of soul (see *Meta.* v 18.1022a29–32; contrast 413b2). Since soul supports these operations, do we conceive soul as matter and substratum receptive to life, perception, and knowledge, or should soul more properly be some sort of *logos* and form with these as formal parts (414a13–14)?

Soul is what *first* allows for life, perception, and knowledge: *we* live, *we* perceive, and *we* know on account of the soul. The human being (or animal) is the substratum; the soul is *logos* and form. The dispositional actualities, such as life, perception, knowledge, are somehow *in* the soul, but their actualities or operations are not similarly in the soul. Were these operations merely in the soul, rather than in the composite living being (cf. 408b12–15), soul would be the substratum of its powers and these powers might be quite separate. But in fact the *human being* lives, perceives, and knows in virtue of the soul and its powers. The operations involve soul and body, so that they cannot simply be separate from the living being. The soul is form of the animal or living thing, and therefore there can be a common definition of soul. Soul is cause or mean proportional for life of the living body.

Aristotle's argument in 414a4–14 has led to soul as that by which we live, perceive, and think, which has the capacities allowing these operations of the living being. He now supplies argument that soul is form rather than matter or composite, and hence soul could not have its powers such that they would be separate. This may seem merely repetition of the earlier definition of soul in ii 1, where he was exploring the relation of soul and body. But here he has a different purpose, to argue that soul is form, and hence its parts, that is, the various capacities of life, are not separate from it, thus defending the common definition of soul as accounting for life generally. Substantial being might be any of the three: form, matter, or composite (τὸ μὲν εἶδος, τὸ δὲ ὕλη, τὸ δὲ ἐξ ἀμφοῖν, 414a14–16; cf. 412a6–9). How to assign soul to one of these? Matter is potentiality, form is actuality (ἐντελέχεια), and what is composed from both of these is what is ensouled (ἔμψυχον, 414a16–17). Since the ensouled is the composite, soul is form and actuality of the body (a17–19). The composite body is ensouled, that is, a certain sort of body, and therefore the soul must be actuality of the body rather than the body the actuality of the soul, as only some bodies will be ensouled. Soul, as form and actuality of the body, cannot be without body (cf. 403a5–b19), and soul is not any sort of body (μήτ' ἄνευ σώματος εἶναι μήτε σῶμα τι ἡ ψυχή, 414a19–20).[24] That soul is not a body was previously argued in

[24] On the *harmonia* theory of soul, soul would be neither without body nor a body, yet this theory fails drastically by taking soul as an accident rather than a substantial being. The rest of Aristotle's predecessors tend either to allow soul without body, e.g., Platonists and maybe Pythagoreans and

406b26–407b12 and 412a16–22, but here it is argued in connection with the various capacities that soul explains and the argument confirms that the powers of soul cannot be separate as can bodily parts. Thus the powers of soul belong to it as formal parts and there can be a common definition of soul.

Soul is not a body at all, yet as form and actuality of body, soul is always something *of* a body (σώματος δέ τι), and consequently, since actuality is in that of which it is actuality, soul is *in* a body (ἐν σώματι ὑπάρχει) and *in such a sort* of body (ἐν σώματι τοιούτῳ, 414a20–22). Soul serves as principle of a body suited to it rather than any chance body. This was part of the purpose of emphasizing in the common definition the proximity of soul to body, that the body has life in potentiality and is an organized body. The body must be appropriate for the soul to be its actuality. Aristotle's predecessors improved little upon the ancient tales of souls traveling from one sort of body to another. They fit soul into any body and of any sort (a22–25; cf. 407b13–27). It hardly appears the case (οὐδὲ φαινομένου), however, that chance bodies receive chance souls as their forms. Thus Aristotle has been correct to give a common definition of soul denying that soul is any kind of body but relating it to an appropriate kind of body.

Aristotle appeals in his argument to both experience and reason. We do not find souls in completely mismatched bodies. At least this does not happen on the scale that the predecessors suggest in which there need be little or no connection between the sort of soul and sort of body.[25] Generalizing the point according to reason (κατὰ λόγον), actuality always seems to belong in relation to potentiality and to arise by nature in its own sort of matter (414a25–27). Thus it is plausible to hold that soul has to be appropriate to the body it informs.

Aristotle draws his conclusion about soul and body from this discussion, "Now that it is a kind of actuality and *logos* of that having a potentiality to be of such a sort is manifest from these things" (ὅτι μὲν οὖν ἐντελέχειά τίς ἐστι καὶ λόγος τοῦ δύναμιν ἔχοντος εἶναι τοιούτου, φανερὸν ἐκ τούτων, 414a27–28). Soul as actuality and *logos* is the form of the body suited to it, as body is potentiality for it (cf. a12–14). This seems to return to the common sort of definition of soul reached in ii 1, that soul is the form of a natural body having life potentially, and confirms that a definition along these lines is fitting. It returns to that definition on the basis of the recent inquiry into substantial beings and the entire reflection upon causes of life, thus ensuring that the common definition of soul is not merely a conclusion but an account dealing fittingly with the reason for the applicability to plants and animals (see 413a16–20). Life has been seen to pertain to soul through capacities that it bestows on the body. The common definition of soul can be sustained because life rightly enters with

Anaxagoras, or to conceive soul as some sort of body. We might wonder, then, whether in 414b19–20 there are any Aristotle commends for grasping the soul's relation to body other than he and those following the lines of his account.

[25] Empedocles seems to have living things put together at random, and Plato mythically has transmigration of souls. At a more plausible level, Plato allows that souls may fit their bodies poorly (see *Timaeus* 87c–88b), and Aristotle discusses the way free persons and slaves may have poorly matched souls and bodies (see *Politics* i 5). Of course there may for Aristotle be accidents and monstrosities in individual offspring.

nutritive capacity that is requisite for any ensouled being, and the other sorts of mortal life connect with nutritive life and are tightly unified in soul. The various types of mortal life cohere with the common definition since they pertain to unified soul, soul as form of an appropriate body with which the operations of living beings occur. The soul must then be a unity giving life to a body suited to having soul. The fittingness of body to be united with soul confirms the unity of soul.

3

How Powers of Soul Are Distributed and United in the Soul

414a29–b19 In ii 2 Aristotle has explored the cause of mortal life through investigating the various powers of soul and how they might or might not be separate from each other. His main concern was that the other powers not be separate from the nutritive life power. Now he considers more fully how the powers of soul are distributed to living things and why they unite in the soul. Previously he was arguing against multiple souls in the ensouled being, while now he argues that each kind of living being has a unified soul. If the powers of soul are in succession, then nutritive capacity ushers in life with possibilities for further sorts of life. The powers (δυνάμεις) of soul referred to are nutritive power (θρεπτικόν), perceptive (αἰσθητικόν), desiderative (ὀρεκτικόν), motive according to place (κινητικὸν κατὰ τόπον), intellective (διανοητικόν, 414a29–32). Different classes of mortal living things possess all, some, or one of these (cf. 413b32–33). Because he is considering how widely these faculties extend and which can be separate, he here lists them, unusually, in the order of decreasing extensiveness.[1] Humans have all of these functions, some animals only some, and plants just the nutritive capacity. As more capabilities are added, the number of living things possessing them decreases. Aristotle reconsiders how these functional capacities separate and combine in the classes of mortal living beings to guarantee that he has dealt well with all the powers of mortal living things and that his definition of soul covers all the soul's powers. He has given some arguments in ii 2 that the powers of soul will be united – that is, that they are somehow parts of a soul, but now he strives to give the cause for this unity in the various levels of living beings. Since animals are the living beings having more than one power of soul,

[1] Manuscripts differ on the order of sensitive and desiderative powers in 414a31–32; Jannone 1966 has desiderative followed by sensitive. This order fits decreasing extensiveness since every animal must have both sense perception and desire. Aristotle claims in 414a31 that the powers that "we said" (εἴπομεν) are the five he lists, but though he mentioned *orexis* in 413b23, his previous lists in 413a23–25 and 413b12–13 have only four sorts of powers or types of life. Clearly he lists the desiderative power since he wishes to speak of it (see 414b1–16). The other power previously mentioned, *phantasia* (see 413b22), he says in 414b16 is being left for later, and *doxastikon* (in 413b30) is included within the *dianoetikon* in 414a32. A reason to put desiderative first is to keep it apart from the locomotive faculty, which it largely encompasses.

they need the most consideration. If sense perception must connect with nutrition power, as well as with higher powers of the soul, the unity of soul is secured. Aristotle therefore concentrates upon linking sense perception causally to nutrition and desiderative power. The succession of the powers of soul, which is essential for linking life with all soul, raises the question, however, whether any general definition of soul is possible and useful. The second half of the chapter hence takes up the value and legitimacy of a general definition of soul. Having achieved comprehensive definition of soul and supported the enterprise, he can proceed in subsequent chapters to the accounts of each of its faculties.

Plants have just the nutritive faculty, so no further argument is needed for their unity of soul and the account of soul encompassing this power succeeds for plants (414a32–33). Other living things, that is, animals, possess the perceptive power along with the nutritive, and having perceptive power also entails at least the desiderative (a33–b2). Aristotle briefly argued previously that where there is sense perception there are pain and pleasure and hence appetite (413b22–24); the argument is now expanded with a causal account of the connection of sense perception with nutritive life and desiderative power, thereby supplying strong argument for unity even of more complex soul. He says,

> If something has the sensory power (τὸ αἰσθητικόν), it must also have the desiderative (τὸ ὀρεκτικόν); for desire (ὄρεξις) is appetite (ἐπιθυμία), spiritedness (θυμός), and wish (βούλησις); now all animals have one sense at least, viz. touch, and to whatever belongs sense, to this belongs both pleasure and pain and both the pleasant and the painful (ἡδονή τε καὶ λύπη καὶ τὸ ἡδύ τε καὶ λυπηρόν), and to which things these belong, also appetite; for appetite is desire of what is pleasant (τοῦ γὰρ ἡδέος ὄρεξις). Further, they have the perception of food. For touch is the perception of food (τῆς τροφῆς); for by dry and moist and hot and cold things all living beings (τὰ ζῶντα) are nourished, and touch is perception of these (of the other sensible objects only by accident [τῶν δ' ἄλλων αἰσθητῶν κατὰ συμβεβηκός]. For sound, color, and odor contribute nothing to nutriment. Flavor is some one of the tangibles.) Hunger and thirst are appetite, hunger an appetite for what is dry and hot, thirst an appetite for what is cold and moist; flavor is a sort of sweetener (ἥδυσμά τι) of these. We must later clear up these points, but now it may be enough to say that to the animals (τῶν ζώων) having the sense of touch belongs also desire. The case of *phantasia* is unclear (ἄδηλον), later it ought to be considered. (414b1–16)

Both plants and animals require nourishment. For animals securing food is a primary task of perception and consequently desire. Thus Aristotle establishes the unity of soul of a living thing, and he supports the succession of life faculties.

The kinds of desire (ὄρεξις) are appetite (ἐπιθυμία), spiritedness (θυμός), and wish (βούλησις); if Aristotle can show that all animals have at least appetite because they have sense perception, then he has proved that they have the desiderative capacity. No justification need here be provided for dividing the genus of desire into these three kinds since agreement that appetite is a type of desire, which seems indisputable, suffices for the argument.

Plato's discussions in *Republic*, *Phaedrus*, *Timaeus*, and so on, and Aristotle's own practical science suggest division of desire into these kinds. Plato divided soul into the appetitive, spirited, and calculative parts, and he indicated that desire

connects with each of these (see *Rep.* ix 580d–581c). Appetite in the *Republic* extends to the basics for survival, food, drink, and sex, which Plato summarizes as money. Spiritedness has to do with honor, that is, the way one is viewed by others and oneself, and the desire connected with reason is the desire for knowledge. Human desires the *Republic* thus attaches to three main goals: money, honor, and knowledge. In most people's lives, though one or another of these tends to dominance, these desires are confused: that is, each does not keep to its own rightful place, so there is desire to have more than is appropriate. Only the just maintain the proper ordering of the desires: by keeping to their rightful places desires avoid *pleonexia*. Aristotle largely takes over Plato's scheme, though as will be seen in iii 9 he does not want to assign different kinds of desire to different parts of soul. He calls the rational desire "wish" as desire for certain ends involving a sense of time. Desire for happiness and important components of it for ourselves and for others is wish. Since wish (βούλησις) tends to realize itself through deliberation (βούλευσις), a calculative process, it seems restricted to reasoning beings. "Appetite" (ἐπιθυμία) is desire for immediately pleasant things for the body or avoidance of the immediately painful. "Spiritedness" (θυμός) connects especially with anger. Anger is desire for revenge due to the appearance of slight (*Rhet.* ii 2). Frustration of appetites and wishes may give rise to spirited response. Spiritedness requires some sense of self that esteems things and holds strongly to them and that becomes annoyed or frustrated at lack of success in its desires or insufficient deference to them. In the *Republic* the guard dog's friendliness to what is familiar to it, such as its master, and its aggressiveness toward what is unfamiliar (375a–376c) derive from *thumos*. Loyalty, fierceness, and friendship thus connect with it.[2]

What those mean who refer to human "will" is often difficult to determine, but Aristotle's distinction of the three sorts of desire appears to leave little room for any exceptional concept of will. He allows that animals do things voluntarily when they do them in accordance with their desires: that is, they do them neither compelled by external force nor being ignorant of what they do (*NE* iii 1). Humans in addition have choice (προαίρεσις) since they may have deliberated and acted according to their wishes. This amounts to a theory of will only if will means some sort of desire included in the three mentioned. Will as a capacity for action that may go against all the desires or inclinations of the animal finds little place in Aristotle. Reason may resist many desires, but only in conjunction with wish and desire could it lead to action.[3]

[2] In *Politics* 1327b40–1328a3 Aristotle attributes friendship to *thumos*. Bremmer 1983, 54 says, "*Thymos* is, above all, the source of emotions. Friendship and feelings of revenge, joy and grief, anger and fear – all spring from *thymos*." And "What was the *thymos* originally? It has recently been shown that the *thymos* must once have been a substance that could be brought into movement, and this observation again lends support to an old etymology connecting *thymos* with words such as the Latin *fumus*, or 'smoke.'" The chains on the prisoners in the cave allegory in *Republic* vii may be many of their desires but especially spirited desires. Spiritedness keeps them to that with which they are most familiar. The philosopher undergoing education must have a different sort of spiritedness devoted to the truth with readiness to jettison what is familiar.

[3] Wolfson 1948, ch. 8 and Wolfson 1961, chs. 6 and 8 reflect upon the origin of the notion of will. Wolfson suggests that the Epicureans may have been the first to provide some conceptual apparatus for a faculty that resists subsumption in any causal chain. If atoms frequently swerve from any predictable path,

Aristotle's argument connecting sense perception with desire focuses on the basic sense, touch. Aristotle points out that every animal has at least the sense of touch, and because any sense suffices for pleasure and pain and discloses things pleasant and painful, the animal must have appetite, since appetite is desire for the pleasant (414b3–6; cf. *PA* 661a6–8). Pleasure and pain seem to be perceptions or akin to perceptions, while the pleasant or painful is the object or state of affairs correlated with such experiences. The argument supplied, assuming that some feeling of pleasure or pain or lack of the pleasant or presence of the painful evokes desire, establishes that sense perception is a *sufficient* condition for desire, contact sense sufficing.[4] Any feeling of pleasure must at least incite a desire for its continuance and feeling of pain a desire for avoidance, and cognition of the pleasant or painful must provoke desire for pursuit or avoidance. Further argument would be needed to establish that perception is a necessary condition for desire, an argument showing that desire depends upon cognition. Appetite is said to be desire of the pleasant, and Aristotle does not make clear how pain enters into it, though he has been emphasizing that animals by perception feel pleasure and pain. Presumably the desire for the pleasant is often provoked by the need to escape the painful. For example, the pain of hunger and thirst drives the animal to eat and drink. Perhaps if appetite is desire of the pleasant and perception discloses the pleasant, then perception is necessary for appetite. Even if *phantasia* or thought can also provoke appetite, such provocation seemingly has its origins in sense since appetite concerns the sensibly pleasant and painful.

Rather than pain appearing first, as it did in 413b23, pleasure and the pleasant here precede pain and the painful because appetite as desire is primarily for the pleasant. It might seem, however, that all desire, spiritedness and wish as well as appetite, is desire for the pleasant. For anger revenge is sweet, and a wish is a desire to do something or have some state of affairs emerge that would be pleasant. Anger also is provoked by pain, though wish often is not. Perhaps Aristotle can say that appetite is desire for the pleasant because the other desires more readily lend themselves to other evaluative terms such as the noble, the fine, or the good, whereas no terms besides the pleasant so fit appetite. Appetite steers toward the domain of life-sustaining pleasures: food, drink, and sex. Hence appetite focuses upon the

chance then permits someone to go against all that seems determined. Chance escapes causal chains, but it is unclear how it allows for decision and intentional action (Aristotle notes similar problems even for the atomism of Democritus; see 406b22–25). The other proposal for a theory of free will was devised by biblically influenced thinkers who also had contact with Hellenism. Creation of the universe miraculously out of nothing seems the model for the possibility of human freedom. As God gives the word and there is the universe, humans made in God's image may act freely, when they have God's good grace. Humans miraculously launch new initiatives as from nothing preceding; i.e., they may resist their inclinations. Continence for Aristotle, when reason resists appetite, is also wish resisting appetite, so one desire resists another.

[4] Hamlyn 1993, 92–93 says that this "is not a very good argument. . . . It is in fact difficult to see what valid argument *could* be produced to show that there must always be a connexion between sense perception and desire; the possibility of a creature which perceives things without having any desire to have them or to be rid of them seems at least conceivable, although it may be admitted that such a creature would not fit into Aristotle's teleological scheme." But Hamlyn seems to overlook the introduction of pleasure and pain into the argument and how an animal can hardly be indifferent to these.

immediate pleasures of touch most requisite to animals (see *NE* iii 10.1118a23–b4). There is even reason to doubt that the beasts have much pleasure through the other senses besides touch except as connected with the pleasures of touch (οὐκ ἔστι δὲ οὐδ' ἐν τοῖς ἄλλοις ζώοις κατὰ ταύτας τὰς αἰσθήσεις ἡδονὴ πλὴν κατὰ συμβεβηκός, 1118a16–18).

Whereas the argument in 413b22–24, and so far in 414b1–6, merely connects sense perception and desire through pain and pleasure, Aristotle now introduces the nutritive requirement of the animal to explain why the perception of the pleasant and painful gives rise to desire. This helps show that perception is necessary and sufficient for desire and demonstrates the unity of soul since perception contributes to the nutrition of animals. All animals have at least the sense of touch, and touch, Aristotle claims, perceives food because the tangible objects that it perceives – dry, moist, hot, and cold things – nourish living things (414b6–9). He can assert that all living things, both plants and animals, are nourished by dry, moist, hot, and cold things since these primarily constitute the elemental bodies (*GC* ii 3), and in *Parts of Animals* ii 1.646a14–20 he insists that instead of referring to the elemental bodies it is better to say that these "powers," hot, cold, wet, and dry, are the matter of composite bodies and that the other tangible differences of bodies derive from these. The most prominent objects of touch thus enter fundamentally into nutrition. The sensible objects of the other senses, which the sense of touch perceives only accidentally, enter only accidentally into nutrition. This holds for the objects of the distance senses, color, sound, and odor (414b9–11).[5] These sensible objects only accompany those that are nutritious (cf. 434b19–21). Yet the case may differ for the sensible objects of taste. Since flavors also are somehow tangibles perceived by contact, it can be urged that the sensibles of touch or the contact senses enter into nutrition (414b11; cf. 422a8 and 434b21–24). Emphasis upon nutrition and its appetites, rather than those of sexuality, is appropriate because not all animals must reproduce sexually. Contact sense providing cognitive access to what is nourishing occasions hunger and thirst, while the distance senses do not so directly support appetite. Touch, then, is necessary and sufficient for appetite. But this argument hardly makes the distance senses and their objects superfluous; it opens for them a richer career. They not only contribute to survival of the animal by locating possible food from a distance, but they also secure a higher form of existence through this more complex cognitive life and richer desires (cf. 434b24–29 and *De sensu* 436b18–437a3). Sense perception generally has the double potential of helping feed the animal and offering a life beyond mere provision of nutriment.

The appetites most evidently concerned with nutrition and implied by touch are hunger and thirst (414a11–13). Hunger, Aristotle remarks, is appetite for what is

[5] See Hicks 1907, 332–333 and Ross 1961, 222–223 for a review of suggested interpretations of lines 414b9–11. Both prefer the interpretation of Alexander, which is that touch only perceives the other sensibles accidentally. Simplicius *In de an.* 105,34–36 and Beare 1906, 178 offer the interpretation that the sensibles other than tangibles are only accidentally nutritious. It seems plausible to accept both lines of interpretation: i.e., that the other sensible objects are only accidentally perceived by touch and they only accidentally contribute to nutrition.

hot and dry, while thirst is appetite for the cold and wet. And he adds that flavor is some sweetener of these (a13–14). These points should offer support for the prominent role of the tangible sensible objects in nutritive life and appetite, but they also may raise some perplexity. Humans of course delight in hot drinks and cold food as well as the reverse. Might we then suppose that Aristotle's claim refers not to the immediate objects of perception but to food and drink after they become suitable for nutrition? The thirsty animal needs fluid, and elemental water is cold and wet, according to *On Generation and Corruption* ii 3. Thirst, then, is a condition of dryness and heat in need of restoration and balancing by means of the wet and cold. Hunger is for food to satisfy the appetite, and digested food becomes hot and dry through the action of the animal's heat. Perhaps it is not so much what the animal takes in that is food, but the result of the digestive process (see 416a3–9). Thus hunger for dry and hot and thirst for wet and cold are appetites for end products. But then it is not exactly the case that what the animal directly perceives by touch serves immediately for food and drink. Nevertheless, since the tangibles hot, cold, wet, and dry are the kinds that serve primarily for nutriment, and appetite seeks them, Aristotle's argument works to unite sense perception with nutritive life and desire. Perhaps *phantasia* that can present what is absent or not yet the case also has a role in appetite. Moreover, the disconnect between what the animal immediately senses by touch and what ultimately serves for nourishment may be bridged by Aristotle's comments about flavor.

Aristotle refers twice in the argument to flavor. Unlike color, sound, and odor, which are perceived from a distance and hence hardly constitute what is nourishing in food or drink, flavor, as are hot, cold, wet, and dry, is perceived through contact (ὁ δὲ χυμὸς ἕν τι τῶν ἁπτῶν ἐστιν, 414b10–11). Flavor is thus a kind of tangible. Aristotle also asserts that flavor serves as a "sweetener" (οἷον ἥδυσμά τι) for food or drink, enticing the animal to it (b13–14). Though further clarification about the role of tangibles and flavors is deferred for later (b14), that is, chapters 10 and 11, even this little about flavor as tangible and sweetener helps. That flavor is a sweetener (ἥδυσμα, which links etymologically with the term for pleasant, ἡδύς) suggests that pleasure and pain can accompany sense perception and taste in particular. Even if the predigested food and drink do not immediately possess just the tangible features desired by appetite, pleasant and painful flavors guide the animal to suitable food and drink. This function of taste is reinforced in *De sensu* 436b15–18. Yet not only will flavors have this function, but also they may themselves be what nourishes. In 416b11–13 Aristotle seems to distinguish the function of causing growth in the living thing from the function of maintaining its existence through nourishment, and elsewhere he suggests that tangibles contribute more to growth, while flavors pertain more to maintenance, all organisms being nourished by the sweet either by itself or in combination with other flavors (see *De sensu* 441b27–442a2 and *GA* 762a12–13, 776a28–29).[6]

[6] Ross 1955, 205–206 links *DA* 416b11–13 with this passage from the *De sensu* and the passages from the *GA*. The sweet, vital for nourishing animals, will also nourish plants. Plants take their food already concocted by the earth's heat (see *PA* 650a20–27 and 655b32–36), but plants do not perceive the flavor

Aristotle's argument establishes that the sense of touch is sufficient and necessary for living things to have desire (414b14–16). He has provided a causal account of why the soul of a living being has unity. Animals that have sense perception must have nutritive capacity and desire as well. Left unclear at this point is the connection of sense with *phantasia* and whether all animals also necessarily have *phantasia* (b16), a topic that reappears in 415a10–11, 428a8–11, and 433b31–434a5. Surely many animals that have sense and desiderative capacity also have capacity for change in place (414b16–17), though some, such as shellfish, may not. The close association of sense perception and desiderative power makes the possibility of further powers of soul following from and united with sense unsurprising, and not presently in need of causal argument. Humans and perhaps other higher beings indeed have both the power of thought and intellect (καὶ τὸ διανοητικόν τε καὶ νοῦς, b18–19). We expect humans to have such powers, but Aristotle words his statement about thought and intellect such that these may be additions to the other powers of soul in beings such as humans or even beings higher than humans, or perhaps such higher beings might have these faculties without needing to have them as powers of soul. Thus the issue how mind connects with soul is left open. That thought and intellect can belong to soul reaffirms the unity of soul, and that these might extend even to beings higher than humans indicates that treatment of the powers of soul listed at the start of the chapter may be comprehensive regarding life.

414b20–415a13 The unity and succession of the powers of soul in a living being have been treated by way of reflection on combination and separation of the soul's faculties in various living beings. What has been determined about life, that nutrition ushers in life, belongs to all mortal living beings, and explains why sense joins with desire, ensures that the general definition of soul covers any sort of soul. But the fact of succession of faculties, so far critical for establishing the unification of faculties and the possibility of common definition, raises a question about the viability and value of this most common account of soul. Where things are in succession, there does not seem to be a tight genus lending itself to definition (see *Meta.* 999a6–16 and *NE* i 6.1096a17–19). Aristotle will acknowledge that understanding the soul should hardly stop with a common definition since what follows from it are accounts of the various types of soul causing the various types of life, but general definition appropriately begins the inquiry. If he has for some time been considering the unity of soul, he now takes up the unity of definition of soul. Despite the fact that soul does not constitute a real genus, the way that soul is in sequence gives it sufficient unity that its most common account has meaningful unity.

The general account of soul is one similar (τὸν αὐτόν τρόπον εἶς), Aristotle says, to the general account of figure (σχήματος, 414b20–21). Figures, that is, the closed figures having straight sides, succeed each other, beginning from the triangle: triangle, four-sided figure, five-sided figure, and so on. There can be no figure outside

as flavor, since they lack sense. The sweet thing, then, does not so much nourish by its flavor as by being suitable fuel for burning. It would be surprising if sensibles as sensibles played a role in nutrition since nutrition is below the level of perception.

these in this succession. Likewise, there is a succession of souls starting from that of plants with just nutritive capacity (b21–22). The assertions that there are no figure besides those in succession and no soul besides those in succession mean not only that the succession leaves none out, but also that there is no true one over these successive manys. Even the Platonist should pause at having a Form in the case where there is succession, as with number or figure. Previously Aristotle doubted that a genus, as merely a "such" applying generally to many particulars in several species, is something in reality (see, e.g., 402b7–9), and what now should be said about cases where there is even less in common, as with successive series?

As successive series in which there is priority among the members, neither figure nor soul is a genus for Aristotle, so neither could permit the strictest sort of definition.[7] In the case of a genus, the differences demarcating the species should not themselves be members of the genus. Yet, where there is succession, as with numbers, what differentiates any two numbers, such as 2 and 5, is itself a number, that is, 3. Figure and soul thus do not have an account of the strictest sort. There is, however, a common account (λόγος κοινός) that can be given to apply to every figure or every soul, but such a common account is an account proper (ἴδιος) to no member of the sequence (414b22–25). Elsewhere he says that only a definition of a species of a genus, that is, an indivisible species, applies really properly to what is being defined (see *Meta.* vii 4.1030a11ff.). If a common definition is proper to none of the members of the defined class, it might well seem ridiculous to seek it while rejecting (ἀφέντας) an account that suitably applies to the indivisible species or kind (ἄτομον εἶδος, 414b25–28).[8] Aristotle perhaps intends to recall Plato's *Meno* 73e–76a, where there is discussion of accounts of figure, and the effort is hardly supposed valueless. An account that is not strict definition can nonetheless properly orient thought about a series, especially the series held together by the notion of life.

The successive figures all seem to have the prior figures potentially within them: for example, four-sided figures divide into triangles; similarly all subsequent types of soul have the prior within them, such as the nutritive power within those with sense power (414b28–32). Soul and figure are analogous and disanalogous. Each series has the prior members potentially within the subsequent members, but while the prior figures belong in the successive potentially such that upon division of a figured body the prior figures emerge actually, the prior sorts of soul are potentially within soul such that upon division of an ensouled being a new whole soul results in the severed part with all the same prior sorts of soul still only potentially within

[7] Ward 1996, 114 and 119–123 discusses the various passages in which Aristotle explains why ordered series are not genera and hence do not permit definitions in the strict sense. The passages are *Meta.* 999a6–16, *EE* 1218a1–8; *NE* 1096a17–35; *Pol.* 1275a34–38. In *Meta.* v 28.1024a36–b4 Aristotle allows for a loose sense in which the figures are a genus.

[8] Many commentators take Aristotle in 414b25–28 to be rejecting general definition of soul (as announced in 412a3–6) in favor of strict definition of indivisible species. For lists of interpreters supposing him to dismiss general definitions, see Ward 1996, 117nn10 and 12, and her own arguments on pp. 118–119. It should be recognized that even the types of soul, nutritive, perceptive, etc., are generic rather than specific, and so their definitions are in turn common and not the strictest sorts of definitions.

the soul (see, e.g., 413b16–21). Separability of types of soul is more complex than with figures since the lowest sort of soul, the nutritive, is separable from the rest, and the highest sort, mind, may also be separate. The figures are an endless series; the series of souls is finite and limited to a few main types.

Were the common account for soul rejected, definition pertaining to each kind (καθ' ἕκαστον) might be sought; Aristotle thus illustrates: "what is soul of each, for instance, what is that of a plant and what of a human or of a beast" (τίς ἑκάστου ψυχή, οἷον τίς φυτοῦ καὶ τίς ἀνθρώπου ἢ θηρίου, 414b32–33). Perhaps he follows out the lead of dividing the successive figures, as quadrilaterals divide into triangles, so that animals might divide into plants. Here the series is a series of types of soul of ensouled beings, the soul of plant, beast, human. The later members of the series of types of soul have the prior types of soul within them. The examples plant, human, beast indicate that even the definitions of each will be generic, as the human being is the only member of the ensouled kind with mind (cf. 402b5–9). Should the most common account of soul that embraces the whole sequence be dismissed, then, any more than these common accounts of plant, human, or beast soul that are members of the sequence? The fact that types of soul and kinds of life are in sequence, perhaps here emphasized by going out of sequence with plant, human, beast, much as types of figure are in succession, provides soul sufficient unity that a common account has validity and value. Hence Aristotle repeats in somewhat expanded form the demonstration that the types of soul are in sequence (b33–415a12). He is not so much here, as in the first part of the chapter, giving the reason that multiple soul powers join as parts of a single soul, but showing that the powers of soul belong in sequence since this is what secures enough unity for constructive general definition.

In 402b5–9 Aristotle raised the question whether we should seek one account of soul as if defining a genus such as animal, or we should get definitions of the souls of the various species of animals, such as horse, dog, human, god. The current discussion provides some answer. Soul does not form a single genus in the way that animal is a genus; instead soul resembles figure within which there are priority and posteriority. As a common account of figure proves useful, so does that of soul. Recall from 402b25–403a2 that a definition that does not help with what follows from it is empty. Aristotle's common account of soul prepares for understanding the particular types of soul and the functioning of ensouled beings. When earlier thinkers view soul as body, *harmonia*, or self-moving number, they fundamentally misconceive soul and impede understanding its functional parts. The account of soul as substantial form of a certain sort of body, a body having life functions, satisfies the predecessors' expectations of definition of soul and assists in producing more particular accounts of the types of soul. That there is succession among figures and souls suggests how to produce the more particular accounts of these life functions: follow out analogies and disanalogies beginning from the prior capacities. If the particular accounts succeed – Aristotle's soul handles motion, cognition, and incorporeality (405b10–12) – then the worth of the general definition of soul has been confirmed.

Aristotle does not now address the cause *why* the types of soul are in succession – when 414b33–415a1 says that this ought to be considered (σκεπτέον) he means later

in iii 12–13 – but he prepares for this by showing *that* there is surely a sequence. The sensitive power does not exist without the nutritive, but in plants the nutritive power of soul is found separate from the other powers and so has priority in the sequence (415a1–3). The same sort of separation occurs with contact sense (ἁπτικοῦ) in relation to the distance senses, because there are animals that have contact sense but lack sight, hearing, and smell (a3–6). The case is similar for sense power in relation to the power of progressive motion; many animals that must have sense also have locomotive capacity while many lack it (a6–7). Finally, to conclude the series, the power of calculation and thought (λογισμὸν καὶ διάνοιαν) that is least widely distributed in mortal animals only accompanies all the rest of the soul powers (a7–10). The sequence is so clear, except perhaps for *phantasia* and theoretical intellect (a10–12), that we can hardly suppose that the various types of soul have nothing in common. Sequence of the sort exhibited provides the unity justifying the common account of soul and fosters exploring each of the faculties through analogy and disanalogy.

When Aristotle says that a soul power presupposes another, as the sensitive power is not without the nutritive and the rest of the senses are not without touch (415a1–6), he might mean either that the natural kinds are so arranged necessarily or only for the most part. Either the natural kind animal has both sensitive and nutritive powers so that no animal under any circumstances can be capable of perception without an operative nutritive capacity, or the individual animals have these conjoined for the most part. The same might hold for the relation of touch and the other senses. Aristotle most probably means this in a very strict way, no further capacity of soul is possible without nutritive operation and no additional sense is possible without possession of touch. This is perhaps clearest where he says that "without the sense of touch none of the other senses exists" (a3–4).[9] The world would have to be of a rather different sort were these faculties more loosely related. After all, what allows conjunctions to hold only for the most part is matter that has the potentiality to be or not to be (see *Meta.* 1027a13–15), but the connections of formal parts should be necessary.

Aristotle's remarks about intellect fit his purpose of reaffirming the tight sequence of the powers of soul. He says, "Finally and least widely shared is calculation and thought, for to those things to which belongs calculation of the perishable things, to these also all the remaining belong" (τελευταῖον δὲ καὶ ἐλάχιστα λογισμὸν καὶ διάνοιαν· οἷς μὲν γὰρ ὑπάρχει λογισμὸς τῶν φθαρτῶν, τούτοις καὶ τὰ λοιπὰ πάντα, 415a7–9). Since there is finality in the series of types of soul, there can be completion of the accounts of faculties. The arrangement of the words "calculation of the *perishable* things" helpfully leaves it ambiguous whether he speaks of the calculation undertaken by perishable beings or the calculation regarding perishable things. The lines may then mean that those perishable animals that have calculation, that is, humans, also have the other types of soul, *or* that those animals that can calculate

[9] Ross 1961, 224 asserts, however, "it is only *de facto* that the perceptive faculty never exists apart from the nutritive; in 415a1–11 A. only points to the observable facts." This seems based upon a dubious modern distinction of matters of fact known a posteriori and necessary relations known a priori.

about perishable things also have the other types of soul, possibly including the type of soul that thinks about imperishable things. Had he wished he could have used "mortals" (θνητῶν) rather than "perishables" (φθαρτῶν), as he did in 413a32. In the first obvious way of reading, calculative capacity presupposes all the other lower faculties of soul, whereas those other faculties hardly presuppose thought. In the second way of reading, calculation of perishable things demands the other powers of soul and gives the further possibility for some humans of thought of imperishable things. Aristotle must appreciate the ambiguity because of the way he says "each of those" (ἐκείνων ἕκαστον) in 415a10 and his rapid reference to theoretical mind (τοῦ θεωρητικοῦ νοῦ, a11–12), which contrasts with calculation about perishable things. The theoretical mind that thinks merely of unchanging things may in some persons join with lower faculties of soul. Thus possession of this highest capacity makes the lower completely necessary, so the succession of faculties holds and the general definition of soul has unity and value.[10]

Most animals lack calculative ability, but do all animals have *phantasia* (415a10–11)? Perhaps this could be a sort of "mind" to make up for absence of calculative ability. Yet Aristotle allows that some animals may lack *phantasia*, though most of the animals have their lives guided by *phantasia* as they pursue what appears pleasant or good to them. Subsequently in iii 3 Aristotle raises the question whether all animals have this capacity, and he seems to answer in iii 11. It turns out that possession of sense implies *phantasia* of some sort. Most animals live according to *phantasia* and even human mind requires *phantasia*. That Aristotle says another discussion is needed regarding theoretical mind indicates that it is still unclear whether it is separate and how (415a11–12; cf. 413b24–27).

Since clarity about the faculties of soul depends upon suitable accounts of each of them, the investigation of soul naturally turns from the most common account of soul (see 412a5–6) to more particular accounts of the various sorts of soul: "Now that this account concerning each of these [kinds of soul] is also most appropriate (οἰκειότατος) concerning soul is clear" (415a12–13). This concluding section of ii 3 reminds us that in spite of the usefulness of a common account, there is something problematic about general definitions and a need for those definitions that are closest and most appropriate (οἰκειότατος) to what is to be known. Thus we are directed to the forthcoming accounts of the faculties of the soul. We should be suitably surprised when he does not always consider the faculties in the expected succession.

In ii 1–3 Aristotle has developed his most common account of soul. Several general accounts emerged in ii 1. Comparing such general definitions in ii 2–3 to two geometrical processes of definition, squaring and the sequence of figures, he

[10] And perhaps we can try a most helpful sort of reading of 415a8–10 in which Aristotle's words apply to the present situation of those following along with him: "for to which humans belongs calculation of [the sequence of] perishable powers of soul [as Aristotle is now giving], to this also all the remaining belong [i.e., all the rest of the understanding of soul such as of the general definition, the subsequent accounts of the powers of soul, and especially the account of theoretical intellect], but to those persons who have each of those [i.e., only some powers of soul or insight into only some], calculation hardly belongs to all such persons."

defends his accounts against possible criticisms. The discussion of squaring shows the need for including cause within a complete definition. The understanding of mortal life in its several varieties reveals that soul serves suitably as cause for these, that is, for giving these types of life to the body. Even if different sorts of living things make soul resemble figure as a sequence rather than a strict genus, doubt about the worth of general definition of soul eases through observing the tightness of sequence. The sequential arrangement suggests fruitful use of analogy for investigating the types of soul.

4

The Nutritive Faculty: Its Object and Subfaculties

If Aristotle has worked out his most common account of soul, and in doing so indicated that soul is the principle for all its capacities, he should now go on to the accounts of the soul's parts or capacities. He will begin with the most necessary of the soul's faculties, that which every mortal living being must possess, the nutritive capacity. The initial remarks about understanding of faculty by its operation and the operation in terms of its object explain some of his method but also allude to the topic of life since the various sorts of living seem to be operations of certain faculties. The nutritive capacity has an object upon which it works, food. In this way it prefigures the way the other faculties will relate to their objects. Moreover, the nutritive faculty breaks into subfaculties in connection with nourishment from food, growth, and reproduction. Here again there is parallel with the higher faculties, as sense breaks into five senses and mind divides into theoretical and practical mind. Aristotle also pulls together the subfaculties of nutritive soul by relating them all to saving the life of the living being. Most characteristic of life in all its forms may be this self-preserving in contrast with the typical self-destruction of motion. If life is activity in contrast with motion, this is as we should expect since activity has its end in itself and is always complete and continuable rather than on the way toward a limit and termination.

415a14–22 Though much of this chapter concentrates on a particular type of soul, the nutritive, the opening contains reflections pertaining to all the subsequent investigations. The first lines, "It is necessary for the person intending to make inquiry concerning these to grasp what each of these is, then thus to consider concerning the things following and other things" (ἀναγκαῖον δὲ τὸν μέλλοντα περὶ τούτων σκέψιν ποιεῖσθαι λαβεῖν ἕκαστον αὐτῶν τί ἐστιν, εἶθ' οὕτως περὶ τῶν ἐχομένων καὶ περὶ τῶν ἄλλων ἐπιζητεῖν, 415a14–16), have some helpful ambiguity. As investigation of soul seeks its definition and what follows from it, inquiry into each type of soul should grasp what it is and then what follows from it. Aristotle may here mean that subsequent to each of the accounts is consideration of the essential accidents of the type of soul or that once all the definitions of the capacities are completed he will go on to what follows; that is, he looks ahead to the *Parva Naturalia* and even

beyond to the treatises on animals. Both ways of taking the lines are appropriate. It is likely that some things follow directly from an account of a type of soul; for example, sense requires a medium, operation of mind depends upon a *phantasma*, and animals having motion of transposition have jointed bodies or the equivalents. Memory, recollection, sleep, dreams, respiration, and so on, that follow from sense and/or intellect only receive treatment in subsequent works. If generally what follows from the types of soul pertains to the embodied living being rather than just soul, then the expectation that definition will also lend itself to determination of essential accidents, suggested in 402a7–10, is satisfied through both what may be found in the *De anima* and the subsequent treatises.[1]

Since the capacities of soul, intellective (νοητικόν), perceptive (αἰσθητικόν), or nutritive (θρεπτικόν), enable the living thing to engage in certain operations, these operations, such as thinking (νοεῖν) and perceiving (αἰσθάνεσθαι), should be considered prior to them (415a16–18; cf. 402b11–14). The reason for this is that actualities (ἐνέργειαι) and operations (πράξεις) are prior to potentialities in account (κατὰ τὸν λόγον, 415a18–20). We explain the potentiality to *X*, for example, to see, in terms of *X*-ing, for example, seeing, that is the operation of the potentiality. Of course actualities are also prior to potentialities in *being* as well as in *account*, as *Metaphysics* ix 8 argues, but all Aristotle needs here is that accounts of potentialities can only be given in terms of actualities. Thus actuality is somehow cause of the intelligibility of potentiality. We expect Aristotle to use actuality in opposition to potentiality, but he also conjoins actuality with operation. Actualities and operations (αἱ ἐνέργειαι καὶ αἱ πράξεις) may mean nearly the same in opposition to potentialities, yet his conjunction of these terms in 415a19 may suggest the distinction of activity and motion, as set out in *Metaphysics* ix 6.1048b18–35. In the *Metaphysics* πράξις (*praxis*) is the wider term applying to both motion and activity, so perhaps here in the *De anima* πρᾶξις in contrast to ἐνέργεια refers especially to a faculty's operation when it is some sort of motion. Or if πρᾶξις is used widely to apply to both motions and activities, as it may be in 415b1–2 and 433a17 – and consider how *De sensu* 436a4 speaks of πράξεις of plants and animals – then ἐνέργεια could more narrowly refer to activities.

Aristotle lists the three capacities that are the most distinctive for mortal living beings from high to low, intellective, sensitive, nutritive power, perhaps because he has ready operations for the intellective and perceptive powers but not so obviously for the nutritive (415a16–18). He can speak of the reproductive operation simply as generating (γεννῆσαι), yet he has to resort more clumsily to "using food" (τροφῇ χρῆσθαι) for nutritive operation in general (a26). What is not initially evident is that the nutritive capacity in *all* its operations *saves* the living thing, as 416b17–20 will disclose. Its operations in growth, nourishment, and reproduction are, then, preservations or safeguardings of the living thing itself. Aristotle works toward this conclusion. In subsequent sections of the treatise it becomes clear as well that

[1] Rather than supposing that there is ambiguity in Aristotle's statement, Hicks 1907, 338–339 arrives at a similar interpretation by distinguishing between τὰ ἐχόμενα and τὰ ἄλλα, the former being "essential properties" and the latter things only more distantly related.

each of the faculties of soul somehow saves the sort of life that it supports (see esp. 417b2–16).

For the same reason that the actuality or operation is prior in account to the capacity of soul, the objects (τὰ ἀντικείμενα) involved in the actuality or operation are prior (415a20–22; cf. 402b14–16). A psychical actuality or operation is explicable only in terms of its object. For example, sense-perceiving is cognizing the sensible object. The object of an activity or operation seems even more to be an actuality inasmuch as the operation is devoted to it and somehow realizing it. Aristotle uses τὰ ἀντικείμενα for objects, his most general term for "opposites," because he wishes to cover many possibilities. When he analyzes the types of opposition into contraries, contradictories, correlatives, and having and privation (e.g., *Categories* 10 and *Metaphysics* v 10), he is dividing up ἀντικείμενα. Cognitive objects and food are "opposites" in the sense of correlatives to the psychical capacity and its operation: cognition, nutrition, and their operations are such in relation to their correlative "objects." Whereas a term for the operation of nutrition is possibly lacking, there is no problem about a term for the object, food (τροφή). Rather than proceeding from high to low as before, Aristotle reverses the order for the objects: food (τροφή), sensible (αἰσθητόν), intelligible (νοητόν, 415a22). He prepares for nutrition as the first faculty to receive account. Since nutrition has food as its object, but this is not an object of which plants are aware because they lack sense perception, not all objects of the faculties have to be objects of awareness. Hence, τὰ ἀντικείμενα, the widest term for opposition, usefully covers all the possible "objects" of the soul's faculties, objects of awareness and those without awareness.

Though the term τροφή obviously can mean food, it has wider possibilities. The term can also refer to the nutritive faculty and even to its operation. This is somewhat similar to the way the term for sense perception, αἴσθησις, can refer to the faculty, its operation, and even the object and the sense organ. Aristotle can speak unambiguously of the faculty of nutrition by the term θρεπτικόν or θρεπτική, which he employs in ii 4 at 415a17, a23, and 416a19. Hence when he uses τροφή in passages that can mean more than one thing, this must be by design.

After his argument that accounts of object and operation precede the account of the faculty, Aristotle states, "So that first concerning food/nutrition and reproduction one ought to speak" (ὥστε πρῶτον περὶ τροφῆς καὶ γεννήσεως λεκτέον, 415a22–23). He could be contending either that consideration of food must be first or that consideration of nutrition and generation as faculties will be first. Since he has been speaking of food, he must be continuing this line of reflection and concluding on the basis of the previous argumentation that food initially requires reflection; yet he also goes on to explain why the nutritive and generative faculty will be the first faculty to receive account. Probably he means to remind us that τροφή applies to the faculty nutrition, to its operation, and to its object nutriment. His complex usage of the term supports the point that faculties should be understood in terms of their objects.[2]

[2] Ross 1961, 227 speaks of 415a20–25 as "careless," bothered by the switch in meanings of τροφή and the announcement in a22–23 that it follows from what has been said that the nutritive faculty must be

Here at the beginning of the treatment of the faculties of soul Aristotle has assumed elaborate analogies. The nutritive, sensitive, and intellective powers are fundamentally analogous. As potentialities they can be understood only in terms of actualities, their operations and the objects of these operations. Thus in the case of each of the different capacities of soul we shall have at least these three analogous items: faculty of soul, operation, object. Soon even more items enter into the analogy, such as bodily organs and media. In addition, if less obviously, the major faculties break up analogously into subfaculties. Sense perception clearly divides into the five senses. But intellect also divides into at least the capacities for theoretical apprehension of nonenmattered beings, mathematical thought, and practical calculation (see iii 7); the nutritive faculty will soon be seen to divide into subfaculties pertaining to growth, nourishment, and reproduction.

415a22–b7 Nutrition and reproduction have first to be considered, "For the nutritive soul also belongs with the others, and is first and most common power of soul, according to which living belongs to all" (ἡ γὰρ θρεπτικὴ ψυχὴ καὶ τοῖς ἄλλοις ὑπάρχει, καὶ πρώτη καὶ κοινοτάτη δύναμίς ἐστι ψυχῆς, καθ' ἣν ὑπάρχει τὸ ζῆν ἅπασιν, 415a22–25). Treatment of the faculties of soul should begin with the nutritive power since the other powers of soul presuppose it. Nutritive capacity of soul is the necessary and sufficient condition for ensouled life. When Aristotle says that "living belongs to all" in virtue of it, he means that nutritive capacity is the cause of life, at least life on the first basic level, for all ensouled beings. It operates in plants separate from the other types of soul and animals cannot be without it. For this capacity of soul to become inoperative means death to the living thing. The succession of faculties with nutritive as first bestowing life has been argued in ii 2–3. The treatment offered here of nutrition sets up the framework for comparison with all the other capacities of soul. We should expect in the *De anima* an account of nutrition that is most general for all mortal living beings, that elucidates what is essential to the faculty and its operations.[3]

Besides arguing that nutritive capacity must be considered first, Aristotle needs to make clear what this faculty includes. He first conjoins nutrition and reproduction in 415a23; whether a single capacity also encompasses reproduction could be in

treated first, yet only in a23–25 is the real reason provided. Has not Aristotle instead worded things carefully to be provocative and to make more than one point succinctly?

[3] The account of nutritive soul in the *De anima* is limited in scale, as will be the accounts of the other faculties, by the aims of this treatise. Ross 1961, 232–233 gives evidence that Aristotle also had a treatise *Concerning Nutrition* or *Concerning Growth and Nutrition* (Περὶ τροφῆς or Περὶ αὐξήσεως καὶ τροφῆς). But this can well be doubted. Modrak 1987, 185n32 states, "Since the nutritive faculty includes all the vital capacities shared by living creatures from digestion to reproduction, it is only a slight exaggeration to say that all the biological treatises (e.g., the *De Part. An.* II–IV, the *De Gen. An.*, the *Hist. An.*) are concerned with the functions of this faculty." She goes too far, however, in saying, "*De An*. II, 4 is devoted to a cursory account of the nutritive soul; the mechanisms involved in the nutritive functions (digestion, reproduction, respiration, etc.) are discussed in detail in the biological treatises" (193n56). Aristotle seeks here to develop a definition of the faculty, to disclose its subfaculties, and to explore adequately the objects, operations, and organs that are in play. More detailed investigations suited to the natural scientific contexts appear in other treatises.

question. When he says that its works (ἔργα) are to propagate and to use food (γεννῆσαι καὶ τροφὰ χρῆσθαι, 415a25–26), he speaks of the nutritive capacity and indicates that it has more than one sort of operation under the single faculty.[4] By offering these works and sandwiching use of τροφή perhaps meaning nutritive capacity in 415a23 between uses meaning food in a22 and a26, he means to set us thinking about how the faculty that uses food connects with reproduction. In fact these works overlap because reproduction depends upon using food. Reproduction fits within the nutritive capacity because the food that is employed for the growth and maintenance of the organism also becomes in its ultimate rendering the seed that serves for propagating new life, and many living things naturally reproduce themselves by means of seed.

Aristotle gives an argument that reproduction should be within the domain of nutritive capacity. He contends that if reproduction is natural to most living things, that is, plants and animals, then it has to be included within the nutritive capacity that is most widely shared, and he justifies holding that reproduction is very natural. He first urges, "most natural" (φυσικώτατα) of the works of living things is reproduction of another such as itself, when the living thing is complete and not maimed or spontaneously generating, that is, mature and capable of sexual reproduction (415a26–29; cf. 425a10). If this reproduction is a most natural work of living things pertaining to all of them capable of it, then it must connect with nutritive capacity. That plants reproduce themselves, while only having nutritive soul, indicates that nutritive life typically includes reproduction. And reproduction applies to plants and animals with the same sort of operation and end, so that the capacity enabling the plant to reproduce should be that for animals as well. And that a plant generates a plant and an animal an animal, rather than reproducing randomly, gives evidence of naturalness, that is, control by the nature and soul. Reproduction may be said to result in another such as itself (ἕτερον οἷον αὐτό) looking either to the immediate offspring that in infancy is only of the sort of the parent or to the adult offspring that is another instance of the very same kind (415a28; cf. 415b6–7, 416b15–16, b24–25, and Plato *Symposium* 208b). When Aristotle says that reproduction of another such as itself is most natural, he is not comparing reproduction to other functions of soul, such as sense perception and intellection, as if to suggest that reproduction is even more natural than these. It would be strange indeed if the higher life is less natural than the lower, except in the way that divine life as activity goes beyond what is natural and motion, and if the whole aim of life is merely to generate another life rather than to live the higher life. What he instead contends is that reproduction is *a* most natural operation for most mortal living beings.[5] As very natural for so

[4] The text ἧς ἐστιν ἔργα γεννῆσαι καὶ τροφῇ χρῆσθαι (415a25–26) has many variants in the manuscripts. Some have the singular *ergon* rather than *erga*, which would make it possible to read καὶ τροφῇ χρῆσθαι as epexegetic, in which case he says that the nutritive soul is that "of which a work is to reproduce, indeed to use nutrition."

[5] Jim Lennox supported this point in correspondence by observing, "'most natural of functions' doesn't imply that there aren't other equally natural – *HA* refers to a number of organs as the most important for animals." That reproduction results in "another such as itself" (ἕτερον οἷον αὐτό) prefigures the way sense perception involves becoming "such as the sensible object" (οἷον τὸ αἰσθητόν, 418a3–4).

many of them, it must fall under the nutritive capacity that applies to all of them. Whereas the living being nourishes itself throughout its life but only reproduces when it has some maturity and completeness, it seems that reproduction is the end of nutrition, its possibility arising through nutrition and what is later in coming into being is somehow prior in being.

Now Aristotle should provide the ultimate justification of the claim that reproduction is natural. Why reproduction of another such as itself is most natural is that it enables the living being to partake of the everlasting and divine so far as it is able (ἵνα τοῦ ἀεὶ καὶ τοῦ θείου μετέχωσιν ᾗ δύνανται, 415a29–b1). Most natural to mortal things is to seek godlike life for themselves so far as they are able. Aristotle does not say that the individual aims to perpetuate the species, or anything so removed from his topic as that, but rather that the living thing produces another such as itself (ἕτερον οἷον αὐτό, 415a28). In this way it preserves *its own life* as much as it can. There is no contrasting here of reproductive and sensitive and intellective life – in fact each of these other natural capacities will analogously seek to perpetuate itself – but the generation of offspring is the making of another *self* capable of continuing its very own life and so the extending of nutritive life. Thus aiming to be like a god hardly takes the living thing beyond itself or its own level of being but immortalizes the self through making everlasting the natural life: a plant giving rise to a plant and an animal to an animal.

Living things generating another such as they accords with nature generally since all nature operates so as to be everlasting and divine: "all things aim for that, and for the sake of that they do whatsoever they do according to nature" (πάντα γὰρ ἐκείνου ὀρέγεται, καὶ ἐκείνου ἕνεκα πράττει ὅσα πράττει κατὰ φύσιν, 415b1–2). This is Aristotle's way of putting Plato's claim in *Symposium* 207d1–2: "the mortal nature seeks according to its possibility to be always and immortal." That nature works for an end, as argued in *Physics* ii, permits Aristotle's assertion that natural operation is a seeking of the divine. Since natural operations regularly and repeatedly achieve their ends, natural *becoming* attains to eternal *being* to the extent that it can. Reproduction serves as archetypical model of this principle of all nature. If all nature seeks to be godlike, when living things are reproducing themselves and thus managing to be divinelike, this must be most natural to them. Though Aristotle speaks of all things aiming (ὀρέγεται) to participate in the divine and doing (πράττει) all that they naturally can for the sake of this (415b1), this is clearly metaphorical even in many cases of living things. Plants lack perception and desire, yet their operations are as if they desired to be as godlike as they can. But animals having perception and desire can more or less consciously pursue various ends. They can voluntarily engage in reproductive actions. Nevertheless, reproduction is most natural for them.

To be as like the divine as possible need not mean doing things for God's sake or benefit. Aristotle points out that "the for the sake of which" (τὸ οὗ ἕνεκα) has two meanings: a purpose aimed at (οὗ) or something benefiting (ᾧ, 415b2–3; cf. *Meta.* 1072b1–3). For example, moneymaking might be for the sake of buying something or benefiting someone. Aiming to be everlasting has as purpose realization of the end of the natural operation and is for the sake of the self, that engaged in the

operation or emerging in the offspring, rather than for God's sake. The divine requires no benefits from perishable things. Aristotle's teleology remains sober and austere. He has the living being seeking to be divine just through engaging in its own natural operations. The various natural operations sustain the self, as does in a way reproduction of another self, and this continuance of life is the natural manner of partaking in the divine.

Why the nutritive capacity in mortal beings must resort to reproduction is that no destructible thing can partake of the divine continuously by remaining the same and one in number (415b3–5). So each natural kind finds its own way to partake of the divine more or less (b5–6). Its participation is more or less either by having more or fewer physical faculties or by the effectiveness of its nutritive faculty; that is, some living things have lengthier life, some more offspring, and so on. Perishable things cannot last forever since being perishable means having the potentiality not to be, and such a potentiality must some time be an actuality or the perishable is not perishable (see *DC* i 12 and *Meta*. ix 4). Mortal living things cannot be individually everlasting inasmuch as they come to be and perish in time. Endless life would hardly be a gift were it progressive decrepitude, so reproduction is not merely second best. Perishable things achieve everlastingness so far as possible by engaging in their natural operations. Neither the natural operations of the perishable being nor the perishable being itself can continue one and the same in number (cf. *GA* 731b31–732a1). Being "one in number" (ἕν ἀριθμῷ) is the strictest sort of unity recognized by Aristotle, stricter than one in species (ἕν εἴδει), one in genus, or one by analogy (*Meta.* v 6.1016b31–1017a3). Things one in number either are those having the same particular matter, such as a particular horse, or a being apart from matter, as, God is one in number (see *Meta*. 1074a36–37). The identity conditions for motions, so that they can be one in number, are set out in *Physics* v 4. No mortal being can engage everlastingly in any motion or operation since sleep or death intervenes. Reproducing offspring offers a means for extending the mortal sort of life forever. The offspring is not one in number with the parent but one in form (εἴδει δ' ἕν), and thus can have the same kind of life (415b6–7). We already see how saving or preservation of the kind of life assumes a key role in this treatise.

The argumentation here to establish that generative power falls under the nutritive may sound flamboyant with its reference to the everlasting and divine, but each step is needed and Aristotle's discussions of purpose in nature remain austere. Purpose derives for Aristotle from form that serves as terminus of natural process and operation. That things have forms and essences means certain conjunctions are either necessary or for the most part the case; that is, they are not accidental.[6] That natural conjunctions occur repeatedly and so are not accidental leads to the conclusion in *Physics* ii 8 that nature works for an end. Purposiveness does not

[6] Aristotle discusses the accidental as what is neither necessary nor for the most part the case in *Phys*. ii 4–6, *Meta.* v 30, and vi 2–3. "For the most part" is not a statistical notion but a modal or formal notion having to do with the fact that natural things have form and matter, so that what is natural for the kind might not always occur for the individual because of recalcitrance of the matter. As a member of a natural kind something is for the most part such and such (see *GA* 770b9–17).

require that each nature be intelligent. Plants, animals, and nonliving natural things can operate for ends without their own conscious purpose. Plato has conceived plants with appetitive soul and some level of desire and perception (see *Timaeus* 77a–c). If nature can work for an end without necessarily having awareness of the end, and if nutritive and reproductive functioning can be explained in this chapter without introducing desire and perception, then plants need not have desire and perception.[7]

Nature as the internal principle within each member of a natural kind looks toward the preservation of the nature of the kind and the sort of life of the natural living thing. Earth, water, air, fire are not in virtue of themselves for the sake of mixed bodies or higher-order living things, even if they employ them. Neither again are plants as such for the sake of animals, nor lower animals for the sake of the higher, though again lower may serve the higher. Hesitation about facile interspecies purposiveness appears in the passage where Aristotle distinguishes two senses in which things can be for an end, for a purpose or for something's sake (415b2–3). Each living organism does what it does to bring about its natural end, and this is for the sake of its self. As the soul uses body instrumentally, higher beings make use of lower beings but without that as the natural purpose of the lower. The furthest Aristotle goes theoretically in speaking of the coordination of the things in the cosmos is in *Metaphysics* xii 10, where God's very being and the seeking of all to partake of the divine bestows order.[8] Only in a practical, political context, rather than a theoretical context, does Aristotle speak as if all things are put here for humans (see *Pol.* 1260a33ff.; cf. *Phys*. 194a34–35 and *DA* 415b17–21). Such political reflection supports the natural world as an amply generous home for humans so that they are naturally political beings. Were the world inhospitable, that is, scarcity prevalent, humans might require unlimited acquisition with inevitable conflict, so that justice would be merely conventional rather than natural. Practical science in order to remain a distinct science may require principles somewhat different from those of theoretical science.

415b8–416a18 The point Aristotle has wished to make is that reproduction is most natural for a mortal living being, nearly as widespread as life itself, so that it might fit into the nutritive capacity and be dealt with first of all. He thus introduces soul, as did his predecessors, to account for various functions or operations. Dispute may surround the necessity of soul as principle of such functions or operations. Many of Aristotle's predecessors hardly considered plants as ensouled beings, because plants lack awareness, and hence they neglected using soul to account for nutritive life and

[7] Below the level of desire and cognition, Plato in the *Timaeus* (see, e.g., 47e5–48a7) has the receptacle "persuaded" by reason such that it tends to arrange the triangles into certain regular polygonal corpuscles and to distribute these toward specific regions while these corpuscles also act upon each other such that like leaves its like alone but attacks the unlike.

[8] In this treatise there is occasional reference to suitable bodies and bodily organs to support soul functions (e.g., ii 1, 415b17–20, iii 13) and even how appropriate it is that water and air occupy the world regions so that they can serve as media for the distance senses.

reproduction.[9] Other predecessors could only conceive plants as alive if they have feelings and awareness (see [Aristotle] *On Plants* 815a14–20, where Anaxagoras and Empedocles are said to hold this position). Plato in *Timaeus* 77a–c attributes soul to plants along with desire and perception. Since Aristotle has offered some argument that nutritive functioning is the necessary and sufficient condition for mortal life, the context of reflection upon nutrition is the place to argue for the causal role of soul. He must finally clinch the point that soul is necessary for nutritive functioning and its key cause so that nutritive capacity suffices for ensouled life; he must show the competence of nutritive soul to manage its functions despite lacking perception and desire. In effect, Aristotle secures *that* there is a faculty of soul accounting causally for nutritive life. If he establishes the causal necessity for soul for the very lowest life functions of nutrition, then this causality carries through for all the higher life functions that even the predecessors acknowledge involve soul.[10]

The argument begins with the contention that soul is cause and principle of the living body (τοῦ ζῶντος σώματος, 415b7–8). This contention accords with the previous definition of soul, but in contrast with the definition in ii 1 that soul is the form of the matter, that is, the principle of the body having life in potentiality, he states that soul is principle of the living body, that is, the *composite* living being. The concern now is not "the most common account" of soul (412a5–6) as it was earlier, but how soul may be cause in the ensouled being of its various sorts of life, and especially whether soul must be the moving cause. Because causes and principles are said in many ways – Aristotle recognizes four sorts of causes – he specifies three ways in which the soul is cause and principle of ensouled bodies: as mover, as end, and as substance, that is, form (415b8–12). Soul cannot be cause as matter since the body is matter or substratum for the soul.

Formal causality should in some respects be most crucial according to remarks in *Physics* ii 7.198a21–31 that in the case of natural things moving and final causes typically coincide with the form. Reversing his initial order (in 415b10–12), Aristotle

[9] The Stoics insist that life requires awareness, and hence they claim that plants have a nature but lack soul (see Long and Sedley 1987, i 319–320). The ancient supposition that nutritive functions do not require souls may be compared with Descartes's *Discourse on Method* v, which explicitly denies the need for soul to account for any functions not involving consciousness so that mechanism suffices. Descartes states: "I contented myself with supposing that God formed the body of a man exactly like one of ours, as much in the outward shape of its members as in the internal arrangement of its organs, without composing it out of any material but the type I had described, and without putting into it, at the start, any rational soul, or anything else to serve there as a vegetative or sensitive soul, but merely kindled in the man's heart one of those fires without light which I had already explained and which I did not at all conceive to be of a nature other than what heats hay when it has been stored before it is dry, or which makes new wines boil when they are left to ferment after crushing. For on examining the functions that could, as a consequence, be in this body, I found there precisely all those things that can be in us without our thinking about them, and hence, without our soul's contributing to them, that is to say, that part distinct from the body of which it has been said previously that its nature is only to think."

[10] Hicks 1907, 341 (cf. Ross 1961, 228 and 230) supposes that the passage 415b8–416a18 is merely a digression here and that the point that soul is cause in three senses might well have been made earlier in connection with the general definition of soul. He fails to see that it is in the context of the lowest, most widely shared life function that Aristotle needs to complete the case for the necessity of soul for mortal life. The argument of 416b9–11 presupposes the result of 415b8–416a18.

first considers soul as substance or form, because in this basic context, soul's being form ultimately depends upon its being first mover, especially as the moving cause of nutritive life. Soul is clearly cause as substance since universally substance is the cause of the being of things, life is the being of living things, and soul is cause of life (b12–14).[11] If life is the very being of living things (τὸ δὲ ζῆν τοῖς ζῶσι τὸ εἶναί ἐστιν), then what causes it, soul, must be their substance or essence. Aristotle adds that the actuality (ἐντελέχεια) is the account (λόγος) of the being in potentiality (τοῦ δυνάμει ὄντος, b14–15). This wide way of referring to form recalls the general definitions of soul in ii 1 as actuality of the body having life in potentiality. Soul as essence or *ousia* of the ensouled being, that is, the composite, and soul as actuality or form of the body having life in potentiality, that is, the matter, surely connect intimately. The body as potentiality for sustaining life can only be discussed in terms of the soul as its actuality and form, and soul as actuality is the substance and formal cause of the living body. Thus Aristotle justifies the claim that soul as substance is clear (δῆλον, b12) on the basis of the understanding of the four causes, his attack on the predecessors in book 1, and the definitional investigation of soul so far in this book.

That the soul is cause as that for the sake of which is manifest (φανερόν), Aristotle continues, "for just as mind does for the sake of something, nature also the same way, and this is the end of it" (ὥσπερ γὰρ ὁ νοῦς ἕνεκά του ποιεῖ, τὸν αὐτὸν τρόπον καὶ ἡ φύσις, καὶ τοῦτ' ἔστιν αὐτῆς τέλος, 415b15–17). He reaffirms the point argued in *Physics* ii 8 that nature works for ends analogously to the way mind or art consciously aims to achieve ends. His wording allows that that for the sake of which or the end for which soul or nature does things is mind or the soul itself (τοῦτ' in 415b17 agrees with τέλος and can refer to ὁ νοῦς or τὸν αὐτὸν τρόπον in b16). Now soul is the very nature of the living being. So when in b17–18 he says that in animals the soul by nature is "such a sort" (τοιοῦτον), he means that the soul is such as to work for an end and in animals soul is the very nature working cognizantly toward an end and that this nature has the soul itself as its end. For evidence he claims that all natural bodies are instruments of the soul used for the sake of the soul (b18–20). This would really clinch the point that soul is cause for the sake of which and end.

The claim that "all natural bodies are organs of the soul" (415b18–19) allows several possible interpretations. (1) It may just mean that living bodies, and perhaps also their nonhomoeomerous parts, including, head, heart, stomach, and even their homoeomerous parts, that is, tissues, are instruments of the soul.[12] This would apply to plants as well as animals (b19–20; cf. 412b1–6). Soul even lacking any awareness or desire, as in plants, is nature employing bodily parts as instruments for its own sake. (2) Aristotle may instead be speaking just of animals to prove that natural

[11] The claim that *ousia* is cause of the being to all things (τὸ γὰρ αἴτιον τοῦ εἶναι πᾶσιν ἡ οὐσία) holds whether *ousia* is given its narrower Aristotelian sense (applying to the category of substantial beings) or its wider sense covering the essence of any sort of being (closer to the way Plato used it). For Aristotle's allowance for this wider use of *ousia*, see, e.g., *Meta.* v 8.1017b21–23.

[12] Ancient and modern commentators wish Aristotle to be speaking only of living bodies as instruments of soul. See Philoponus *In de an*. 274,11–15; Hicks 1907, 343; and Ross 1961, 229. A justification for this may be an Aristotelian hesitation to speak of elemental or homoeomerous bodies as instruments until they receive considerable arrangement.

living bodies serve the soul of the animal, and he would then be contending not only that their own bodies are instruments of the soul, but also that when an animal eats other animals or eats plants, these bodies of other living things become instruments for the soul eating them. (3) But the natural bodies utilized by soul need hardly thus be restricted to bodies of animals and plants – the claim is for *all* natural bodies – since nonliving natural bodies can also serve as instruments for soul: animals breathe the air, drink water and swim in it, run on the earth, use air and water as media for sense perception, and plants root in the earth, take in water, and so on. All these natural bodies can thus be used instrumentally. And when Aristotle speaks of these bodies "as (if) being for the sake of the soul" (ὡς ἕνεκα τῆς ψυχῆς ὄντα), he seems to allow for interpretations such as (2) and (3). In accord with sober teleology, each kind is for its own sake while possibly also serving something higher than itself (cf. *Phys*. 194a34–35). Whichever way we take these lines, they confirm that soul uses natural bodies for its own sake as end. Soul as nature works is cause working for an end, and soul serves as end of nature. Since "for the sake of which" (τὸ οὗ ἕνεκα) may mean two things, a purpose aimed at or the party that benefits (415b20–21; cf. b2–3), this fits with soul as having itself as its end. The natural bodies are used for the benefit of soul, and soul does what it does for the everlastingness of its sort of life. The soul that is the end can be the soul of the individual and its offspring. Previously all natural things were said to be done to share in the everlasting and divine so far as possible (415a29–b2), and now this seems restated as soul's employing bodily instruments for its own sake and for perpetuation of its kind of life. The near repetition of 415b2–3 and b21–22 is deliberate both for advancing the argument in context and for the echoing.

Finally, Aristotle argues that soul is cause as that whence motion according to place first arises (ὅθεν πρῶτον ἡ κατὰ τόπον κίνησις, 415b21–22). The introduction of "first" here, which was absent in b10, suggests that soul is an unmoved mover since motion first arises from soul. Whereas soul as substance and end were claimed to be "clear" and "manifest" (b12 and b15), no such claim appears here for soul as mover, in spite of the fact that this was the most obvious function of soul for his predecessors (403b25–31). Soul's role as cause of motion most needs argument. An immediate reservation about soul as first cause of motion in place is that not all living things have capacity for such motion (415b22–23): certain animals, such as shellfish, and all plants lack progressive motion. Yet if motion is widened beyond locomotion – *Physics* 213b4–5 has motion according to place cover locomotion and growth – the soul seems responsible for alteration and growth (415b23–24). Sense perception, which only ensouled beings have, seems some sort of alteration, and nothing grows or declines naturally without nourishing itself, and doing so requires life and soul (b24–27).[13] This now becomes the issue: do natural growth and decline

[13] Even the animals that do not change in place must have sense perception, so perhaps sense perception cannot be locomotion. When Aristotle says guardedly that "sense perception seems to be some kind of alteration" or "alteration of a sort" (ἡ μὲν γὰρ αἴσθησις ἀλλοίωσίς τις εἶναι δοκεῖ, 415b24; cf. 416b34–35), he may have in mind such passages as 417b2–9 and 431a4–7, that perceiving questionably is alteration.

require life and nutritive action of soul? *That* there needs to be nutritive soul at all is under challenge.

Some predecessors deny soul is necessary for natural growth and decline. Until the need for soul is convincingly established, beyond what was provided in 413a25–31, the arguments just given about soul as form and end lack punch, as does any appeal to nutritive capacity. The haunting objection to soul's causality is that feeding and growth and diminution could be due merely to the natural powers of nonliving elements. Empedocles holds that the natural downward motion of earth and upward motion of fire explain plant growth (415b28–416a2).[14] Some other thinkers suppose that fire by itself suffices for nutritive functioning since it feeds itself, burns its fuel, and grows and diminishes (a9–13). Both of these views have the operations of elemental bodies account for nutrition and growth without requiring soul at all. If nutrition loses its status as life involving soul, what of the other supposed types of life? The necessity of soul for the first level of life, nutritive life, and consequently for subsequent levels of life, must now receive validation. Only if a *first* mover is required for nutritive life, a mover unlike any of the natural nonliving bodies, but a soul as mover, can soul additionally be the other two sorts of cause, form and that for the sake of which.

For Empedocles earthy roots and fiery upper portions of plants explain growth without recourse to soul. Aristotle observes, however, that Empedocles misunderstands up and down by supposing they mean the same for the universe and everything else (416a2–5; cf. *De juv.* 467b32–468a12, *DC* 284b15–18, *HA* 500b28–32, *De incessu an.* 705a32–b1). Plants' roots function as the heads of animals do, and so, if function determines the instrument and its direction, the roots are the upper parts; presumably the flowers, leaves, and branches, like the reproductive and evacuating parts in animals, are downward.[15] Thus plants reverse the functional orientation of most animals. Any purported account of organic structure and growth without soul should explain why the upward motion of earth and downward motion of fire have completely reversed functional significance for plants and animals. And the even more devastating challenge by Aristotle is that attributing growth merely to upward and downward motions of fire and earth ignores what can hold together these things in motion in contrary directions (416a6–7). To him it appears that only soul would prevent the growing thing from being torn asunder as the elements go their separate ways (a7–9).[16] Soul is the principle of nutritive life, arranging the whole utilization of food and the growth of the plant. Soul may employ instrumentally the elemental

[14] Some manuscripts have συρριζουμένοις in 415b29 but others replace this *hapax legomenon*. Perhaps Aristotle uses it here to echo in a funny way the way Empedocles himself spoke of the plant's rooting itself in earth by means of earth, as by means of fire it goes up toward fire.

[15] Aristotle might find the point about the animal head being like the roots of the plant in Plato's *Timaeus* 90a–b. If it is wondered why nutrition especially connects with up and down, we may observe that for Aristotle the six directions, up-down, right-left, and front-back, link, respectively, with nutrition, locomotion, and sense perception (see *De incessu an.* 4). Plants only have up and down, so this must correlate to nutrition.

[16] Aristotle perhaps ignores the way for the functions he attributes to soul Empedocles might use love and strife.

bodies and their natural directions of motion in arranging the growth of plants and animals, but soul serves as first principle of motion. Aristotle could add the point introduced in 413a27–31 that growth occurs not just up and down but in all directions, but it may reappear immediately below in 416a15–17.

Some others observe that fire is the only elemental body that nourishes itself, thereby grows, and so by itself could cause nutrition and growth in plants and animals (416a9–13). Aristotle acknowledges that fire may well be an auxiliary cause (συναίτιον; cf. Plato's *Phaedo* 99a–b and *Timaeus* 46c) but not the cause simply (ἁπλῶς, 416a13–15). Soul rather is the first principle of nutrition and growth. Fire or heat provides merely the bodily organ or instrument utilized by the soul in nutrition (see 416b25–29, though Aristotle perhaps avoids calling any simple element an instrument). The argument against treating fire as primary cause, despite its seeming growth in every direction, is that so long as it has fuel fire grows indefinitely or infinitely (εἰς ἄπειρον), but all those things put together by nature (τῶν δὲ φύσει συνισταμένων πάντων) have a limit (*peras*) and *logos* (order or notion) of their magnitude and growth (416a16–17). Whereas a forest fire expands wildly, an oak tree, for example, produces oak leaves and branches having a characteristic configuration and size, and goats have goat limbs and stature. Growth has not only limit in its magnitude but also proportion in the parts produced: growth is in all directions with measure so that body parts are suitable organs for the soul. Fire as such is by nature but not "put together by nature" as a living thing is, since the magnitude of this particular fire is not controlled by nature in the same way that complex living things are. Fire does not show the regular arrangement, magnitude, and unity of living natural bodies (cf. *Meta.* vii 16.1040b5–21). Fire grows and declines in magnitude, but only metaphorically is it fed or nourished. Aristotle compellingly defies the opponents to find any strictly material principle through strictly natural motions to direct the living being toward orderly growth. The first moving cause of controlled growth must be a form that is *logos*, that is, soul, rather than merely a material principle such as fire (a17–18).[17]

The way the argument for necessity of nutritive soul works is that Aristotle seeks any possible nonliving thing that might cause growth and life. Were any such thing a sufficient condition for nutritive life, soul would not be necessary. But if he shows that nothing other than soul suffices for growth and life, then soul is necessary for nutritive life. On the view that there are merely four elemental bodies having different basic motions, and reviewing the thought of his predecessors, few candidates present themselves as responsible for growth and life, and fire may be the only real candidate (see 416a9–12). Refuting any alternatives, Aristotle proves that nutritive soul is necessary for nutritive life.[18] He confirms that *form* is the primary

[17] Since immediately earlier in 415a22–b7 Aristotle linked reproduction with the nutritive capacity, he might also ask whether any strictly material account of reproduction suffices. Both growth and coming into being must have formal causes. Perhaps this argument does not appear because it would take him too far afield, little having been established about reproduction.

[18] In *Physics* 255a5–11 Aristotle argues that only living and ensouled beings can be self-movers since only they have capacity for motion in contrary directions and multiple motions. Hence the nonliving natural elemental bodies are not self-movers.

cause of natural motion. The characteristic growth of complex living bodies can only be explained by soul that is form. For those denying formal causes are ever needed to account for motion, the argument will seem question begging. But for Aristotle it has the support of his entire physics since for him all motion involves form, matter, and privation of form. The growth of living things demands a suitable form.

This section that has seemed to some commentators merely a digression deals with fundamental challenges to Aristotle's thought, that nutrition is a life function requiring soul or that nutrition can take place without desire and perception. Unless he can maintain that at the most primitive level of life soul is necessary and sufficient as first mover, form, and end, and at the basic level just nutritive capacity, then thinkers may suppose that material causes or souls that are magnitudes suffice for apparent life, or that desire and perception must be built into nutrition. The argument for soul as first mover supports its causal role generally. His argument here encapsulates that running through *Physics* i–ii. All change is the taking on of a new form caused frequently by something the same in form. The taking on of a form repeatedly cannot be due merely to accident, as the accidental is neither necessary nor for the most part the case. The uniformity and unity of the complex bodies of living things must be due to natures that are souls with nutritive capacity. Soul seems necessary for even the minimal level of life unless the opponents can demonstrate that material principles suffice, and it seems sufficient because it can direct the limited growth of the bodily components of plants.

416a18–b9 Aristotle has confirmed the soul's causality by showing that it is the moving cause for nutrition. Thus he has demonstrated finally *that* there is a capacity of soul accounting for nutritive functioning. He should go on now to determine *what is* this capacity of soul and what it includes, that is, how growth, nourishment, and reproduction of living things can all be explained by it. We should expect, in light of 415a16–22, which urges investigating what a capacity is by looking to its operation and object, that finding what nutritive capacity is follows the sequence object, operation, faculty. He needs to assess the object of the faculty prior to clarifying the faculty. If reproduction and nutrition belong to the same capacity, the object of the faculty might be food. Since the faculty should be considered last in the sequence, assurance about the relationship of reproductive and nutritive capacity has to wait, yet the preliminary linking of reproduction to nutrition in 415a22–b7 allows him to say they are the same faculty (416a19–20). Aristotle announces,

> Since nutrition and reproduction are the same power of the soul, indeed it is necessary first to define food, for it is by this function that this psychic power is distinguished from all the others. ἐπεὶ δ' ἡ αὐτὴ δύναμις τῆς ψυχῆς θρεπτικὴ καὶ γεννητική, καὶ περὶ τροφῆς ἀναγκαῖον διωρίσθαι πρῶτον· ἀφορίζεται γὰρ πρὸς τὰς ἄλλας δυνάμεις τῷ ἔργῳ τούτῳ. (416a18–21)

The Greek's meaning is ambiguous and hard to capture. After claiming that nutrition and reproduction are the same faculty, Aristotle says that either food, nutrition, or the exercise of the faculty of nutrition must first be investigated: τροφή can refer to any of these. The clause 416a20–21 then declares that nutritive faculty differs

from the others by the work of food, nutrition, or the operation of nutrition. Compare how in 415a25–26 the work of this faculty is to use food (τροφὰ χρῆσθαι), but in 416a20–21 the way food enters into the work is unspecified. Probably Aristotle wishes to be indicating that since the faculties of nutrition and reproduction are the same, he can deal with food as object of nutrition to clarify the entire faculty. The operation of nutrition in using food is most obvious to us and most easily compared to the operations of sense perception and thought.

Food or nutrition seems to some thinkers to be the contrary by the contrary (δοκεῖ δ' εἶναι ἡ τροφὴ τὸ ἐναντίον τῷ ἐναντίῳ, 416a21–22). Food may be a body having features contrary to the features of the body that it feeds, and nutrition is feeding the living body with a body contrary to it. Contraries (ἐναντία) are types of opposites (ἀντικείμενα): typically things differing most within a genus, for instance, in flavor sweet and bitter. Bearers of such contrary attributes may also be said to be contraries (see *Meta*. v 10.1018a31–32). Aristotle stated earlier that hunger is for what is hot and dry and thirst for the cold and wet (414b11–13); such an account of the desires may accord with the view that the contrary feeds the contrary. Not every contrariety pertains to food and nutrition, however (416a22). It is not enough for the contraries to change into each other, as disease changes into health or vice versa, but in nutrition one contrary must feed the other so that there is *increase* in quantity (αὔξησιν, 416a22–25).[19] Not all elemental transformations that Aristotle believes occur when hot and cold or wet and dry substitute for each other lead to growth in magnitude, and therefore feeding. He suggests that water is food to fire, though fire does not feed water (a25–27). Water has no active power to utilize fire, but the example of water feeding fire can have various instantiations. For example, the heat of a compost pile requires moisture, oil is a kind of watery substance that burns easily, and wood that has some moisture keeps the fire going. In Aristotle's understanding of elemental transformations the moist feeds fire since fire is already hot and dry and has the active power to assimilate the cool and moist to it. Completely dry things are no longer combustible; only what retains some moisture can be fuel; the end product of burning is dry, earthy ash that has exhausted its capacity as fuel. This connects with the just raised consideration of the possible role of fire in nutrition: fire seems to feed and grow (416a9–18). Fire is what is fed by moist fuel, so that the way in elemental transformations the moist feeds fire is the very paradigm for food and nutrition at the level of life (a27–29).

Aristotle's general reflection upon food as object of nutrition has so far suggested that it might be an elemental body that feeds another elemental body to which it is contrary: the moist feeds fire. Yet hunger previously was said to be for the dry and warm (414b12), and that may not conform to this model. Perplexity (ἀπορίαν) surrounds food because while some insist that the like is fed by the like, and growth takes place when something the same in kind is added to its like (416a29–31), others maintain the opposed view that things are fed by their contrary

[19] Even though the nutritive capacity may be distinguished into capacities for growth and for maintaining of the life of the living being (see 416b11–13 and *GA* 744b32–36), food should be what can lead to growth since the same food must support both growth and nourishment of the living being.

since like is unaffected (ἀπαθοῦς) by like and food is changed in the digestive process, and change in all cases is into an opposite or intermediate (τὸ ἀντικείμενον ἢ τὸ μεταξύ, 416a31–34; cf. 410a23–26). This very way of putting the perplexity suggests its resolution: when food gets added to the body to cause growth it must be like that to which it is added, and it has become like by being changed in digestion; hence, prior to the change brought about by digestion the food will have been contrary to what it feeds (cf. *Phys.* 260a29–b2).

The perplexity about nutrition has food as either like or unlike what it feeds (416a29–34). What undergoes change in the nutritive process, the food or what is being fed? Food, if like what it feeds, should not change what it feeds, at least not qualitatively; therefore those supposing food contrary to what it feeds have the food changed in the digestive process (a33–34). Aristotle supports the view that food is that which undergoes change of a qualitative sort (πάσχει τι) as a result of action upon it of what is being fed (ὑπὸ τοῦ τρεφομένου) rather than what is being fed's undergoing change due to the food (a34–b1). Much as the carpenter does not undergo action by the wood (ὑπὸ τῆς ὕλης), but the wood is changed by the carpenter, the carpenter only "changes" into activity from inactivity (ὁ δὲ τέκνων μεταβάλλει μόνον εἰς ἐνέργειαν ἐξ ἀργίας, 416b1–3; 417b2–16). "Carpenter" (τέκτων) and "wood" (ὕλη) may be translated more generally as "craftsperson" and "matter." A craftsperson, however much the activity of the craft involves motions, remains a craftsperson while engaging in the craft, but the material that the craft works on undergoes change. Matter as such is not mover, not active, but what passively undergoes change by a mover. Food analogously is matter worked upon by what it feeds.

Previously nutrition was compared to fire and its fuel (416a26–27), but now to craftsperson and matter. Fire burns up its fuel directed by a principle lower than soul; the craftsperson has soul and through craft works up the matter. As fire burning up fuel and the craftsperson changing the material, the ensouled body acts on its food. The nutritive soul is not knowledgeable or a craft, but nonetheless is a capacity to cause complex change in the food. The food in the digestive process undergoes alteration and even substantial change as it becomes suitable to feed the plant or animal, but the body that is being fed surely does not change in such ways. The living body that is fed may grow by adding the changed food to itself, but this is change of a different sort from the food, that is, growth rather than alteration and substantial change. And the ensouled body having attained full size maintains itself in the nutritive process, keeping its body heat and restoring body parts, but not growing and hardly changing at all. The body being fed while not changing resembles the craftsperson exercising the craft while remaining a craftsperson.

The resolution of the perplexity about nutrition derives from recognizing two senses or stages of food, the initial predigested condition (ἡ ἄπεπτος) and the last stage when the food is already digested (ἡ πεπεμμένη, 416b3–6). Food prior to digestion is contrary to what it feeds, whereas the digested food rendered useful to the body is like it (b6–7). Aristotle contrasts the two conditions by calling the food having been digested the last or ultimate (τὸ τελευταῖον) and the undigested the first (τὸ πρῶτον). He might speak of actual and potential food, but he only

thematizes this distinction in the following chapter. Food before it is digested is actually unlike what it feeds, but potentially like it, and in the course of digestion it becomes assimilated to the form of its mover and what it feeds. Hence there manifestly is a way in which those saying food is like and those saying that it is contrary are correct and incorrect (b7–9).

416b9–31 Since what is fed or nourished nonmetaphorically can only be something alive – this was argued in 415b25–416a18 – ensouled body must be what is fed (τὸ τρεφόμενον) and *as ensouled* (ᾗ ἔμψυχον, 416b9–10). Aristotle stresses that the living, ensouled body as such is what is fed to contrast with body merely as body, because no nonliving body strictly is fed. Perhaps we may say that the internal fire or heat of a living thing is fed accidentally (κατὰ συμβεβηκός) when the living thing feeds; the living thing itself is not thus fed only accidentally but in virtue of itself. Therefore food or nutrition is with reference to the ensouled body and not by accident (ὥστε καὶ ἡ τροφὴ πρὸς ἔμψυχόν ἐστι, καὶ οὐ κατὰ συμβεβηκός, b10–11). As indicated, the fire of the living body is fed accidentally by its going along with the living thing, while the ensouled body is nourished as ensouled and alive, that is, in virtue of itself. Moreover, the ensouled body cannot be as indiscriminate with food as fire is with fuel. Food has to be assimilable to what is fed by it. Stones are not food even if ingesting them would increase the magnitude of the living being. The ensouled body that is fed can hardly be as elemental as fire, so food in its final form must have complexity approaching that of the ensouled body. Aristotle has so worded b10–11 with the usefully ambiguous τροφή that he says both that nutrition is not accidental to the ensouled being – that is, a body is nourished if and only if ensouled – and that its food is hardly accidentally suitable for the ensouled being.

Having offered an account of nutrition's object, food, that it is what is initially unlike but undergoing change in digestion it becomes like what it feeds and then can contribute to growth of the ensouled body, Aristotle must go on in the order suggested in 415a14–23 to concern himself with the operation and faculty of nutrition. He has just said that it is the ensouled body that is nourished (416a9–11). The moving cause of nutrition must be soul, but the nutritive capacity seems to have multiple operations and to be a set of subfaculties. He states, "The being of nutritive capacity and of the capacity for growth are other" (ἔστι δ' ἕτερον τροφῇ καὶ αὐξητικῷ εἶναι, 416b11–12; cf. *GC* 322a20–28).[20] Previously he said that the nutritive and the generative faculty (θρεπτικὴ καὶ γεννητική) are the same (416a18–19), so that it seems he uses *threptikon* to refer to the faculty generally while *trophe* can refer more narrowly to nutrition that nourishes the living thing (this accords with 412a14–15 and 413a24–25). Ultimately the same power of soul explains

[20] It seems that τροφῇ in 416b12 (and τροφή in b13) is the capacity for nutrition rather than food since an announcement that object and faculty differ is here unnecessary and poorly fits the context. The seed of plants and animals have somewhat different food from the subsequent stages of the plants and animals, but still food serves as object of all the operations of the nutritive soul, though the sweet may have more to do with nourishment and tangibles with growth (see *De sensu* 441b27–442a2 and *GA* 762a12–13, 776a28–29).

nourishment and growth, along with reproduction – that is, they are subfaculties of the same overarching faculty – but these subfaculties can be distinguished in capacity and operation. Aristotle says growth (αὐξητικόν) pertains to the ensouled body as quantitative (ποσόν τι), whereas nutrition (τροφή) in the narrower sense to the ensouled body as a particular kind of being, that is, as the sort of substantial being it is (τόδε τι καὶ οὐσία, 416b12–13). The capacity for growth changes the quantity of the ensouled being, but the nutritive capacity, as pertaining to the very being of the ensouled body, preserves or saves (σώζει) the substantial being for as long as the ensouled body can be nourished (b14–15). The capacity for nutrition thus keeps the ensouled being the kind of being it is for so long as the nutritive functioning continues rather than causing it to change. Since nourishment saves the substantial being as it is, it apparently saves it as capable even of higher powers, such as perceiving and thinking. Nourishment saves nutritive functioning itself as well as any higher level of life functioning. And for any of the faculties of a mortal living being to be saved, the nutritive capacity must be operating incessantly, whereas other capacities of soul can become inoperative for some time. Reproduction can be distinguished among the nutritive faculties because it is not the living thing being nurtured (τὸ τρεφόμενον) that is generated but another like the thing being nurtured, for the ensouled being that already exists does not have to be generated (b15–16). Nothing generates itself, but it saves itself through nutrition (γεννᾷ δ' οὐθὲν ἑαυτό, ἀλλὰ σώζει, b16–17; cf. *GA* 735a12–14). While distinguishing the subfaculties and their operations, and giving to one of the subfaculties the role of saving the being of the ensouled being, Aristotle appears to be pushing to an overall view of nutritive soul as that which saves the living thing.[21]

The definition arrived at of the nutritive power might be taken to apply particularly to the narrower capacity of nutrition, but it can be seen to extend to the nutritive capacity taken most widely:

> With the result that such a sort of principle of soul is the sort of capacity for saving that which receives it as such, food (nutrition) prepares it to operate; whence deprived of food (nutrition) it is unable to be. ὥσθ' ἡ μὲν τοιαύτη τῆς ψυχῆς ἀρχὴ δύναμίς ἐστιν οἵα σώζειν τὸ δεχόμενον αὐτὴν ᾗ τοιοῦτον, ἡ δὲ τροφὴ παρασκευάζει ἐνεργεῖν· διὸ στερηθὲν τροφῆς οὐ δύναται εἶναι. (416b17–20).

In this pregnant formulation, nutritive faculty is a principle of soul that is a capacity to save that which has it and as such a being that has it. The genus in the definition is principle of soul, and the difference is capacity to save what has it as such. Key to the working of this definition is *saving* as the operation of the faculty and what is saved is *that which has this capacity* as just the sort of being that has it. The nutritive capacity of soul saves not just any being but the being that has it and as having it. If the nutritive capacity saves what has it, it saves itself, and if it saves itself, it saves what has it. The nutritive soul cannot be without the ensouled body, but the nutritive power saves the ensouled body as having the nutritive power of soul.

[21] Moses Maimonides seems to share this interpretation (*Guide of the Perplexed* ii 10 [Pines trans. 1963, ii 272]). See also Menn 2002, 119–122.

"Saving" (σώζειν) is a most astounding function. To save something is an operation that may involve effort and changes, but is not itself fundamentally a change. After all, to save something is to prevent it from undergoing any major change. Has not Aristotle managed to improve upon his predecessors' simple linking of life and soul with *motion* (cf. Plato *Symposium* 208a)? Life of mortal beings requires nutrition that saves the living thing and its very capacity for life. Saving, in the various ways that life saves, is something more unusual than ordinary motion and more plausible as a living operation. In ii 5, especially 417b2–5, it will become clear that all operations of soul faculties will be ways of saving the faculty, since they bring the potentiality into fullest actuality, and therefore they are hardly standard sorts of motions. The task of all life, nutritive, sensitive, intellective, seems to be to save or preserve the kind of life.[22] We may say that saving itself, rather than self-motion, is the best way to characterize life itself. All life as operation of soul is activity in contrast with motion, activity that is always complete and continuable. This activity is not change but saving of the sort of being, of its very life and of the principle of such life. As alive plants *save* themselves, as do animals and even God. The general way to speak of the operation of what has life is that it saves itself as the sort of living that it is, and the principle of life is a capacity for saving the being and itself.

Is Aristotle in 416b17–20 defining a narrow subfaculty of nutrition or the nutritive capacity generally? His formulation permits either or both. Where the passage appears and with its talk of saving, it may refer to the nutritive capacity in the narrow sense discussed in b13–15, especially because he stated that nothing generates itself but it saves itself (b16–17). But since all three subfaculties have been spoken about in b11–17, and the following lines b20–23 speak of the whole nutritive faculty, the passage can refer to the embracing nutritive faculty, emphatically so since the generative capacity is also somehow involved in saving. This is surely the case because the generative faculty results in offspring that must receive the nutritive capacity to be ensouled beings, and thereby the offspring are empowered to save themselves in virtue of receiving the nutritive capacity. Even though reproduction involves substantial *change* and growth involves *motion* with respect to quantity these are ways in which the living being engages in the *activity* of living and saving itself. Saving what receives the nutritive capacity as such may thus cover the suboperations of growing, nourishing, and reproducing because a living being in living and preserving itself needs to reach its optimal magnitude, and nourish its living body, and through reproducing generate further living beings that save themselves. In this way the generative capacity saves the life of the capacity for all time. Thus 416b17–19 can readily apply to the wider faculty of nutrition engaging in activity in all its operations as it obviously applies to the narrower nutritive faculty.

The μέν . . . δέ construction in 416b17–19 and use of τροφή permit flexible readings of the rest of the passage. If Aristotle has merely defined the nutritive capacity in

[22] It is arguable that "saving" is the most intriguing notion of what the soul does. Forms of the word for saving appear in many crucial contexts in the treatise. They are 411b23, 416b14, b17, b18, 417b3, 422b4, 426a17, 434b14, b17–18, and b26. Cf. 469b18–20.

the narrow sense, then he is adding that food prepares it to operate. And so without this nutritive capacity, or possibly denied food, the ensouled being cannot be. But he may also have defined the nutritive capacity generally in 416b17–19, in which case he may add that the nutritive power in the narrow sense prepares it to operate. On this reading, τροφή in b19 is taken as nutritive power in the narrower sense to follow along with the way τροφή has been used in b12 and b13, and the account offered in b17–19 should be meant to apply to the nutritive capacity taken generally. The broad power of nutrition is not able to operate to save itself if the narrower power of nutrition does not save itself and the being possessing it. And deprived of the nutritive power in the narrower sense no ensouled being can be. But the lines b19–20 also work fine in conjunction with the wider definition if τροφή refers in both appearances to food: "food (nutrition) prepares it to function. Whence deprived of food (nutrition) it is unable to be." Here the lines relate the object, food, to the faculty and its operation. Food plays the role of provoking the action of the nutritive soul. Food is not the first mover, but it "prepares" (παρασκευάζει) for the first mover, the soul, to act (416b19). Food is a passive principle of nutritive operation analogous to the way, for example, the availability of something heatable gets what is hot to exercise its capacity to heat. What is hot is the active moving cause; the drawing near of the passive factor is what is needed for the power of the hot thing to operate. The nutritive soul is the moving cause in nutrition, but food is needed for it to operate (see *GC* i 7, esp. 324b1–4).

Three factors in nutrition can be distinguished: what is being fed (τὸ τρεφόμενον), that with or by which it is fed (ᾧ τρέφεται), and what feeds it (τὸ τρέφον, 416b20–23).[23] It is hardly clear how what is involved in nutrition is distributed among these three factors, so Aristotle has to specify them. What is being fed is the ensouled body, that with or by which it is fed is food, and what feeds it is the nutritive soul. This soul is here called "first soul" (ἡ πρώτη ψυχή) because every ensouled being at least has it. The three-factor analysis for nutrition may be compared with the three ways that soul is cause in 415b7–28 and the analysis of factors of all motion in *Physics* viii 5.256b14–15: "For there must be three things – the moved, the mover, and the instrument of motion" (τρία γὰρ ἀνάγκη εἶναι, τό τε κινούμενον καὶ τὸ κινοῦν καὶ τὸ ᾧ κινεῖ). But most interestingly comparison should be made with the three factors in progressive motion (see iii 10.433b13–19), where the mover is desiderative soul and the object of desire, and that by which it moves is only the bodily organ. Here in ii 4 the emphasis is upon the nutritive soul as what feeds the living thing since food is given the role of that with which it is fed. These three factors enter into analysis of the nutritive faculty or any of its subfaculties. Though Aristotle does not spell this out explicitly in 416b20–23, given what he goes on to say in b23–25, perhaps he is

[23] Some commentators relocate the lines 416b20–23 by placing lines b23–25 before them. Ross 1961, 231 explains that the discussion of the three factors of nutrition in b20–23 fits with b25–27 while b23–25 continue the general discussion of the nutritive and generative faculty. The interchange by a copyist might seem likely because both sentences begin with the same Greek words ἐπεὶ δ'. But this relocation is unhelpful, and reference to "first soul" in b25 follows much more plausibly that in b22 than the reverse.

justifying calling the nutritive faculty θρεπτικόν in light of the way the three factors all connect with τρέφω.

Having just defined the nutritive capacity of soul (in 416b17–19), indicated its subfaculties, and called it *first* soul in b22 in connection with the three-factor analysis, Aristotle adds that since all things are justly named in connection with their end (τέλος), which in this case is the reproducing of another such as itself, the first soul could well be called the reproductive soul of such as itself (γεννητικὴ οἷον αὐτό, b23–25). This circles back to argumentation near the beginning of the chapter that linked reproduction with nutrition (see 415a23–b7). Reproduction is the ultimate aim for the nutritive capacity inasmuch as it saves something more enduring than the mortal individual living thing, its sort of life. And as the last aspect of nutritive life to enter into play, it might seem to be the end. The addition of this point about the justness of calling the faculty generative in terms of its end confirms that a general definition has been provided, the operation of saving covering reproduction. A reason that the nutritive faculty is not usually called the generative faculty is perhaps that the common object of the capacity, evident in the three-factor analysis, is food (*trophe*), and this obviously suggests naming the capacity nutritive (*threptikon* or *trophe*).

Aristotle further divides one of the three factors in the nutritive process, that with or by which the living thing feeds or is fed (ᾧ τρέφει, 416b25–26).[24] Right above he said that the ensouled body is fed with or by food (b22–23), but now he indicates that it may also be fed by the instrument or bodily organ employed by the soul to work on the food.[25] This puts matters closer to the three-factor analysis of *Physics* 256b14–15 quoted earlier and introduces an organ for nutrition that tightens nutrition's analogy with sense perception. That by which nutrition works resembles, Aristotle suggests, that by which a ship is steered, the hand and the rudder, "the one moving and being moved, the other only moving" (τὸ δὲ κινοῦν καὶ κινούμενον, τὸ δὲ κινοῦν μόνον, 426b26–27).[26] The way the rudder keeps the ship on course resembles the way food maintains the body's life. On the easier reading that just has the rudder moved, the soul is the mover, the hand that is the soul's instrument is a moved mover, and the rudder that is part of the ship is only moved. The soul of the steersman, being an unmoved mover, uses the hand, a moved mover, to guide the rudder. Analogously, the nutritive soul itself unmoved directs the internal bodily heat as instrumental moved mover to work on the food that is merely changed. On the more difficult reading, what is "only moving" has to be the soul of the

[24] The Greek texts have either ᾧ τρέφει or ᾧ τρέφεται in 416b25–26. The choice need not affect the interpretation.

[25] Menn 2002, 119 speaks of what is "radically different in the way Aristotle thinks of nutrition. The Heracliteans from whom Aristotle takes over the theory of digestive fire think of the process of nutrition as involving two terms, ἡ τροφή, nourishment or food, and τὸ τρεφόμενον, what is nourished or fed, where τὸ τρεφόμενον acts on ἡ τροφή to transform it into more of τὸ τρεφόμενον. Aristotle, by contrast, thinks that there are at least three terms;" the crucial one added is the nutritive soul feeding what is fed (τὸ τρέφον).

[26] Jannone 1966 has κινοῦν μόνον (only moving) in 416b27, whereas Ross 1961 has κινούμενον μόνον (only being moved). Either text sustains a similar interpretation so long as we take the rudder to be a part of the ship and to represent the food rather than an additional instrument.

steersman or nutritive soul, what is moving and being moved is again the hand or internal heat, and the rudder or food is understood to be just moved. What can serve as instrument of the nutritive soul, comparable to the hand of the steersman, emerges in the claim that it is necessary that all food be digestible and heat is at work in digestion, so all ensouled beings have heat (b27–29).

Aristotle's illustration of hand and rudder proves suggestive. Though he does not use the term for organ or instrument, perhaps because heat is so elemental, evidently heat plays this role for the nutritive soul. Consequently, his treatment of nutritive soul sets up items for analogies with other faculties of soul: capacity of soul, operation, organ, and object. The possible concern that the ship's rudder is not merely moved may extend to food as well. In a way the rudder, as part of the ship, is the end of the sequence of motion, but from another perspective it contributes to additional motion of the ship. Assimilation of food is in one way the last step in the process of change, yet in another way, the food has additional work to do in contributing to growth, nourishment, and reproduction. Also, the illustration introduces the hand as a subtle instrument that may be in a sequence of moved movers (see 432a1–2). Serving the role analogous to the hand in steering the ship is heat (τὸ θερμόν) that he for present purposes leaves unclarified. *Generation of Animals* 736b29–737a7 denies that digestion could be due merely to fire and proposes instead *pneuma* (πνεῦμα) as the hot material in living things, whereas *On Respiration* 8.474a25–28 and b10–13 refers explicitly to fire in connection with digestion. Could mention of heat as comparable to the hand permit nutrition a sequence of instruments? Closest to the nutritive soul and able to work most subtly with it is *pneuma*. *Pneuma* has the fineness and adaptability of the human hand, and therefore is the soul's vital instrument (see *GA* 789b7–12). The *pneuma* may guide the less subtle internal fire that works directly to digest the food. We recall in 416a9–18 that fire could be a contributing cause to nutrition if suitably utilized.[27] This context of the *De anima* does not call for any more specificity about the instruments of the soul (as 416b30–31 indicates).

Having so discussed nutrition (ἡ τροφή) – and we might also translate this as food or the operation of the faculty – Aristotle announces that what it is (τί ἐστι) has been said in outline (τύπῳ) and that more clarity concerning it may arise from later discussion suitably devoted to it (416b30–31). It is enough for him in this treatise to give the most general account of the faculty and the factors involved in it. The other works more specifically devoted to aspects of nutrition – and we suspect that these are works in the existing corpus, such as *Generation of Animals* and *Meteorology*, rather than any lost treatise on nutrition – supplement what the outline leaves for clarification. He evidently supposes that his task in the *De anima* regarding nutrition is largely done (later in iii 12–13 he has to say more about why living things have their functional capacities). His aim is to give an account of the capacities of soul and the factors entering their analysis (see 415a14–15); this he has accomplished for nutrition, also providing accounts of its object, food, and

[27] For the power of heat and cold to form homoeomerous materials, whether of nonliving things, such as gold and tin, or of living things, such as flesh, blood, sap, see *Meteorology* 390b3–5.

the operation of nutrition. He has determined what follows along with this type of soul inasmuch as he has connected it with its subfaculties for growth, nourishment, and reproduction, and with the requisite bodily organ, heat, that the soul uses to render food actual food.

Nutritive capacity allowed only to ensouled beings is truly wonderful. Taking in foreign material typically nonliving, the living thing somehow turns it into the living being itself. It builds and sustains itself on what it has made like itself. Following out the sequence and more amazing still, an ensouled being generates another such as itself. This remarkable alchemy of living nature occurs through soul's governance. Food only provokes the nutritive soul and provides it matter to do its work; nutritive soul operates without any desire or awareness. This kind of soul manages to produce alteration, growth, and substantial change. Even more astounding are the cognitive faculties through which animals somehow develop awareness. Sensible or intelligible objects give rise in sense or mind to cognitive being, yet since the sense and mind receive their objects in nonenmattered form, there is strictly no change at all. While nutrition saves the ensouled living being as such, cognition saves its own form of life. Every capacity and operation of soul is analogously wonderful. Life itself in its various forms is the greatest of phenomena.[28]

Treatment of nutrition prepares for and foreshadows the subsequent investigation of capacities of soul. (a) Aristotle shows *that* there is a capacity of soul for nutrition and *what* it is, as he will also for the other cases. (b) The object of the faculty of soul, its operation, and the faculty itself receive attention. (c) The presence of food gets the nutritive capacity to operate; presence of the sensible object and intelligible object has a similar role for their faculties. (d) The object food undergoes change itself through digestion. From being contrary to the ensouled body, it changes to be like it. It is somehow the reverse for the other capacities. The objects of the other faculties proceed from potential to actual objects in the course of altering the faculty. (e) Nutrition covers and unites further subfaculties, growth, nourishment, and reproduction. Analogously, sense perception and intellection include several subfaculties: five senses and several types of intellect. (f) Nutritive soul works through an elemental bodily organ, heat or fire. The senses may have rather elemental organs: eye, ear, nose, tongue, flesh, at least their operative parts, seem quite watery, airy, or earthy. (g) All operations of the nutritive capacity seem ways of saving the living being, and all actualizations of psychical dispositions seem to save them (see 417b3). (h) Though the potentialities to serve as objects would still be, there would be no sensibles and intelligibles in actuality at all without sense and mind to cognize them, as there would be no actual food without living beings to use it (see 426a15–27 and 431b24–432a3).

[28] Compare Hobbes's comment upon the phenomenon of phenomena: "Of all the phenomena or appearances which are near us, the most admirable is apparition itself, τὸ φαίνεσθαι" (*De Corpore* i ch. 25).

5

Clarification of Being Affected, Living as Saving, and the First Definition of Sense

The treatment of nutritive life ultimately disclosed the way all the subfaculties work at saving life. This will also turn out fundamental for the treatments of sense and thought. When these cognitive faculties actually cognize their objects, their doing so will not be any sort of change or destruction of the faculty but its saving as the kind of being that it is. Perceiving and thinking are kinds of life, and life is activity complete and continuable. But Aristotle must now earnestly confront the difficulty of fitting treatment of cognition within the framework of physics, a framework that speaks of movers and things moved that is rather inapt for soul that might be better served by talk of activity complete at every moment. He therefore clarifies actuality and potentiality so far as needed to speak of sense perception, and such that he avoids a large break from physics.

Making the treatment of this chapter hard is the difficult relation of soul and cognition to physics. Aristotle has compelling reasons for offering claims that he also has to call into question. Book i has challenged any view that has the soul in motion. So sense perception and thinking dubiously are kinds of motion, and he will himself in ii 5 elicit reasons for denying that they are motions at all. Yet if he needs to have them as ways of being acted upon by their cognitional objects, then in line with his natural science they should be motions caused by a mover. This serves to explain their origination and basis in reality. Moreover, if they are motions as alterations in which what is acted upon is assimilated to its mover, then we can understand why cognition should be truthful. Hence there will be honest questioning of viewing cognition as alteration along with insistence that it could be alteration of a strange sort. He will suggest that the being acted upon involved in cognition is either not alteration at all or another sort of alteration (417b6–7), but perhaps he wishes to embrace the seemingly incompatible view that cognition both is not alteration at all and yet is alteration of a sort.

416b32–417a20 This chapter and the next take up what applies "in common to all sense" (κοινῇ περὶ πάσης αἰσθήσεως, 416b32–33, and see 418a7–8).[1] In fact at its end ii 5 arrives at a common account of sense. Yet, subsequently in ii 7–11 when Aristotle deals in turn with each of the five senses, he makes important additions that apply to all of the senses, such as that a medium is needed, that sense is a critical faculty, and that sense is a *logos* and mean. He can only apparently prove these other common features by dealing with particular senses. Therefore, though ii 5 formulates the initial common account of what sense perception is, after the treatments of the particular senses enrich the understanding of sense generally, ii 12 will return to defining sense to give a more ample account.

There are two complementary ways to trace the progression of argumentation in this chapter. It can be read as starting off from the *endoxa* about sense perception bequeathed by the philosophical predecessors. These *endoxa* are especially in play in 410a23–b16 of book 1. By pointing to the perplexity to which these *endoxa* give rise, Aristotle provokes a reassessment and rearticulation so that he can develop his own account of sense.[2] Or, more pointedly, we may say that the chapter takes the perplexity arising from the *endoxa* as calling into question the very existence of sense perception. Defusing the perplexity then initially establishes *that* there is sense capacity at all, and subsequently following up the distinctions he has introduced Aristotle determines *what* sense is.

Here is how he sets out the *endoxa* about sense:

> Perception comes along with being moved and acted upon, just as has been said; for it seems to be a sort of alteration. Some indeed say the like is acted upon by the like. How this is possible or impossible, has been said in the universal discourses concerning action and being acted upon. ἡ δ' αἴσθησις ἐν τῷ κινεῖσθαί τε καὶ πάσχειν συμβαίνει, καθάπερ εἴρηται· δοκεῖ γὰρ ἀλλοίωσίς τις εἶναι. φασὶ δέ τινες καὶ τὸ ὅμοιον ὑπὸ τοῦ ὁμοίου πάσχειν. τοῦτο δὲ πῶς δυνατὸν ἢ ἀδύνατον, εἰρήκαμεν ἐν τοῖς καθόλου λόγοις περὶ τοῦ ποιεῖν καὶ πάσχειν. (416b33–417a2)

The wording here is not straightforwardly that perception *is* a case of being moved and acted upon, but that it happens (συμβαίνει) through these. This less definite wording perhaps indicates hesitation about treating sense simply as motion. That sense perception is assumed by his predecessors to be a case of being moved and acted upon was said previously in 410a25–26. Thus this must be a widely shared view, an *endoxon*. Though widely held, this position is not universal. The atomists suppose that only atoms and void are real while the appearances are by convention; that is, they are somehow constructs (DK 68B9; cf. 31B8 and 31B9). Plato in both the *Theaetetus* and *Timaeus* seems to have sense perception arise through interaction

[1] That this account will be "common" to all the senses recalls the way Aristotle is seeking the "most common" account of soul in 412a5–6. A common account, in perhaps some contrast to a universal (καθόλου) account (as immediately afterward in 417a1–2), pertains to kinds clearly in mind and on the same level. So the account is common to vision, hearing, etc. But the universal account of action and passion might pertain to anything on whatever level. When 418a7–8 says he will speak of the sensible objects "according to each sense" (καθ' ἑκάστην αἴσθησιν), this means he provides a common account of the several kinds of sensible objects pertaining to each sense.

[2] Burnyeat 2002, 34–37 argues for this approach.

of object and percipient rather than mere passivity. Aristotle must justify his own reformulated embrace of this *endoxon*.

Previously Aristotle has himself suggested that perception is some sort of alteration (ii 4.415b24), and he now repeats the point as justifying the claim that perception is a case of being moved and being acted upon.[3] Any case of alteration is a case of *being moved* and *being acted upon* since in *Physics* vii 1 and viii 4 it is argued that every motion is a case of being moved by something, and alteration in particular results from being acted upon (see *GC* 323a15–22). Because most predecessors hold – Anaxagoras is a striking exception – that sense is a case of like's acting upon like (cf. 405b14–15), alteration, that is, qualitative change, seems the probable sort of motion. The predecessors did not clearly demarcate the different kinds of motion – in Plato's *Theaetetus* 181c–d quality (ποιότης) is named and distinguished so that alteration might be disentangled from change in place (cf. *Parmenides* 138b–c) – so proposing some sort of alteration for sense appears to be Aristotle's own suggestion in light of what his forebears say.

In treating the nutritive capacity, Aristotle considered whether food is like or unlike what it feeds and found a way to extricate himself from difficulties (416a21–b9). His approach to the possibility or impossibility of like's acting on like accords with that laid out in *On Generation and Corruption*, which he now refers to explicitly in 416b35–417a2 in relation to the way sense could have like's acting on like. *On Generation and Corruption* i 7 reconciles opposing views by showing that generally a thing like in genus but unlike in form acts upon something to liken it to its own form. The context in *GC* i 7 is consideration of action and passion entering into *alteration* since i 6.323a17–21 distinguishes acting from moving. Acting (ποιεῖν) correlates with being acted upon (πάσχειν), which has to do with affection (πάθος) and alteration (ἀλλοίωσις). In *Categories* 4.2a3–4 action and passion, exemplified by to cut or to heat and to be cut or to be heated, could extend to any motion. Reference to *On Generation and Corruption* informs us that the more restricted usage in which action and passion apply just to qualitative motions is needed for interpreting the rest of the chapter.

So long as the predecessors suppose that in perception like merely acts upon like, there might be little need for any outside mover. In *On Generation and Corruption* i 7.323b21–22 Aristotle pertinently observes: "If something is capable of being affected by the like, also itself by itself [it might be affected]" (cf. Plato *Lysis* 214e). This possibility reappears in regard to sense perception here in the *De anima*. If the senses are acted upon by the like, then the senses could just act upon themselves, and there dubiously is any real action or motion at all, and doubtfully any sense perception. Aristotle urges,

> There is perplexity why sense perception does not arise of the senses themselves, indeed why without external things they do not engage in sense perception, since within these are fire and earth and the other elements of which there is sense perception in virtue of themselves

[3] Burnyeat 2002, 36–37 usefully points out that (ἀλλοίωσίς τις) might be translated either as "some sort of alteration" or "alteration of a sort;" i.e., "perception is an alteration only in an etiolated sense." We shall see Aristotle observing how strained the usage is in calling it alteration.

or accidentally to these. ἔχει δ' ἀπορίαν διὰ τί καὶ τῶν αἰσθήσεων αὐτῶν οὐ γίνεται αἴσθησις, καὶ διὰ τί ἄνευ τῶν ἔξω οὐ ποιοῦσιν αἴσθησιν, ἐνόντος πυρὸς καὶ γῆς καὶ τῶν ἄλλων στοιχείων, ὧν ἐστιν ἡ αἴσθησις καθ' αὑτὰ ἢ τὰ συμβεβηκότα τούτοις. (417a2–6).

The like-by-like account of sense perception would allow the senses or sense organs – at this point no distinction has been made – to undergo the action merely of their own components, so that no further sensible objects are required.[4] Are external objects ever necessary for cognition, or might awareness (consciousness) be exclusively self-awareness (self-consciousness), that is, cognition solely of the animal's own components, which raises concerns about whether sense perception really exists?

The predecessors' view that sense is being moved by the like may undermine itself such that sense is dubiously the result of being moved by any external object at all. Until sensible objects are accepted as genuine and acting upon sense, there can be doubt about the existence of a capacity for sense perception that is being moved. At issue in the case of nutrition is whether *soul* is really required for processing food and how this may connect with growth, nourishment, and reproduction, with little doubt that living things need food and are unlikely to flourish by digesting parts of themselves. But in the case of sense perception, there may be doubt that the animal is aware of anything beyond itself. If perception has like acting on like, perhaps everything is always self-aware or at least the senses always are, so there seems little justification for saying that they engage in perception of much at all. This may cause perplexity about the very existence of sense perception.

In modern times philosophy has confronted the Cartesian doubt of an external world on account of skeptical arguments based on dreams and deceiving demons.[5] Doubt raised by dreams goes back at least to Plato's *Theaetetus* 158b–d, so Aristotle is alive to skeptical issues about external objects. Hence before he can enter in earnest into *what* sense perception is, he must sufficiently establish *that* there are sensible objects, and in the next chapter, after his account here of *what* sense perception is and having established *that* there are sensible objects, he determines *what* are the sensible objects. For his work here it is enough that there are external particulars to which the sense becomes likened. Whereas nutrition has soul causing

[4] The senses (or sense organs) seem for materialists to be made of elemental bodies, such as fire and earth (see *De sensu* 437a19–29), or for Platonists of other sorts of elements, and these elements of whichever sort are either perceived in virtue of themselves (417a4–5), or the features accompanying them are perceived perhaps in virtue of themselves (a5–6). Aristotle's careful wording allows this latter part to agree with his own thought about sensible objects, but more crucially he is referring to his predecessors' views so that most of them, who accept like-by-like cognition, suppose that the elements or features are perceived in virtue of themselves, whereas those who reject this, such as Democritus, might still allow that the accidents of the elements, such things as color, odor, flavor, seem to be perceived.

[5] Mention of "external objects" (τῶν ἔξω, 417a4) may cause surprise here if we impute to it Cartesian overtones. But since Aristotle has not as Descartes has established consciousness as a subject or substance that may or may not have things outside it, we should recognize that Aristotle's usage is much less freighted with metaphysical assumptions. All he need mean by "external" is outside the sense itself (cf. 417a28). The issue is whether the sense merely perceives itself or there is something beyond it that acts as mover to provoke it to perceive.

food to be digested, sense perception has soul acted upon by its object. The reversal might receive this uncouth formulation: an animal eats its food (assimilates food to itself), but sensible objects eat up the animal (assimilate the sense to the object).

The perplexity about being moved and acted upon by the like with resultant loss of sensible objects beyond the senses themselves demands some resolution. Aristotle says that it is clear (δῆλον) that the sensitive capacity (αἰσθητικόν) is in potentiality alone (δυνάμει μόνον) rather than in actuality (ἐνεργείᾳ, 417a6–7).[6] This is clear presumably since animals are not always perceiving – at least at times they sleep and maybe shut their eyes (see a11) – so perception is a capacity rather than total actuality. Because sense is somehow a potentiality, it will only perceive when something else provokes it, much as fuel, that which is capable of being burned (τὸ καυστόν), is not burned itself in virtue of itself (οὐ καίεται αὐτὸ καθ' αὑτό) without something capable of burning it (τοῦ καυστικοῦ), that is, actual fire (τοῦ ἐντελεχείᾳ πυρὸς ὄντος, a7–9). Aristotle has been careful to say that the fuel is not burned *itself* in virtue of itself (αὐτὸ καθ' αὑτό) rather than merely in virtue of itself (καθ' αὑτό), since fuel is just that which is burnable in virtue of itself, though it does not by itself lead its own capacity to burn into actuality. The reference to actuality and potentiality to explain why the senses do not merely perceive themselves goes beyond *On Generation and Corruption* i 7, where actuality and potentiality are not explicitly in play. The argument suggested here in the *De anima* is that were things capable of moving themselves, as the combustible might cause its own burning without needing any fire in actuality to cause it to burn, they should always be in motion, and there could be no distinction of mover and moved or of actuality and potentiality. If the sense is merely in potentiality as are other movable things, however, then it must be moved by something beyond itself, that is, some external sensible objects. Sense merely perceiving itself would be doing so always, much like the combustible's causing its own burning. Intriguingly, then, sleep and dreams, showing that we are not always perceiving, prove even more helpful to Aristotle for defending the reality of sense perception than for calling it into question. Though Aristotle defends here against skepticism, he nonetheless assumes that he can speak plausibly of combustible things, fire, movable things, and movers.

In the passage 417a6–9 Aristotle uses both ἐνεργείᾳ and ἐντελεχείᾳ. This fits with the expectation that *energeia* serves especially to refer to the operation of the faculties of soul and their objects, while *entelecheia* can be used here to speak of the actuality of fire not so much as an object of perception but as a moving cause of burning. This confirms how Aristotle tries to restrict *energeia* to motions and activities of the parts of the soul and their correlated objects. Even when in 417a17–18 he says that *all* things are moved and affected by that capable of moving them and the being in actuality (ἐνεργείᾳ ὄντος), this is still in the context of senses' being affected by sensible objects. Though both terms for actuality are used frequently in this chapter, *entelecheia* is the primary term used to contrast with the different sorts of potentiality (see 417a21–22). Probably this is the case because this parallels how

[6] Burnyeat 2002, 44n41 argues that here in 417a6 and elsewhere in ii 5 (418a1 and a3) τὸ αἰσθητικόν might be better translated as "perceiver" than "sensitive capacity."

in ii 1 (412a9–11 and a22–23) he distinguished two sorts of *entelecheia*, as knowledge and as thinking. Even though he is preparing to speak of sense perception, it is useful to speak of levels of actuality in terms of *entelecheia* to reserve *energeia* more for the operation of faculty and its object.

Recognition of the distinction of potentiality and actuality supports external objects for putting the sense into actuality. Aristotle indicates that to perceive (τὸ αἰσθάνεσθαι) may be said of something in two ways: an animal potentially perceiving, for example, potentially hearing and seeing (τό τε γὰρ δυνάμει ἀκοῦον καὶ ὁρῶν), may be said to perceive, that is, to hear and to see, even if it chances to be asleep, and the already actually perceiving animal (τὸ ἤδη ἐνεργοῦν) may be said to perceive (417a9–12). Because to perceive (τὸ αἰσθάνεσθαι) is said in these two ways, it is predicated of potential or actual perceivers, meaning that the former are capable of perceiving and the latter actually perceiving, perception (ἡ αἴσθησις) may similarly be said in these two ways (a12–13). We can say, for example, that the sleeping animal has sense perception and that the presently perceiving one is engaged in sense perception.[7] The crucial point is perception's being either in potentiality or actuality.

If sense perception can be either actual or potential, the sensitive capacity (αἰσθητικόν) as such is a potentiality put into actuality only by an external agent in actuality, as fuel is ignited by fire. This would be obvious were sense perception a motion, a point that calls into play the result of the *Physics*, that motion requires a mover. Aristotle therefore contends, being acted upon (τοῦ πάσχειν), being moved (τοῦ κινεῖσθαι), and being actualized (τοῦ ἐνεργεῖν) are all the same (ὡς τοῦ αὐτοῦ ὄντος, 417a14–15).[8] "Same" here may merely mean comparably requiring something external to bring it about. He already limits himself to the sphere of alteration, that is, the sphere for being acted upon, so that being acted upon and being moved will be the same (see 416b33–35). He makes a case for linking motion with actuality to show that sense also needs something to bring it about. Motion (κίνησις), he says, is some kind of actuality but incomplete (ἐνέργειά τις, ἀτελὴς

[7] The Greek ending -σις, as in *aisthesis*, can mean at least the capacity *and* the action of the capacity. The manuscripts go on in 417a13–14 to say ὁμοίως δὲ καὶ τὸ αἰσθάνεσθαι, τό τε δυνάμει ὂν καὶ τὸ ἐνεργείᾳ, (similarly also to be percipient is both the being in potentiality and in actuality), which might just reiterate and reaffirm the point in a10 that to perceive (τὸ αἰσθάνεσθαι) can be both in potentiality and in actuality; i.e., this is not merely a manner of predication but perceiving really does take these two forms of being. Or Aristotle may play on the ambiguity of the verb τὸ αἰσθάνεσθαι, which can mean either to perceive or to be percipient. Here in a13–14 he would say that an animal can be a percipient being in potentiality or in actuality. Alexander *Aporiai kai luseis* 83.6 suggests instead that the sensible object (τὸ αἰσθητόν) has these two manners of being, and Ross 1961 makes this emendation. The emendation seems inappropriate as not immediately relevant (cf. Hicks 1907, 352), but Burnyeat 2002, 48n54 defends it.

[8] Burnyeat 2002, 46–47 emphasizes that this is the *beginning* of what Aristotle wishes to say (πρῶτον . . . λέγωμεν) since he will go on to modify the understanding of being acted upon. Also Burnyeat even more stresses tentativeness on Aristotle's part here by translating ὡς τοῦ αὐτοῦ ὄντος "as if . . . are the same" (a14–15). But Aristotle here is still finishing his response to his predecessors, and he does not revise the view that what is in motion requires a mover. And some manuscripts have λέγωμεν in 417a16, as relied upon by Burnyeat, but Jannone 1966 has the reading λέγομεν of other manuscripts.

μέντοι, 417a16–17; cf. 431a6–7). Elsewhere also, as in, *Physics* 201b31–33, 257b8–9, and *Metaphysics* xi 9.1066a20–22, motion has been called incomplete actuality. That motion is actuality explains why "being moved" (τοῦ κινεῖσθαι) is the same as "being actualized" (τοῦ ἐνεργεῖν); that motion is incomplete actuality clarifies why it is always a case of being moved and there is always a mover.[9] That a complete actuality, that is, activity, needs something actual to provoke it can be accepted because the incomplete actuality, motion, requires a mover. All that suffers and is moved, if it at all resembles alteration, needs something to act as agent and in actuality (τοῦ ποιητικοῦ καὶ ἐνεργείᾳ ὄντος) to bring it about (417a17–18).[10] This should have established that an external sensible object is required to cause actual perceiving. Aristotle concludes:

> Hence it is on the one hand as by the like it is acted upon and on the other hand as by the unlike, just as we said; for the unlike is acted upon, but having been acted upon it is like. διὸ ἔστι μὲν ὡς ὑπὸ τοῦ ὁμοίου πάσχει, ἔστι δὲ ὡς ὑπὸ τοῦ ἀνομοίου, καθάπερ εἴπομεν· πάσχει μὲν γὰρ τὸ ἀνομοιον, πεπονθὸς δ' ὅμοιόν ἐστιν. (417a18–21)

The external sensible object that acts upon the sense is initially unlike the sense, but once it has acted upon the sense to bring it into actuality, the sense is likened to it.

Like by like and unlike by unlike are both in play, as was discussed previously in 416a29–b9 regarding nutrition. In the case of alteration, the mover, what is active and in actuality, causes what is acted upon and moved to take on the sort of being of the mover. What is moved or passive to the action of its mover is initially potentially like its mover, but actually unlike it, and will in the course of the motion become actually likened to it. What is just like something else cannot change it in the respect that it is just like it, so what causes alteration must initially be unlike. Since the sense is like itself, something else must move it. This argumentation resolves the perplexity announced in 417a2–6. If perception is a case of being moved and what is passive and moved must initially be unlike what moves it, then perception could not be

[9] Motion is defined in *Physics* 201a10–11 as "the actuality of the potential being as such" (ἡ τοῦ δυνάμει ὄντος ἐντελέχεια, ᾗ τοιοῦτον, κίνησίς ἐστιν) and similarly in *Metaphysics* 1065b16: τὴν τοῦ δυνάμει ᾗ τοιοῦτόν ἐστιν ἐνέργειαν λέγω κίνησιν. Obviously, then, motion should be some sort of actuality. Motion is incomplete in two ways: (1) as actuality of the potential being as such, where the potentiality is the potentiality to be at the terminus of the motion, so long as motion continues it is incomplete because it has not fully reached the terminus; and (2) motion (*kinesis*) is an actuality (*energeia*) that is incomplete because it differs from activity (*energeia*), i.e., that sort of actuality that is complete at every moment (see, e.g., *Meta*. 1048b18–35). While everything needs causes, motion as incomplete actuality will have a cause outside itself. This applies also for activities of mortal living beings.

[10] English talk of "agent" or "active" and "actuality" is possibly confusing because the words seem connected. The Greek for active or agent here is ποιητικός (or more generally ποιεῖν), which means active in the sense of productive of or able to give rise to motion, esp. alteration. This is contrasted with what is passive and capable of receiving the motion (παθητικός or πάσχειν). Actuality (ἐνέργεια) instead contrasts with potentiality. When the active and passive factors are in proximity, both enter into actuality. For example, fire is hot even before it heats anything but only actually heats something when close to something heatable. When actually heating, the fire is actually an agent and what is being heated is actually a patient, i.e., undergoing heating. Thus both active and passive potentialities (powers, potencies, capacities, abilities, faculties) may enter into actuality.

moved merely by itself. Since it is now quite clear that the sensitive capacity is only potentiality to what acts upon it and originally unlike it, the possibility of the sense's causing itself to perceive itself, and so doubtfully really being moved or perceiving at all, may be dismissed. There definitely are sensible objects, and it should be clear *that* there is a genuine faculty of sense perception. Having established *that* there is sense perception, Aristotle might be expected to detemine *what* it is; extending the exploration of potentiality and actuality and alteration will arrive at the first common account of *what* sense perception is.

That the senses could just move themselves is inconsistent with the understanding of mover and moved. But just what kind of a potentiality is the sensitive capacity, and is its actuality really an alteration and motion, an actuality that is incomplete? When we see, hear, smell, taste, or feel is there motion or process on the way to something further? We may well question that sense perception is incomplete actuality, that is, motion, rather than actuality complete at every moment. "Sense perception is *some kind* of alteration" or "alteration of a sort" (416b34) should perhaps mean such activity is complete at every moment. Aristotle must investigate the relation of actuality, potentiality, and alteration to sense perception to generate an account of what sense perception is and to safeguard the argument that there are external sensible objects causing perception.

417a21–b16 Actuality and potentiality have been referred to frequently prior to ii 5. In ii 1 in defining the soul, Aristotle used them prominently and even applied an additional distinction of actuality analogous to that between knowledge and theorizing (412a10–11 and a22–23). He has also constantly referred to capacities or potentialities of soul, and at the beginning of ii 4 he spoke of knowing such potentialities in terms of actualities (415a18–20). Yet only now that he has disclosed that the sensitive capacity is a passive potentiality that must be acted upon by something that is in actuality need he give a fuller account of potentiality and actuality (cf. *Phys*. viii 4.255a30–b13). He indicates that so far – at least in this present treatment of sense – he is speaking of them simply or absolutely (ἁπλῶς), that is, as if potentiality and actuality (δυνάμεως καὶ ἐντελεχείας) did not each mean more than one thing (417a21–22). He has said that to perceive and perception (αἰσθάνεσθαι, αἴσθησις) are in potentiality or in actuality (a9–14), as if to perceive and perception have double usage (διχῶς, a10, a12), but potentiality and actuality themselves are each used in but one way. A more adequate understanding of actuality and potentiality is required for the accounts of both sense perception and intellection.

It should hardly be supposed that Aristotle here in *De anima* ii 5 offers a completely general account of actuality and potentiality, as provided in *Metaphysics* ix, but rather he restricts himself to what is pertinent to this treatise. What he says may apply strictly only to psychical capacities and their actualizations and only some of these. Though he referred to two sorts of actuality in defining soul (412a10–11, a22–23), it is only when he gets to sense perception that the distinction demands fuller clarification. Knowledge is the best sort of example, because three situations are clearly evident: a person may lack knowledge entirely, have knowledge without using it, or employ the knowledge possessed. Consequently, Aristotle freely uses

intellectual capacities for his illustrations. In contrast, complete lack of sense perception is impossible for animals as animals so the three situations are less obvious. Now nonliving things have rather analogous situations. For example, something cold is potentially hot or glass that is breakable may sometime actually break. But Aristotle's restriction of his cases to intellection and sense perception suggests that his analysis applies strictly to the realm of cognition and things linked closely to it (perhaps extending to nutritive capacity of soul), while other cases are merely more or less analogous. In the discussion in *Physics* 255a30–b13 of how nonliving natural beings have potentialities resembling knowledge, a sort of potentiality that is in play when nothing hinders, he says only that the cases are similar (ὁμοίως δὲ ταῦτ' ἔχει, 255b5–6). This falls short of extending the three-level analysis of actuality and potentiality to all things. And this holds even though the term ἕξις (habit, state, disposition) used to refer to moral and intellectual virtues as possessed can also be said of nonensouled beings (see, e.g., 418b19, 432a6).

A human might be called a knower or knowledgeable (ἐπιστῆμον) in more ways than one. A person is a knower merely through membership in the class of human beings that are knowers and can possess knowledge; also a person could be called knowledgeable through already possessing literacy (τὴν γραμματικήν, 417a22–25).[11] These persons are capable (δυνατός) as knowers in different ways (a26). A person as a member of the class of humans may have no knowledge at all but merely the possibility of gaining some because of the capacities pertaining to the class, whereas the person who can read and write possesses knowledge and is capable (δυνατός) of putting it to use at will if unhindered (a26–28).[12] In 417a27 Aristotle somewhat surprisingly says that a human being is potentially knowledgeable "because the genus is of such a sort and the matter" (ὅτι τὸ γένος τοιοῦτον καὶ ἡ ὕλη). "Genus" here evidently means class or kind, that is, the species of humans as receptive of knowledge. But why refer to the matter of humans? Commentators often suppose it means little different from their class.[13] But perhaps matter is added not so much to indicate why humans can *know* as to indicate why they are only *potentially* knowledgeable:

[11] In Aristotle's time γραμματική means the knowledge of reading and writing. Compare Plato's *Theaetetus* 198e–199a, which Aristotle may have in mind (see Burnyeat 2002, 49n57). "Grammar" only became what we understand as grammar in a later period (see Frede 1987, 338–359). The *Theaetetus* with its aviary imagery introduces distinctions that Aristotle takes over. These are a stage in which the aviary is empty (i.e., we do not yet know), then a stage in which birds captured for the aviary are possessed within it (i.e., we possess knowledge without using it), and finally a stage in which the possessed birds are recaptured and held in one's hand (i.e., we actually think of what we know).

[12] Aristotle uses "possible" or "capable" (δυνατός) in 417a26 and a28 both because it is less awkward than using "potentiality" and because there may be some question whether it is appropriate to speak of the most ignorant as potential rather than possible knowers (see, e.g., *Metaphysics* ix 7 on when it is appropriate to speak of potentiality). In 417a30 he speaks of a knower according to potentiality when it is clear that learning can take or has taken place.

[13] Ross 1961, 236 suggests that Aristotle cannot mean "in the literal sense, corporeal matter. The thought is that which we might express by saying 'he has the makings of a scientist.'" Hicks 1907, 355 says "there seems hardly any reason why difference of matter as giving rise to different capacities should be mentioned in this context. Probably therefore we should take ἡ ὕλη as summing up the latent capacities of the species and not therefore really very different from τὸ γένος."

they are ensouled bodies. Being enmattered beings they have to gain knowledge through learning. Were humans nonembodied, as some gods, learning would be unnecessary and actual thinking would instead always occur. Reference to the matter of humans points to their peculiar position between mortal beasts and the gods. Also, it accounts in a way for why there is potentiality. Since both humans who do not yet know and those who actually know are capable as knowers, they have different sorts of potentiality. The unlearned person still has to learn, while the person who has knowledge can employ the knowledge by wishing to do so if nothing external hinders (ὁ δ' ὅτι βουληθεὶς δυνατὸς θεωρεῖν, ἂν μή τι κωλύσῃ τῶν ἔξωθεν, 417a27–28).[14] The unlearned person has raw or undeveloped potentiality, whereas the knowledgeable person has developed potentiality or a dispositional capacity to do something.

When the knowledgeable person uses the possessed knowledge – that is, the literate person actually employs the literacy (ὁ δ' ἤδη θεωρεῖν) – the person is knowing in actuality and in the strict sense might be knowing this A (ἐντελεχείᾳ ὢν καὶ κυρίως ἐπιστάμενος τόδε τὸ A, 417a28–29). The example of literacy suggests the illustration of "knowing this A." This illustration is nicely ambiguous about whether the thinking is of some particular "alpha" sound or letter that is said or written, or is thinking much more generally of "alpha," for instance, the way it sounds when a part of diphthongs, or is thinking of some essence merely symbolized by A. Aristotle wishes to leave ambiguous whether the objects of our actual thinking and knowledge are essences, universals, or particulars (cf. *Meta*. xiii 10.1087a15–25), and even whether he is dealing with theoretical or practical knowledge. What is important is that knowledge that is utilized puts us into some actual relationship with its object so that we are actually thinking it and knowing it in the strictest way. He refers to what is going on in knowing in actuality as θεωρῶν (thinking or considering) whether or not it is theoretical knowledge (θεωρία or ἐπιστήμη θεωρητική) in play (cf. 412a11, a23, a25). It should be emphasized that Aristotle speaks carefully of *the person* who is thinking and utilizing knowledge in 417a28–29. He does not speak of knowledge as itself being in actuality, except as humans possess and use knowledge, but it is always *the knower* who is in actuality as either the possessor of knowledge or the one actually employing the knowledge. Knowledge itself no more undergoes anything when a human thinks than does the breakability of glass when glass breaks. It is *the knower* who enters into a new condition of actuality.

[14] "External" or "the things from outside" (τῶν ἔξωθεν) here in 417a28 may be compared with "external" or "the things outside" (τῶν ἔξω) in 417a4. Probably external interference is mentioned because for sense an external object is needed for the faculty to be actualized whereas knowledge does not require an external object for its exercise and these may in fact interfere with knowledge's use. What is "external" in the case of knowledge seems only to have to mean outside what is wishing to use the knowledge or outside mind. The hindrance could even be within the person, though outside the wish or mind, e.g., a conflicting desire. The assumption is that no actuality as such, e.g., a wish to do *X*, could also *itself* be in conflict with itself, e.g., also be the wish not to do *X*. Something outside this particular wish or something outside mind itself must resist it, if there is resistance. Cf. Plato *Rep*. iv 436b ff.

Since there are two ways to be knowledgeable or a knower in potentiality, as the unlearned and the learned, there are two types of transition from potentiality to actuality:

> Now both the first [of those mentioned knowers, i.e., in 417a26–28] are knowers in potentiality, but the one has been altered through learning and often changing from a contrary condition, but the other from having perception or literacy but not actualizing them, into actualizing them another way. ἀμφότεροι μὲν οὖν οἱ πρῶτοι κατὰ δύναμιν ἐπιστήμονες, ἀλλ' ὁ μὲν διὰ μαθήσεως ἀλλοιωθεὶς καὶ πολλάκις ἐξ ἐναντίας μεταβαλὼν ἕξεως, ὁ δ' ἐκ τοῦ ἔχειν τὴν αἴσθησιν ἢ τὴν γραμματικήν, μὴ ἐνεργεῖν δ' εἰς τὸ ἐνεργεῖν ἄλλον τρόπον. (417a30–b2)

The person who has undeveloped potentiality for knowledge makes the transition to actuality, which in this case is coming to possess knowledge, by being altered (ἀλλοιωθείς) through learning and frequently changing from the contrary condition (ἕξις) of ignorance. Inasmuch as this involves change from a contrary state and takes time, it seems to be a change and an alteration. Strictly, as will soon be disclosed in 417b12–16 and in accordance with *Physics* vii 3, even the transition from undeveloped to developed potentiality is not an alteration, though it may depend upon alterations. Alterations have to do with affections (*pathe*), while conditions (*hexeis*) are some relationship to these such that they are ordered more or less well.[15] Aristotle uses the term ἕξις in 417a32, which we must translate as "habit," "state," "condition," or "disposition."[16] As emphasized in the ethical works, habits or dispositions, whether moral or intellectual virtues, develop through practice or habituation (see *NE* ii 1, *EE* ii 2, *MM* i 6; cf. *Meta*. 1049b29–1050a2). Attempting again and again actually to do something, that is, time after time trying to change from a contrary condition, especially under the supervision and critical attention of those who know, we learn. Strictly this transition is not an alteration but the development of a new relation with respect to the *pathe*. The second type of transition from potentiality to actuality is the actualizing or exercising of the already developed potentiality, that is, the possessed sense power or knowledge.[17] From

[15] Burnyeat 2002, 55n76 insists that *Phys*. vii 3 is not relevant, not until 417b12–16, because he takes the standard account of alteration to be that of *Phys*. iii 3.202a32ff. and *GC* i 4.319b6–14. But since alteration in *GC* 319b6–14 and elsewhere is defined in terms of *pathos*, and even in *Phys*. v 2.226a23–29 only affective quality permits alteration, the standard case is in fact that of *Phys*. vii 3; the other discussions look toward it (cf. *DC* 270a27–30).

[16] In *Metaphysics* v 20.1022b10–11 a ἕξις is a disposition (διάθεσις) in virtue of which that which is disposed is disposed well or poorly. He also recognizes ἕξις as an action of having or being had, i.e., some action or motion (1022b4–6); that is the way Plato uses it in *Theaetetus* 198aff.

[17] Some editors, such as Ross 1961, replace αἴσθησιν in 417a32 in the manuscripts with ἀριθμητικήν, which seems to be the reading that Themistius had. Burnyeat 2002, 53n68 and 54–55 n73 defends the emendation. In n68 he says, "The MSS illogically (as Hicks concedes) anticipate in the model the thing the model is designed to illuminate, thereby making αἴσθησις an instance of ἐπιστήμη (!) and wrecking the step by step articulation of Aristotle's argument." But this assumes that knowledge is just an illustration for sense perception, while in fact there is nothing wrong with Aristotle's here reminding us that sense capacity, as can knowledge, can be further utilized. The proposed textual change would make the passage even closer to Plato's *Theaetetus*, as Burnyeat observes in his n73, which explains its attraction to commentators but does not make the emendation more compelling.

having knowledge but not using it, we use it. Coming to have the knowledge from not having may be one way to actualize (τὸ ἐνεργεῖν) a potentiality, and another way is putting the possessed knowledge to use.

The second sort of transition from potentiality to actuality is so stated that the last two words, "another way" (ἄλλον τρόπον, 417b1–2), may modify ἀλλοιωθείς (a31) or μεταβαλών (a32) or ἐνεργεῖν (b1). Thus this second transition from potentiality to actuality is a different type of alteration, change, or actualization from that in the shift from raw to developed potentiality. So far this discussion should have indicated that neither potentiality nor actuality is simple because there are both raw and developed potentiality, and actuality pertains both to developed potentiality and to its further exercise.

Just as potentiality and actuality need not be said simply (417a22), being affected or acted upon (τὸ πάσχειν) is not simple (b2). This directly addresses the two sorts of transitions or "alterations." Since there are at least two sorts of these transitions, being acted upon must also be of at least two sorts. In dealing with these transitions or "alterations," Aristotle starts explicitly to question that they are alterations:

> Neither is to be affected simple, but the one way is some sort of destruction by the contrary, the other way is rather preservation of the being in potentiality by the being in actuality and thus being like, as potentiality is with respect to actuality; for thinking arises for that which has knowledge which either is not to be altered (for it is progress into itself and into actuality) or another kind of alteration. οὐκ ἔστι δ' ἁπλοῦν οὐδὲ τὸ πάσχειν, ἀλλὰ τὸ μὲν φθορά τις ὑπὸ τοῦ ἐναντίου, τὸ δὲ σωτηρία μᾶλλον τοῦ δυνάμει ὄντος ὑπὸ τοῦ ἐντελεχείᾳ ὄντος καὶ ὁμοίου οὕτως ὡς δύναμις ἔχει πρὸς ἐντελέχειαν· θεωροῦν γὰρ γίνεται τὸ ἔχον τὴν ἐπιστήμην, ὅπερ ἢ οὐκ ἔστιν ἀλλοιοῦσθαι (εἰς αὐτὸ γὰρ ἡ ἐπίδοσις καὶ εἰς ἐντελέχειαν) ἢ ἕτερον γένος ἀλλοιώσεως. (417b2–7)

Being acted upon can be used widely, but Aristotle speaks in this context of the two sorts of transition from potentiality to actuality that might seem to be alterations. In general, when something is affected and there is alteration, one quality replaces another, so that there is loss or destruction of the quality that is replaced (see, e.g., *Cat*. 9a29–10a10, 15a17–27; *Phys*. 226a26–30, 226b1–8, vii 3; *GC* i 4; *Meta*. 1020b8–12). Sometimes he speaks loosely of alteration as involving change in any sort of quality, but most strictly alteration pertains to affective qualities or affections (πάθη, see, e.g., *Cat*. 9a28–10a10, *Phys*. vii 3, *GC* i 6.323a16–20, *Meta*. v 21). For example, hot replaces cold or one color replaces another such that the contrary left behind can be said to be destroyed. The looser speaking of alteration would apply to the acquisition of psychical capacities under consideration here in ii 5, such as gaining knowledge or the power to perceive. Such dispositions are not affections but relations to such affections since an excellent state such as knowledge or perception is to be in a certain relation to affection (see *Phys*. vii 3). Unlike the cases of hot replacing cold or one color replacing another, where there are clear contraries in the same genus, when an animal becoming an animal takes on perceptive power or a human gains knowledge through leaving a condition of ignorance, these acquired conditions and those replaced are neither strictly affections nor contraries within a genus. This may explain why Aristotle speaks of "a sort of destruction" or "destruction of a sort" (φθορά τις, 417b3) regarding these cases (cf. 417a31–32). These are not the

strictest cases of alteration in which one affection previously possessed is destroyed as another takes its place, though they do seem to involve processes that take time and result in a new condition that replaces an original condition. Thus even this transition and being affected of psychical faculties that is rather like ordinary alteration, because there is a replacement of one condition by another of a quite different sort, is not strictly alteration.[18]

Whereas this peculiar sort of alteration that is a transition from undeveloped to developed potentiality has a contrary condition arising from the destruction of some initial condition, the way of being affected that is a transition from developed potentiality to exercising it is not at all destruction of the condition but its preservation or *salvation* (σωτηρία, 417b3; cf. 416b1–3 and 422b4). The actualizing of a habit or developed potentiality saves it by realizing its very likeness (417b3–5). Since the way into the actuality is into what is like the potentiality (ὁμοίου, b4) and into itself (εἰς αὐτό, b6), that is, a fulfillment of what is already there, there is no replacement or destruction by something different. Aristotle is not here making the point, nonetheless quite worthwhile, that if we do not occasionally exercise our habits we may lose them, so exercising them saves them over the long haul. He is rather noting that their actualization is no destruction of them as the usual alteration is but rather being most themselves. When someone potentially a knower learns, the prior state is destroyed or replaced since the person now *knows*. But when the knower thinks about what he or she already knows, being a knower is surely not destroyed but saved in its kind since the exercise of the capacity is the actualization of that for which the capacity already is the capacity. Thus actualizing one's capacity is not becoming other in kind than one was.

When Aristotle insists that this transition is the salvation of the potentiality (σωτηρία), this is meant to recall how central saving (σωζεῖν) was for nutritive capacity (see 416b14–19). The key operation of the nutritive capacity is saving of the living thing. Analogously it appears that sense-perceiving and thinking save the sorts of capacity for life of which they are the operations (see 426a17). Actualizing a kind of life function saves the kind of life by giving it fullest realization. Each of the principal operations of soul thus seems somehow to save a capacity of soul. Life is for the living to maintain the kind of living. In *De somno* even sleep, deactivation of the faculty, is for the sake of saving (σωτηρίας ἕνεκα, 455b22) the capacities of perceiving and thinking.

Habits or developed potentialities do not cease to be when they are actualized since, for example, the knower using knowledge continues to be a knower. Therefore transition to actualizing a habit is either not an alteration at all or a different kind of alteration, which he has announced in 417b5–7. Though this has been presented as

[18] Burnyeat 2002, 54–55, here ignoring *Physics* vii 3, treats these cases of developing potentiality, such as learning, as standard cases of alteration. This may overlook the possible significance of "destruction of a sort" (417b3). The phrase might just mean that any loss of a quality or *pathos* could hardly really be a destruction, since destruction strictly applies to substantial change, but it is even more pertinent that obtaining sense perception and gaining knowledge are hardly really destructions of anything at all (see 417b12–16).

a disjunction, *either* not an alteration *or* a sort of alteration, we should understand this as an inclusive rather than exclusive disjunction (cf. iii 10.433a9–14). We are to see that in fact this transition to actualizing a developed capacity cannot be an alteration at all, yet if we permit talk of alteration of a most peculiar sort, it is an alteration of this other sort. Hence he really needs and means to insist on both sides of the disjunction.

Aristotle adds remarks strongly reinforcing the denial that such actualizing of developed potentialities is alteration at all:

> Hence it is not speaking well to say (οὐ καλῶς ἔχει λέγειν) that that which thinks (τὸ φρονοῦν) when it would think (φρονῇ) is being altered (ἀλλοιοῦσθαι), just as neither the housebuilder when he would build a house. (417b8–9)

This illustrates how inappropriate it is to call transition from the habitual potentiality to its actuality an alteration. The thing thinking (τὸ φρονοῦν), when it actually thinks, is no more altered than is the builder when building.[19] The builder actually building does not cease being a builder. Since the exercise of the capacity of building is not an alteration of the person capable of building, however much it may involve various sorts of motions in both the subject matter worked upon and the builder, we need not suppose that thinking, however practical the thinking might be and so engendering motions, is alteration. Even if Aristotle had selected an art whose primary activity is altering things, such as the art of dyeing cloth, the exercise of the art would not be an alteration of the person having the art.

Since the examples of the transition from developed potentiality to its exercise are cases of thinking and applying art, and these are denied to be alterations, should we suppose that the parallel cases of exercising the senses are also denied to be alterations, or are they to be taken as alterations of another sort? Aristotle uses the cases of thinking and building precisely because these surely appear not to be alterations. The person thinking or building remains a person capable of doing these things. Does perceiving any more destroy an animal's ability to perceive? Does not perceiving too raise the animal to what its natural ability prepares it to do? Hence alteration seems as inappropriate a name for what occurs in actual perceiving as for what occurs in actual thinking or exercising of capacity in art.

[19] The neuter form, τὸ φρονοῦν, is the person thinking or the mind engaged in thinking. Perhaps surprisingly, φρονεῖν is Aristotle's least ambiguous term for intellectual activity inasmuch as it is used in this way by his predecessors. Conjoining τὸ νοοῦν and τὸ φρονοῦν in 417b10–11 may be compared with 427a19–29. Burnyeat 2002, 57 has Aristotle distinguishing the situations for knowing and perceiving: "On the one hand, Aristotle will shortly say it is not good to call it alteration when a knower exercises their knowledge (417b8–9). On the other hand, for perception he ends up saying that, due to the lack of specialist vocabulary, we have to go on using the language of alteration and being affected, so please remember not to give those verbs their standard meaning (418a1–3). Why tolerate for perception the unclear language rejected for knowledge?" Burnyeat goes on to answer that it is because the ancients did not distinguish perception and thought, and if perception is alteration and so always true because due to assimilation, all cognition turns out truthful (pp. 59–61). But this should be suspect because knowledge itself is truthful and thought of essences is truthful for Aristotle, so this gives a weak reason, and in fact Aristotle seems to be questioning talk of alteration and being affected for perceiving no less than knowing though such talk may be largely inescapable for both. Consider the way in iii 4.429a13–15 he speaks of thinking.

Yet in denying that thinking is alteration of the person thinking or building of the builder, or suggesting that if it is alteration at all it is alteration of another sort, Aristotle speaks quite carefully. From the standpoint of the knower as capable of thinking or the builder as capable of building, actualizing the potentiality for such actualities does not change or destroy the potentiality or the person having the potentiality. The same would apply for sense-perceiving. Still the shift from being in potentiality to being in actuality, since it is some sort of modification of condition, might be called alteration of a sort. Yet, as indicated, such transitions are strange alterations inasmuch as there is no destruction of a preceding condition but its preservation. And there is further possibility of confusion since these transitions may also involve further sorts of changes. For example, building causes a new house to come into being and it involves locomotions, heating up, sweating, and fatigue of the builder. Even mere thinking of what is known, while it does not change the habitual knowledge, may give rise to changes in the thinker, if only fatigue. And in sense-perceiving the bodily sense organ may undergo some sort of material alteration, if not the sense, as may be shown when a too intense sensible object impedes subsequent perception (see 429a31–b3). Hence Aristotle should not be denying that the exercise of a habit or faculty has anything to do with any sorts of motion or change. He is merely denying that the transition itself is a standard alteration in respect to the transition.[20] Moreover, the very transition may itself be primarily some type of motion. The building illustration is illuminating. Building causes motions in the building materials because of a series of motions undertaken by the builder (this is even more so if the builder does not merely give orders to assistants but engages in building work). Besides the incidental alterations of the builder, such as becoming hot and sweaty, the very actions of building are sorts of motions. The sort of alteration or motion disallowed by the transition from potentiality as developed habit to its actuality is that the habit is destroyed or changed into another sort of habit, which would resemble a standard alteration. But this may suffice for concluding that some of these transitions are not motions at all (except in the way that any such transition is a nonstandard "alteration" of condition). Thinking and perceiving hardly seem to be locomotion or growth and diminution, so they are "alteration of a sort" or not motion at all.

Though Aristotle presents us the disjunction, either not a case of being altered or another sort of alteration (417b6–7), his comments perhaps lead us to the position that conjoins the disjunctions: such transitions are not cases of being altered while also being alterations of another sort. To the extent that there is not change, that is, actuality that is incomplete, Aristotle has left open the possibility that it is actuality complete at every moment, a notion announced in *Metaphysics* ix 6 and *Nicomachean Ethics* x 4. Transitions from habits to their exercise might be just activities complete at every moment or also involve motions.[21] Thinking is exclusively activity,

[20] Caston 2005, 266–269 well argues that the transition from developed potentiality (first actuality) to its exercise (second actuality) hardly precludes the involvement of physiological changes.

[21] Misunderstanding the limited sense in which the shift from developed potentiality to its actuality excludes motion seems to be the source of crucial mistakes in interpretation. Hamlyn 1993, 82 contends that all *hexeis* are dispositions for activity as opposed to motion; i.e., they are dispositions merely for

and the thinking and choosing going on in building are not motions but activities complete at each moment. But the actualization of building will also involve bodily motions of constructing a house. Therefore, the art or disposition to build is actualized both as the motion of building and as the activity of thinking and choosing.

Aristotle has explicitly denied that the transition from habit to its exercise in the cases of building or thinking is alteration or at least alteration of the usual sort (417b5–9). The conclusion to draw is that any such transition is not strictly alteration at all but it may perhaps be said to be an unusual sort of alteration. Sense perception similarly involves transition from the habitual capacity to sense to actual sense perceiving (see 417b16–19). Clearly, then, sense-perceiving is no alteration of the usual sort.[22] The body may undergo motions during sense perception, but soul, as argued in book 1, does not undergo motion. Aristotle's remarks about the unusual sort of alteration in the transition to full actuality suggest that sense-perceiving is really activity complete at every moment rather than any sort of motion. He seems to hint at this conclusion but does not draw it, permitting sense-perceiving to be unusual alteration. He cannot be too forthcoming because it is useful to have his psychology remain as much as possible within physics that concerns movable things. Introducing activity too explicitly might jeopardize the argument presented in the first part of this chapter. Does activity that is complete resemble alteration in needing a mover or something to act for likening another to itself? Sense perception, taken as like ordinary alteration, has the sensible object as active agent assimilating the sense to itself, and mind analogously is acted upon by the intelligible object. This physical approach provides Aristotle good theoretical support for his "realism" about sense perception and intellection. Animals can perceive things as they are, that is, their perceptions are true, because sense-perceiving is assimilation to its objects. Thus there are crucial reasons for holding on to alteration.

Strictly, as indicated, developed potentiality and its further actualization pertain to soul and its capacities. Yet Aristotle will have occasion to speak by analogy of the bodily parts of the sensory apparatus. The medium for sense perception and the sense organ are bodies, but unusual ones insofar as they have connection with perception. As capable of being acted upon by the sensible object, they might seem to take on a new quality or affection, that of the sensible object, the previous affection being destroyed, so they undergo ordinary alteration. But this is not the way Aristotle views the case. The medium and sense organ as capacities to be acted

certain animal actions, such as perceiving and thinking. But *hexeis* for walking, running, wrestling, and so on, seem plausible, and the actualities of these capacities are all motions. Yet the transition to exercising these capacities is still no destruction of or change in the capacity.

[22] Some interpreters have supposed that Aristotle explains sense perception as an ordinary alteration, e.g., the sense "goes red" in vision of red, and this alteration could be observed by a suitably placed scientist. For this view, see Slakey 1961; Sorabji 1979, 49–50, 64; and Sorabji 1995, 209–210. We shall be giving reasons to suppose that the sense organs do undergo some sort of change in sense perception but that these are not standard alterations. Were the sense to undergo a standard alteration such that the eye would, e.g., simply turn red in seeing red, such change might be evident to an external observer, and more crucially this would destroy the transparency of the visual organ, disrupting the sensitive mean and interfering with subsequent sense discrimination.

upon by the sensible object are acted upon such that the capacity for sensitivity is saved rather than destroyed (see esp. 422b3–5). Since air and water are the basic media and materials for the sense organs, at least for the distance senses, and these have no color, sound, smell, or flavor of their own, when they are acted on by such affections it is not really as if the affection destroys another one previous to it. Air and water doubtfully are altered through undergoing the action of these sensible affections since they do not strictly take on an affection (see ii 12.424b3–18). Hence the way the medium and sense organ undergo change by the sensible object resembles in various ways both the transition from undeveloped to developed potentiality and that from developed potentiality to actuality, neither of which is strictly alteration. It is hardly standard alteration. Even in the cases of the contact senses where flesh and tongue can undergo standard alteration, as when, for example, the flesh is heated, still the changes involved in perceiving must be nonstandard because sense perception is discriminative through some sort of contrast of sense and sensible object such that were the organ to become just like the object the discriminative power would be undermined. Since there is some sort of nonstandard alteration in the bodily sensory apparatus so intimately involved with sense perception, and it can hardly be activity complete at every moment, there is further reason not to treat sense perception itself as activity complete at every moment.

Both transitions, from developed potentiality to its exercise and from raw to developed potentiality, are dubiously alterations or most unusual alterations. About these transitions Aristotle says,

> Now on the one hand that which is leading into actuality from being in potentiality according to cognizing and thinking is not teaching but another name for it is appropriate; but on the other hand that which is learning from being in potentiality and gaining knowledge from the person who is in actuality knowledgeable and has the power to teach either one ought to say is not being acted upon, just as has been said, or there are two ways of alteration, both the change in the case of the negative disposition and the change in the case of the conditions and the nature. τὸ μὲν οὖν εἰς ἐντελέχειαν ἄγον ἐκ δυνάμει ὄντος κατὰ τὸ νοοῦν καὶ φρονοῦν οὐ διδασκαλίαν ἀλλ᾽ ἑτέραν ἐπωνυμίαν ἔχειν δίκαιον· τὸ δ᾽ ἐκ δυνάμει ὄντος μανθάνον καὶ λαμβάνον ἐπιστήμην ὑπὸ τοῦ ἐντελεχείᾳ ὄντος καὶ διδασκαλικοῦ ἤτοι οὐδὲ πάσχειν φατέον, ὥσπερ εἴρηται, ἢ δύο τρόπους εἶναι ἀλλοιώσεως, τήν τε ἐπὶ τὰς στερητικὰς διαθέσεις μεταβολὴν καὶ τὴν ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν. (417b9–16)

What leads someone to utilize knowledge already possessed should not rightly be called teaching. Once learning has engendered knowledge, the use of the knowledge requires no further teaching and learning, but the desire of the knower suffices to cause the actualization (see 417a27–28). Since teaching is not going on, neither is learning, so this hardly seems a typical case of being acted upon and alteration. The transition from raw to developed potentiality *is* learning and will have teaching as its *cause*, yet perhaps it should still not be said to be a case of being acted upon, that is, affected, or there are two ways for there to be alteration in such cases.[23] That

[23] That the strongest likelihood is that the development of potentiality is *not* an alteration is suggested by the placement of this alternative after ἤτοι in 417b13. Smyth 1956, 648 (2858) says, "ἤτοι may be used instead of the first ἤ when the first member, as is commonly the case, contains the more probable

the transition from undeveloped to developed potentiality of a psychical faculty is not being affected or an alteration should be a surprise if we have not picked up any of the hints heretofore. Why it should not be an alteration at all is, as explained previously, that the transition is not from a contrary in the same genus, it is not a transition in affections, and it is a transition to a natural condition. Aristotle now declares this. The strict and genuine sort of alteration has an affection taking the place of its contrary, and hence he says that in one case of alteration there is a change in the opposing dispositions (στερητικὰς διαθέσεις μεταβολήν).[24] The use of the plural indicates the way alterations can typically go back and forth between contraries. Rather than speaking of affection (*pathos*), which would be more strictly correct for alteration, there is some small loosening with talk of dispositions (*diatheseis*), that in *Categories* 8.8b26–9a13, 9b28–33, and 10a6–10 are viewed as longer lasting than a *pathos* but shorter lasting than a *hexis*. In the other sort of alteration, the nonstandard sort as in learning, where there is the development of a *hexis* of soul, this is much longer lasting than an affection, as indicated by calling it a *hexis*, and it is not so much a destruction and replacement of one contrary by another but a development into what is natural for the living thing, even its perfection (see *Phys*. vii 3.246b20–247a3 and 247b9–18). Fulfillment of the very nature hardly counts as destruction, and thus it should not be called an alteration or being affected at all, or it is an unusual sort of alteration.[25]

417b16–27 Aristotle can now apply his analysis of kinds of being affected or alteration to sense perception. Animals make the transition from raw to developed potentiality of sense perception, that is, gain the sensitive capacity (τὸ αἰσθητικόν), when they are generated (ὅταν δὲ γεννηθῇ, 417b16–18). Merely the action of the parent (or parents) suffices for effecting the change from incapacity to perceive to the sensitive capacity characteristic of animals. Aristotle need not be concerned whether the animal perceives at birth or before, if fetuses perceive in the womb, or whether the male or both parents beget. His wording is noncommittal on all of this (see *GA* ii 5 on the respective contributions of male and female). What is

choice." The words "just as has been said" (ὥσπερ εἴρηται) in 417b14 that are in the manuscripts perhaps loosely refer to the line b2, which says that "to be acted upon is not simple," or to b6, which denies that one sort of transition is to be altered.

[24] Burnyeat 2002, 62n88 points out that the index of Bonitz shows that "στερητικός in its standard logical meaning = ἀποφατικός," i.e., denial or negation. This fits much better with this context than the efforts of Themistius *In de an*. 56.5–12, Philoponus *In de an*. 304.16–22, and some contemporaries to read it as change to a privative or bad condition. So Aristotle is repeating in other words the point about alteration's being a sort of destruction (φθορά τις, 417b3).

[25] Burnyeat 2002, 64 says that none of what is emphasized in *Physics* vii 3 "is on display in *De Anima* II 5. All more reason to infer, as before, that the point of the disjunctive formulation 'Either (a) not a being affected at all or (b) there are two types of alteration' is to make (b) available for the special case of perception." Burnyeat is wrong about the considerations of *Phys*. vii 3 being absent, since the contrast of *diathesis* and *hexis*, as well as the fulfillment of nature, resonates with the *Physics* treatment. He misses the way Aristotle wishes forthrightly both to deny that the main transitions he is considering are cases of being acted upon and alterations, and to allow that they are such in extraordinary ways. As a consequence of this misunderstanding Burnyeat on pp. 68–69 mistakenly supposes that Aristotle might have further refined the distinctions of ii 5.

more pertinent is that no learning is needed, as is the case for knowledge, to bring about this "first change" (πρώτη μεταβολή) to the capacity for sense perception, essential to being an animal. But once the animal is an animal by virtue of being able to perceive, and so this is the "first change," the capacity has similar dispositional status to developed knowledge (417b18). And the actuality (τὸ κατ' ἐνέργειαν) of perceiving is comparable to actual thinking (τῷ θεωρεῖν, b18–19); that is, thinking and perceiving are both due to employing dispositions for these operations.

Yet the agents leading to the actuality of perceiving and thinking, that is, the cognitive objects, differ. In the case of sense the objects giving rise to the actuality of perceiving are outside the sense (τὰ ποιητικὰ τῆς ἐνεργείας ἔξωθεν, 417b19–21). This is another reference to something's being external (cf. 417a4 and a28); sense perception needs an external mover, such as the visible or audible object, but such a mover may interfere with our wish to think (a28). "External" means that perceptible objects are outside the sense itself, that is, outside the soul, rather than necessarily outside the animal. A tasted object enters the mouth, and the self-indulgent cherish the feeling of food sliding down the throat (*NE* iii 10.1118a32–b1). Aristotle explains why the sensible objects are outside and why the agents for perceiving and thinking differ:

> The reason is that perception according to actuality is of the particular things, but knowledge is of universal things; and these are somehow in the soul itself. αἴτιον δ' ὅτι τῶν καθ' ἕκαστον ἡ κατ' ἐνέργειαν αἴσθησις, ἡ δ' ἐπιστήμη τῶν καθόλου · ταῦτα δ' ἐν αὐτῇ πώς ἐστι τῇ ψυχῇ. (417b22–24)

In 417b19 Aristotle spoke of "the actuality of perceiving," that is, τὸ κατ' ἐνέργειαν in reference to τὸ αἰσθάνεσθαι, whereas here in b22 he speaks of "perception according to actuality" (ἡ κατ' ἐνέργειαν αἴσθησις). Perhaps the switch to perception (*aisthesis*) means he speaks about dispositional sense perception corresponding to dispositional knowledge, though he could also be speaking about the activity of perceiving. Surely the actuality of perceiving is the perceiving of some particular object, such as this red thing here and now, and consequently we may also say that the object of the faculty of perception is particular, yet we might also say universally that perception has what is sensible for its object. Knowledge, however, where we consider knowledge as based upon grasp of causes, is of things universally somehow in the soul itself (cf. *Post. An*. 81b6 and 87b28–88a7). Regarding knowledge it is appropriate to be speaking of the disposition since thinking may not similarly be of universals. The contrast of sense and knowledge regarding their objects as agents coheres with the argumentation earlier in the chapter that the moving cause of perception has to be something outside it (417a2–21) and that we can think when we wish (a27–28). The particular sensible objects are beings inhering in substrata or the substrata themselves. As thus enmattered, either features or relations of bodies or bodies themselves, they are outside of the sense itself. The sensitive capacity is a potentiality that is brought to actuality by something unlike it, as discussed earlier in the chapter, and what does this can only be some particular, external, sensible object. We can think, however, when we wish if nothing external hinders since the intelligible objects are already in the soul of the actual knower.

The objects of knowledge can be somehow in the soul ready to move it, whereas the sensible objects are not. In *Metaphysics* ix 1.1046a11 the basic sense of active

potentiality is "the principle of change in an other *or as other*" that correlates to passive potentiality as "the principle of being changed by an other *or as other*." Sense is a passive potentiality to be acted upon by the sensible object external to it; mind too is a passive power, but it can be acted upon not simply by an external object but by the intelligible object moving it *as if it were other*. For Aristotle having an art such as medicine is having the form of the product in the soul (see, e.g., *Meta*. vii 7.1032a32–b31). Since the knowledge of the form extends also to the contrary, the doctor knows how either to heal or to sicken the patient. The doctor chooses whether to use the knowledge to heal or to sicken. Medical art treats the patient, but the patient might happen to be the doctor, in which case the art treats the doctor as if other. Medical art by means of the form in the soul of the doctor is thus an active potentiality that may happen to work on the doctor just as on any other patient. Hence for the case of "rational active powers" Aristotle has had to say that they are principles of change in another *or as other*. Analogously, all objects of knowledge are somehow in the soul of the knower serving as active potentialities to raise the mind as passive potentiality to actual thinking whenever the person chooses to think. The intelligible objects act upon the soul *as if it were other*.

The objects of knowledge somehow in the soul are things having universal status (τῶν καθόλου, 417b21–23), that is, things predicated of many things as tree can be predicated of many (*DI* 17a39–40). As universal they are *said of* substrata rather than being *in* substrata or substrata (*Cat*. 2.1a20–b9). Aristotle in 417b21–23 speaks explicitly of *actual* sense perception (ἡ κατ' ἐνέργειαν αἴσθησις), perhaps the actuality of sense-perceiving, as having particulars as objects, but he only refers to knowledge, dispositional knowledge, in relation to universals. He does *not* say that actual thinking has universals as objects.[26] The explanation for his careful phrasing may be this. Practical and productive knowledge has the form as universal in soul so that there can be calculative application to particulars to be done or made. Theoretical understanding schematizes the subject matter into kinds, genera and species for natural beings, since this is the way we comprehend them causally. Habitual knowledge has kinds or universals in the soul. Now the kinds are not arbitrary or merely devised by naming, as nominalists suppose (see Plato *Theaetetus* 157b–c). Things have essences – that is, form is the principle of their being – and while for Aristotle form as substantial being is not universal (see *Meta*. vii 13), neither is it particular (see *Meta*. vii 15), though it accounts for both universals and particulars. The *Metaphysics* argues that form in itself can have neither the mode of being of particular composite substances that it along with matter constitutes, nor the sort of being of universals, which are mere "suches" predicated of many. Instead form is "a this" (τόδε τι) that is itself neither universal nor particular but the principle accounting for both particularity and universality.[27] Hence knowledge as habitual or potential

[26] Hicks 1907, 359 note on b23 observes that how universals are "somehow" (πώς) in the soul is later revealed to be as potentiality. He refers to 429a22–31, 431b20, b22, b26–432a3. This would confirm the point that Aristotle speaks of knowledge as developed potentiality rather than knowledge as itself entering into activity. It is the knower that actually thinks and uses knowledge.

[27] See Owens 1963 for this understanding of substantial being. Owens's interpretation, or the same view differently expressed, seems the only compelling interpretation of Aristotle's notion of form, whether substantial or accidental form. Only as enmattered does any form become particularized; in the soul

pertains to universals in the soul; when we actually think the essences of things as they are, we think of the form that is in itself neither particular nor universal. The truest objects of actual thinking, then, are not universals but the forms of things or the essences as they are in actuality.[28] Having knowledge as a habitual relation to universals prepares us to think the essence as it truly is. Knowledge is of universals – since knowledge is habitual – and thinking is principally of the form or being just as it is in itself in actuality. The universal serves as a kind of instrument of the soul by means of which we think essences as they are (see iii 8.432a1–3). We can turn our thought to think of universals as we can turn to think of particulars, but then we are not thinking of forms or essences as they are in actuality. Universals maintain a hold on reality since they are in our soul when we know habitually and they are "parts" of the form or essence when defined in terms of genus and difference.

Since for Aristotle the knower has the universal in soul, and actual thinking utilizes this so that the universal as such or the form or essence to which it is related or some particular may be thought, no external agent raises us to thinking as the external sensible object gives rise to sense-perceiving, but we may think when we wish. Aristotle expresses the points thus:

> Knowledge is of universal things; these are somehow in the soul itself. Therefore to think is up to the person whenever he might wish, but to perceive is not up to him; for it is necessary that there be the sensible object; similarly this is the case even for the sciences of the sensible objects, and on account of the same cause, that the sensible objects are among the particular and external things. ἡ δ' ἐπιστήμη τῶν καθόλου · ταῦτα δ' ἐν αὐτῇ πώς ἐστι τῇ ψυχῇ. διὸ νοῆσαι μὲν ἐπ' αὐτῷ, ὁπόταν βούληται, αἰσθάνεσθαι δ' οὐκ ἐπ' αὐτῷ · ἀναγκαῖον γὰρ ὑπάρχειν τὸ αἰσθητόν · ὁμοίως δὲ τοῦτ' ἔχει κἀν ταῖς ἐπιστήμαις ταῖς τῶν αἰσθητῶν, καὶ διὰ τὴν αὐτὴν αἰτίαν, ὅτι τὰ αἰσθητὰ τῶν καθ' ἕκαστα καὶ τῶν ἔξωθεν. (417b22–28)

We can start ourselves thinking by wishing to do so. Universals present in the soul of the knower are ready to give rise to thinking, much as the doctor's knowledge is available and choice determines whether healing or sickening is undertaken. Wish for a practical result or for theorizing can set thought into activity. This does not mean that affectivity precedes cognition because even wish is determined by cognition: we wish for what appears good to us (see *NE* iii 5.1114a32–b25). Some sort of cognition is raising our power of thought to activity even when it is desire that induces us to think. The cognition originating thought does not require a particular external object confronting us about which we think, as we perceive what confronts the sense, since *phantasia* can engender thought. Were the exercising of thought to depend upon sense perception, it would be much more limited than it is since we could only think in relation to what we presently sense-perceive. But

it is universal; in itself the form is neither universal nor particular. The divine unmoved mover is not a form at all, but an actuality (since form is always in relation to matter), yet it supremely is neither universal nor particular but "a this."

[28] Εἶδος has the marvelous ambiguity of referring either to form or to species. Species is universal whereas form as the cause of substantial being is neither universal nor particular. Whereas Platonists may seem to have forms that are both universal and particular – i.e., the *X* itself is the one essential *X* and the universal cause to the others – Aristotle has forms that are neither universal nor particular. The soul of Socrates is just his principle, but not his soul but Socrates is particular.

sense-perceiving is not similarly up to us inasmuch as a sensible object is needed to cause perceiving. Of course the human or beast may have some control regarding which sensible objects it pays attention to or avoids perceiving. The final sentence about the sciences of sensible things (417b26–28) refers to the way we know universally about visible things, audible things, and so on. Our knowledge of them as we have it in the soul is universal, though the perceptibles themselves are particulars external to the senses. We can think of these sensible objects even without their being immediately present before us once we know them and wish to think of them, but we can never perceive them without their being present. So Aristotle need not be engaged in sense perceiving to elaborate this treatise on the soul. Mind may enter into play even in knowing sensible objects. By the "sciences of sensible objects" Aristotle could well be referring to the productive arts and practical sciences that must work with perceptible things or to the natural sciences of movable sensible things or more narrowly to the sort of knowledge of colors, sounds, odors, and so on, emerging in this treatise.

What Aristotle discloses is that as analogous to each other as sense perception and knowledge are, there are significant differences. When humans have dispositional knowledge, gained from learning and teachers, they can actualize it by their wish since they have universals *already* in their soul. Knowing persons are self-movers not in need of particular sensible objects to provoke their thought, though they may have *phantasia* as provocation. The capacity for sense perception, which does not depend upon having learned, does not similarly have the sensible objects already there in the soul. Only confrontation by the senses with particular sensibles leads to sense perceiving. The animal requires no previous experience for perceiving. Of course, continued perceiving of the same sorts of things, if the animal has memory or can also develop experience and knowledge (cf. *Meta*. i 1 and *Post. An*. ii 19), enrichens sensitive life, but sense perception as such results from being acted upon directly by particular sensibles outside the senses.[29]

417b28–418a6 Aristotle's previous lines have touched upon several topics so that his suggestion that he may clear up these matters on a later occasion (417b28–29) could refer to numerous passages in this and other treatises. Perhaps he especially means that he will take up intellect, its object, operation, and origination, in its rightful place in this treatise in book 3. What he mainly wishes to draw from the discussion are the implications for sense perception. Being in potentiality, he affirms, is not said simply (ἁπλοῦ), but in two important ways (b29–32; cf. 417a22 and b2). In one way the child might be said to be capable of serving as a military general (τὸν παῖδα δύνασθαι στρατηγεῖν), and in another way the adult in his prime (τὸν ἐν ἡλικίᾳ ὄντα), this latter way pertaining to the capacity for sense perception (τὸ αἰσθητικόν) ready for use. The reference to a child is to someone prior to experience of war and presently ineligible to serve as general. Here there is undeveloped potentiality or potential eligibility for warfare. The adult is one who is experienced in war or

[29] A slight exception is our awareness by sense of not sensing (see 425b20–22).

who has attained legal eligibility to be elected general.[30] This situation of the adult is like the condition of the developed capacity to sense-perceive since once there is a living animal it is ready to employ sense perception. Hence Aristotle may be saying that the sense faculty possessed by an animal is in the condition of developed potentiality like the adult's eligibility for generalship; that is, the οὕτως in 417a32 refers only to τοῦ δὲ ὡς τὸν ἐν ἡλικίᾳ ὄντα in b31–32. Yet since some animals do not have all their senses ready to perceive right from birth, as dogs gain vision later (see *GA* ii 6.742a8–10), Aristotle might suppose that both sorts of potentiality have some application to that which is capable of perception (τὸ αἰσθητικόν), even if potentiality as ready for operation dominates.[31]

Greek in Aristotle's time has no terminology to distinguish these two different sorts of potentiality and the transitions to their respective actualities (417b32–418a1). Other languages are unlikely to do much better since Plato and Aristotle are perhaps the first to mark such distinctions.[32] Aristotle nonetheless has shown that they are other and the way they are other (διώρισται δὲ περὶ αὐτῶν ὅτι ἕτερα καὶ πῶς ἕτερα, a1–2). This determination *that* the types of potentiality and their transitions to actuality differ and just *how* they differ corresponds to the standard methodological questions "if" or "that" the subject matter is and then "what" or "on account of what" it is. The potentialities differ in the actualities for which they are potentialities; for example, the inexperienced child is potentially a general and the adult potentially a general quite differently. The child is potentially an adult eligible to be general, so the actuality is to attain such eligibility, while the adult is eligible to be a general, so the actuality is to become and be a general. Lacking better terms, Aristotle must speak of the two sorts of potentiality as acted upon (πάσχειν) or altered (ἀλλοιοῦσθαι) when they come to be or enter into actuality. As flawed as the terms "to be acted upon" and "to be altered" may be, and Aristotle has repeatedly questioned them in the chapter, he says we have to use them as legitimate or the standard names (χρῆσθαι ἀναγκαῖον τῷ πάσχειν καὶ ἀλλοιοῦσθαι ὡς κυρίοις ὀνόμασιν, a2–3).[33] Any transition from potentiality to actuality seems a case of being acted upon since something has to serve as "mover," "agent," or cause leading to

[30] Burnyeat 2002, 69n109 suggests that the contrast of child and mature adult is legal, i.e., based on *nomos* as analogy to *physis*, rather than based on skill. The child is potentially an adult old enough to be elected, i.e., potentially eligible, and the adult is eligible to be elected general.

[31] Hicks 1907, 359 disputes supposing "that sensibility, like knowledge, has two grades of potentiality," and he asserts that the ancient commentators reject this. Of course any animal must have some sense ready to operate, but as indicated Aristotle is aware that there are animals born with a distance sense not yet ready to operate.

[32] Commentators have expanded upon Aristotle's own speaking of "first actuality" in ii 1 (and also "first change" in 417b17) to speak of "second actuality" as the exercise of first actuality. Then the two types of potentiality are "first potentiality," which is the undeveloped potentiality, and "second potentiality," developed potentiality. "First actuality" and "second potentiality" overlap and are two perspectives on the same condition. Such terminology may first appear in Alexander.

[33] Hicks 1907, 359 compares the usage of ὡς κυρίοις ὀνόμασιν to that in *Poetics* 1457b3 and 1458a19, a22ff. These are standard names rather than metaphors or words needing explanation. But even if it meant legitimate or strictly proper names, the "as" in 418a3 could be taken to mean "as if," indicating that these are not really quite appropriate names (see Burnyeat 2002, 73n117).

actuality. Having been told why such transitions of special interest in the *De anima* are not ordinary alterations (417b2–16), we may nonetheless continue to call them cases of being acted upon and alterations. This is crucial if, as previously indicated, physics makes clear that all motion requires a mover throughout its duration, but it has not anywhere been established by Aristotle that activity similarly requires an agent.

All is prepared for the initial general definition of sense perception:

> The sense power [or the perceiver] is in potentiality the sort of thing the sensible object is already in actuality, just as has been said. Now it is acted upon not being like, but having been acted upon it is likened and is the sort of thing that is. τὸ δ' αἰσθητικὸν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχείᾳ, καθάπερ εἴρηται. πάσχει μὲν οὖν οὐχ ὅμοιον ὄν, πεπονθὸς δ' ὡμοίωται καὶ ἔστιν οἷον ἐκεῖνο. (418a3–6)

A sense capacity or the perceiver is the potentiality to become what sort of thing the sensible object is in actuality through being acted upon. Here because so much remains unclarified about sense perception (*aisthesis*), and he has done more to demarcate types of potentiality rather than actuality, Aristotle makes clear that he defines sense power (*aisthetikon*; cf. ii 12.424a17–18, which defines *aisthesis*). It is unclear whether he defines strictly a faculty of soul or a faculty along with its bodily organs, that is, what has the sense power (in ii 12 strictly the soul's sense faculty is defined; see esp. 424a26–27, which seems to identify *aisthesis* with the very being of sense power, τὸ αἰσθητικῷ εἶναι). In effect his account puts the sense capacity in the genus of potentiality, whether a potentiality of soul or the animal. But the chapter has spoken of two sorts of potentiality, undeveloped and developed potentiality. In light of 417b16–18, the sense power is developed potentiality because the animal has it ready to use at least from birth. The potentiality is to become the sort of thing that the sensible object is already in actuality. This difference in the definition by genus and difference must distinguish sense capacity from other kinds of potentialities. Other capacities are not acted upon by the sensible object *already in actuality*. Many things undergo action by sensible objects and are likened to them, as when a hot object heats something else, perfume makes the body fragrant, and paints color surfaces. In these cases they must not be receiving the action of the sensible object as it is already in actuality.

The sense power is developed potentiality parallel with knowledge, and its actuality, the transition from possessing the sense capacity to employing it, compares to theorizing. Because this is the relevant transition, and to focus on the significance of "sensible object *already in actuality*," Aristotle adds "just as has been said" (καθάπερ εἴρηται, 418a4–5) to recall the distinctions that have been made in this chapter of the types of potentiality and actuality.[34] This helps explain the difference in the account.

[34] Ross 1961, 238 takes the reference in 418a4 to be just to such passages as 417a18–20 where Aristotle makes the general point that things originally unlike become like through being acted upon. While the explication of the way what is initially unlike is likened by being acted upon is relevant to his present account, since he immediately restates this in 418a5–6, it is somewhat less urgent than the distinction of types of actuality and potentiality that enters into the account of being acted upon. See on the reference Philoponus *In de an*. 309,10–13.

When things besides perceivers are acted upon by sensible features, there is most likely an ordinary alteration rather resembling the transition from undeveloped to developed potentiality. The surface that is painted a new color or heated takes on a new quality as a new affection or disposition. This is an ordinary alteration. The surface that now is blue or hot can in turn give rise to sense perception of it. Only that which has the power of sense perception can be acted upon by the sensible object already in actuality and undergo the transition from developed potentiality to its actuality. The sensible object already in actuality must mean a sensible object actually being perceived. Insentient bodies are acted upon by sensible objects solely as they are in potentiality for being perceived; that is, bodies are acted upon such that they become potentially perceptible. The sense power alone as sentient is acted upon by the sensible object in actuality.

Sensible objects when they are not causing actual sense-perceiving in some animal are merely the potentiality for moving a sentient being to perceive them. This will be stated explicitly in some later passages of the treatise (see esp. 425b25–426a27 and 431b24–28). Even if the sensible object is moving the sense medium when perception is not taking place, the sensible object is not moving it as already in actuality as a sensible object being perceived. The sensible object can merely move the sense medium when perceiving does not occur as still a potentiality to give rise to perceiving. Only the sensible object acting upon the sense power to cause actual sense-perceiving might be said to be "the sensible object already in actuality" (τὸ αἰσθητὸν ἤδη ἐντελεχείᾳ, 418a4).[35] What the sensible object accomplishes when it thus acts upon the sensitive power is to cause it to become the sort of thing that the sensible object is in actuality so that the sense can perceive it as it is. The sensible object raises the perceptive power from developed potentiality for perceiving to perceiving in actuality. Prior to sense perception the sensitive power is unlike the sensible object though potentially like it, but after being acted upon by it the sense has become likened and so is the sort of thing that sensible object is (ἔστιν οἷον ἐκεῖνο, a6). The lines 418a4–6 do not add to the definition but reinforce that the sense power goes from being like the sensible object only potentially to being like it in actuality. In becoming the sort that the sensible object is, the sense is not primarily perceiving itself but the sensible object as it is, for the sense power has become it in actuality in a special way, as the sensible object is in actuality. Sense perception thus gets to the sensible truth of things.

[35] E.g., a yellow, hot, or pungent object is only potentially sensible as yellow, hot, or pungent prior to its actually being sensed as yellow, hot, or pungent. Color, heat, and flavor are actual attributes of substrata, yet are merely potential movers of a sense prior to being perceived. Everson 1997, 124–125 is mistaken in denying that the sensible object *already* in actuality is just in actuality simultaneously with the actuality of the sense that perceives it. He disputes that the actuality of sensible object and sense can be simultaneous, in spite of Aristotle's saying so, since he supposes that a mover has to be prior to the moved. In fact, however, while a body can be in motion prior to moving some other body, and so it is still a potential mover, it cannot be an actual mover until it is actually moving what it moves, and therefore the case differs little from that of perceptible object and sense. The sensible object is potentially sensible prior to being actually perceived, but it cannot be actually perceived – "the sensible object already in actuality" – prior to being perceived.

Aristotle is careful to say that the sense becomes the sort of thing the sensible object is (ἔστιν οἷον ἐκεῖνο) since he must avoid either having sense perception get actual things in the soul, as perceiving a stone puts a stone in the soul (see 431b28–29), or having sense perception create a second world merely resembling, imaging, or representing the actual world, as if the soul were a cave in which images of realities were reflected upon a wall. That the sense becomes "likened" (ὡμοίωται, 418a5) might suggest that a representation is in the sense. But Aristotle rejects any kind of effluence theory of sense perception that has the sensible object producing some appearance in the percipient being, and generally he avoids any view that has cognition in a world of its own apart from things. That the sense power becomes what sort of thing the sensible object *already is in actuality* suggests that this is no ordinary change in which something new results from a destruction of what existed before. The sense power is the potentiality to be perceiving, and this perceiving is a saving rather than destruction. When ii 12 states that the sense receives sensible forms without the matter, it should be clear that this means no image is in the sense since a form cannot be an image. Instead the sense gets something of the same sort as the sensible object within it, that is, the sensible form, that enables the sense to perceive the sensible object itself as it is. The sense actually perceiving is only likened to the sensible object already in actuality by taking on its sensible form enabling it to perceive it, and hence also to be aware of its perceiving.

Previously in speaking about the nutritive soul, Aristotle has reproduction through substantial change generate another such as *itself* (ἕτερον οἷον αὐτό, 415a28, b6–7, 416b15–16, and b24–25), while he is now saying the sense power is in potentiality a sensible quality or feature such (οἷον) as *another*, that is, the sensible object already in actuality (see 418a4 and a6). What results in generation is a larval or full living being of the same sort as the parent, but in sense perception the sense or sense organ is ready to become such a sort as the sensible object already in actuality. Use of "such a sort" (οἷον) leaves considerable flexibility as to the way the result will approach to the being it will be of the same sort as and thereby give rise to perception of the sensible object. Subsequently in ii 12 sense turns out receptive to sensible forms without the matter. The sensible object itself is not reproduced in the sense. Were another sensible object reproduced in the sense organ and sense, it could not help us to perceive the original object any more than we know the parent by the child. We should still have to explain how the sensible object in the sense power is perceived. Perceiving is not thus a generation of something completely new since the sensible object being perceived already is in actuality and the sense is in potentiality what sort that is so that it is thereby enabled to be aware of the sensible object not to reproduce it.

The chapter might seem to have reached understanding of sense perception comparable to that of nutrition so that investigation of sense perception might terminate. That both nutrition and sense involve objects has been established. In their respective operations something becomes likened to what is originally contrary or unlike it. Yet, there may be much more to say about the various sensible objects and the likening involved in sense perception. There may seem some circularity or emptiness in saying merely that the sense power is in potentiality the sort of thing

the sensible object is already in actuality. The role of bodily sense organs and the place of media remain for scrutiny as well. That Aristotle has an account doing justice to the five senses must be established, and there must be some attention to the relationship of these five senses. Sense perception is far more complex than nutrition, and sense perception pertains to no other investigation so well as to this investigation of soul; hence the treatment must continue.[36]

[36] Though perception is more complex than nutrition and reproduction, Aristotle has to devote a large treatise just to the generation of animals. Despite the tremendous difficulty of understanding sense perception and cognition generally, there seems less variety in the ways different animals sense-perceive than in the ways the different sorts of animals reproduce.

6

The Three Sorts of Sensible Objects

418a7–16 Having determined in the previous chapter *that* there are external particular sensible objects, and having arrived at a general account of the perceptive power as the capacity to become likened to these sensible objects as they are sensible in actuality, Aristotle turns to *what* in general these sensible objects are. He indicates that he first (πρῶτον) considers the objects of each sense (καθ' ἑκάστην αἴσθησιν) since if he is going on to treat each of the senses it is appropriate to understand faculties and operations in terms of their objects (418a7–8; cf. 415a16–22). "Of each sense" here really means each *kind* of sense, whatever kinds there are, since the Greek καθ' ἕκαστον can refer to kinds as well as to particulars (see 414b32–33 for καθ' ἕκαστον referring to kinds and 417b22 for τῶν καθ' ἕκαστον applying to particulars). Talk of *kinds* of senses is pertinent insofar as different types of animals share kinds of senses and inasmuch as some sensible objects are perceived in virtue of themselves (καθ' αὑτά), that is, in virtue of the kind of sensible object and the kind of sense. Aristotle must delineate the possible sorts of objects of the various kinds of sense perception and indicate which play the central role in the accounts of the senses. Only afterward will he be ready to treat more particularly each kind of sense, its special object and operation.

The chapter's concision is remarkable in view of its importance. Aristotle wishes without much elaboration to set out the possible sorts of perceptible objects. The previous discussion of nutrition merely contended with a single object, food – maybe digested more or less for the different operations – but there are several kinds of sensible objects. He says enough to distinguish these and to justify concentrating upon one class of sensible object. Since this one class is proper or peculiar to each sense, the subsequent discussion of the sense can focus upon just this sort of sensible object and what goes into perceiving it.

Aristotle asserts that sensible object is said in three ways (λέγεται δὲ τὸ αἰσθητὸν τριχῶς, 418a8). This probably indicates that he can take over the division into kinds of sensible objects largely from his predecessors since it is not just by him that they are said to be sensible objects. Plato surely points out that there are sensible objects perceived merely by one or another sense (see *Theaetetus* 184b–185a). In addition in the same context Plato refers to what is "common," but he means primarily

a thought about different sensible objects, though he also mentions "one" and "number" (185d1). Moreover, there is talk in the dialogue of perceiving Theaetetus and Theodorus (191b–194b). Evidently, then, predecessors such as Plato point to different sorts of sensible objects and even sometimes distinguish them from each other. Nevertheless, the way Aristotle says "we say" (φαμεν, 418a9) and "I mean" (λέγω, a11) discloses his own contributions to clarifying the way to think about the three sorts of sensible objects.

Going back at least to Anaximenes, who explains heat and cold in terms, respectively, of rarefaction and condensation (see DK 13B1), there is a tendency for "reductionist" accounts of sensible objects. Certain sensible objects were reduced to others. The atomists attributed naturally to atoms magnitude and figure and further allowed them motion and rest, but then color, odor, flavor, hot, cold, and so on, are merely the result of the impact of the natural attributes of the atoms upon the sensitive apparatus of the percipient being. The only natural or real properties of the atoms thus explain the apparent and conventional features of bodies (see DK 68B9, 68A47, 68A129). Plato's *Timaeus* resembles this approach to some extent by having the magnitudes and angles of the regular solid corpuscles built from triangles account for other sensible features primarily through cutting and compressing (see esp. 65c2–6). Prior to Aristotle, then, there is a prominent tendency to explain color, sound, odor, flavor, and tangible features of bodies through figure, magnitude, arrangement, and motion. He will be opposing this tendency and giving priority to what these other thinkers viewed as derivative.

Three possible types of sense-perceptible objects present themselves. Two of these are perceived, Aristotle himself clarifies ("we say," φαμεν), "in virtue of themselves" (καθ' αὑτά), and one is perceived "according to accident" (κατὰ συμβεβηκός, 418a8–9). The two kinds perceived in virtue of themselves divide into sensible objects "proper" or private to each sense (τὸ ἴδιον ἑκάστης αἰσθήσεως) and sensibles "common" to all the senses (τὸ κοινὸν πασῶν, a9–11). In light of Aristotle's wording, these have come to be called "proper sensibles" and "common sensibles."

About proper sensibles Aristotle says,

> I call proper what it is not possible to perceive by another sense, and concerning which it is not possible to be deceived, for instance vision of color and hearing of sound and taste of flavor. Yet touch has more differences; but each sense discriminates concerning these, and it is not deceived that it is color nor that it is sound, but about what it is that is colored or where, or what it is that sounds or where. λέγω δ' ἴδιον μὲν ὃ μὴ ἐνδέχεται ἑτέρᾳ αἰσθήσει αἰσθάνεσθαι, καὶ περὶ ὃ μὴ ἐνδέχεται ἀπατηθῆναι, οἷον ὄψις χρώματος καὶ ἀκοὴ ψόφου καὶ γεῦσις χυμοῦ. ἡ δ' ἁφὴ πλείους μὲν ἔχει διαφοράς· ἀλλ' ἑκάστη γε κρίνει περὶ τούτων, καὶ οὐκ ἀπατᾶται ὅτι χρῶμα οὐδ' ὅτι ψόφος, ἀλλὰ τί τὸ κεχρωσμένον ἢ ποῦ, ἢ τί τὸ ψοφοῦν ἢ ποῦ. (418a11–16)

These sensibles among those perceived in virtue of themselves are called proper or private (*idion*) because they can only be perceived by one sense, and he adds a second criterion that it should not be possible to be deceived regarding them. This second criterion, perhaps not otherwise needed to demarcate the proper sensibles, may be added since in ii 7 not just color is visible but also something that has an account while being nameless, which turns out to be what we call the phosphorescent

or bioluminous. As perceived exclusively by sight, the phosphorescent is perceptible in virtue of itself, but because we are not perceiving its true color in the darkness, and so possibly are deceived regarding it, it is not strictly the proper object of vision. In the case of the senses besides sight, what is perceived exclusively by the sense is the proper object of the sense, for example, sound for hearing and odor for the sense of smell.

Any object perceptible exclusively by one sense must be perceptible in virtue of itself. For example, while many sorts of perceptibles are visible, including common and accidental perceptibles, that which is only visible rather than also perceived by another sense must be visible in virtue of itself because an account can be given of it that has being visible in it, for example, color and the phosphorescent are perceptibles that are exclusively visible by sight. Since being visible belongs in such an account, whether or not this is the best definition of these perceptibles, being visible belongs to them in virtue of themselves, as what belongs in something's account is what pertains to it in virtue of itself (see *Meta.* v 18.1022a27–29). And what is visible in virtue of itself must be perceptible in virtue of itself. The same applies similarly to the sensibles proper to the other four senses, so that what is perceived exclusively by one sense is perceptible in virtue of itself in a formal and definitional way.

Not only is each kind of proper sensible perceptible in virtue of itself formally or definitionally, but also the proper sensibles are perceptible in virtue of themselves as moving causes of perception in virtue of themselves rather than as accidental movers (see 418a30–31). Color, for example, is perceptible by being capable of moving the actually transparent (see 418a31–b2). Color or any other of the proper sensibles by acting upon the medium that in turn acts upon the sense organ and sense is the originating cause of perception and is perceptible in virtue of itself. As the originator of sense perception, through medium, sense organ, and sense, the proper sensible is perceived directly. "Directly" perceived means just that what is perceived is itself the ultimate moving cause of the perception. The proper sensibles are also final causes in virtue of themselves inasmuch as the senses are for the sake of discriminating them.[1]

The primacy of the proper sensibles as sensible objects is reinforced if, as Aristotle says, sense cannot be deceived (μὴ ἐνδέχεται ἀπατηθῆναι) about these objects (418a12). Proper sensibles are some sort of differences (διαφοράς) that the sense discriminates or judges (κρίνει), generally truly, but the sense can be deceived about what has these differences or where it is. That sense should not be deceived fits with the account in 418a3–6 that the sense power becomes likened to the actual sensible object through being acted upon by it. His cognitive realism depends upon this. But Aristotle leaves it ambiguous whether he means the sense is not deceived *that* color or sound is being perceived or exactly *which* color or sound is being

[1] Material cause will not be so relevant to cognition, but proper sensibles have been shown to be causes of the other three sorts. Hence Everson 1997, 30–45 too narrowly supposes that Aristotle's talk of perceptibles in virtue of themselves just refers to efficient causes *per se* rather than causes *per accidens*. There need be no such restriction to efficient causes. Common sensibles may be so restricted, i.e., they are perceptible in virtue of themselves solely as moving causes.

perceived. When vision sees color or hearing hears sound, some color or sound is perceived, whether or not just the one supposed. Nothing could call into question that some proper sensible or other within the range of the proper sense is being perceived. But Aristotle also seems to mean that each proper sense is authoritative about just which proper sensible it is perceiving as well (see 428b21–22). Because each sense has sole access to its own proper sensible, it is the only criterion for it and sole judge. Whatever this sense reports, then, is unimpeachable, even as to the particular proper sensible that it perceives at present. But while this is the case, sole access is not the full reason for the proper sense's truthful perception. In Plato's *Theaetetus* 153e–157c an account of sense perception is developed in which perception is infallible because it is an experience unique to each perceiver and moment since it is a one-time interaction between perceiver and perceived.[2] Aristotle will not offer such an account appealing to the uniqueness of the perception or the lack of further judge, but rather he will suggest that proper perception so becomes what it perceives by being acted upon by the object that the sense perceives it just as it is under normal conditions. The account of the way the causal agent in alteration assimilates to itself what receives its action secures the truth of the perception. The sense does not get a representation of what it perceives but the very perceptible being itself cognitively.

That Aristotle says proper perception cannot be deceived may well cause surprise. Often regarding such sensibles there seem to be conflicting appearances. Something appears warm to one perceiver and cool to another, or something tastes sweet to one and bitter to another. The standard argument for doubting the veracity of perception or the reality of its objects is the "argument from conflicting appearances." It is held that if something appears *X* and not-*X* to someone at different times or in different respects or to different perceivers, then it cannot really *be X* in itself. Having displayed that things do thus appear in conflict, the skeptic contends that the things cannot really have the features in themselves since why trust one appearance more than another? But this argument is not as compelling as it seems.[3] The conflict concerns what feature to attribute to some substratum. It is unlikely that there will be conflict regarding what sweetness is or what bitterness is, but about whether this thing has a bitter or sweet taste. Typically such disagreements arise because one of the disputants is in a distorting condition; for example, the person is sick, or far away from what is perceived, or there is poor lighting. Though Aristotle says that proper perception is not deceived, he perhaps means that it is unerring on certain assumptions: the percipient being is in good condition (e.g., not sick), the medium is not offering distortion (e.g., poor lighting or excess wind), the sensible object is not too far away, and so on. On such assumptions, which are standard conditions, proper perception reliably perceives its proper objects.[4] Much

[2] See *DA* 404a28–29 and 427b3 about some predecessors supposing that all appearances are true. Aristotle is only having proper perception be true.

[3] See Burnyeat 1979 for a discussion of such arguments and an account of what is wrong with them: primarily the assumption that all observers have to agree about the truth.

[4] *DA* iii 3.428b18–19 relaxes the claim of truthfulness of proper perception; in such passages as ii 10.422b6–10, where the sick are said to taste things as bitter, part of the reason for the relaxation is indicated. See *Meta.* 1010b2–26 for the needed assumptions for complete truthfulness. For an attack upon this way of

as he says "it is not possible" (μὴ ἐνδέχεται) for a proper sensible to be perceived by another sense, he says "it is not possible" (μὴ ἐνδέχεται) to be deceived about the proper sensible (418a11–12). But perhaps as one sense can "accidentally" perceive another's proper sensible, in abnormal conditions sense is "accidentally" deceived about a proper sensible. That animals differ in the caliber of their sense power need not interfere with the argument. Animals other than humans have better vision, smell, and hearing, while humans have the best sense of touch (421a16–26).[5] Yet the proper senses of various animals, though differing in the ranges of what they discriminate and under what conditions they are capable of making their discriminations, should be supposed to do well and be accurate under fitting conditions and within their ranges (see on 421a9–26).[6]

In this passage Aristotle has spoken of color, sound, flavor, and so on, as objects of sense about which the sense is not deceived, but he has also mentioned that which is colored, sounding, flavored, and so forth, and where it is located, as possible matters about which deception occurs. Does the sense perceive merely the proper sensible or the sensible in its substratum? We surely speak of perceiving both color and the colored thing. As an affective *quality* (see *Cat*. 8.9a31–b9), any proper sensible will be an attribute of some substratum, and it will only be able to be through some connection with a substratum.[7] Here Aristotle indicates that we generally perceive things having features, such as a colored thing, so to say that we perceive the feature, for instance, color, is to have analyzed sense experience. The argument from conflicting appearances supposes that we disagree about the *features* of things, even those that are proper sensibles, but Aristotle says that the deception occurs in relation to what has the feature and where that thing is. For example, we hear a loud voice but we mistake who is speaking or where he or she is. Aristotle turns us

understanding Aristotle on the truthfulness of proper perception, see Burnyeat 2002, 45n45. Burnyeat thinks the reservation is about the sorts of sense organs animals have, such as hard eyes that make colors appear less bright than they are (here he seems to misconstrue 421a9–26, which does not say that hard-eyed animals misperceive but only that they do not see many differences in color). Yet Burnyeat also allows relaxation for the case in *PA* ii 2.648b12–17, in which a thing feels hotter to a perceiver than it should as a result of the perceiver's condition rather than the sense organ. Yet since the flesh can be viewed as the sense organ, Burnyeat misconstrues even this case. We see that since there is here a temporary impairment of the sense organ, as when the perceiver is sick, there is no reason to disallow Aristotle to refer to other temporary difficulties with media and so on as well as with the sense organs. Since proper perception is for the most part truthful, and animals can be certain about what they thus perceive, it should be clear that certainty is hardly a sufficient condition for knowledge. Knowledge as comprehensive understanding surely has different demands from certainty.

[5] In ii 9 Aristotle focuses on the inferiority of the human sense of smell. Notice that 418a12–14 mentions the four other senses as perceiving sensibles without mentioning smell. In fact, however, though humans may not perceive as well as some other animals from a distance, they may do better in discriminative power (see *GA* 781b19–22).

[6] Freeland 1995, 242 argues that Aristotle reasonably takes an anthropocentric stance in analyzing the senses since the human senses discriminate more clearly. But we should recognize that proper perception by any animal under suitable conditions and within a fitting range should deliver the truth about the proper sensible perceived.

[7] We might readily say that all the proper sensibles inhere in substrata except for the problematic case of sound.

from conflicting appearances of proper sensibles to mistaken identifications of the substrata of the proper sensibles or where the substrata are located. Already this indicates that common and accidental sensibles, the two sorts of sensible objects besides proper sensibles, may be erroneously perceived (cf. 428b18–25) since the issues of what is colored or sounding and where these are pertain to common and accidental perceptibles.

In speaking of proper perceiving, Aristotle says that the sense discriminates or judges (κρίνει) the differences (διαφοράς, 418a14).[8] If perception is to be an awareness of its proper objects, it must be some sort of discrimination of them. But such discrimination need hardly be verbalized in judgments. It is almost unavoidable to speak and write of sense as making judgments, though this cannot really be the case because the beasts do not speak at all and neither do humans before they learn, yet they have sense capacity. Animals recognize things through sense but without necessarily enunciating the recognition. It is already discrimination when by sense the animal distinguishes sensibles within the same range of sensibles, and errors in distinguishing, say, one color from another seem firmly precluded. Discriminated by sense are such differences. For the sensibles called "differences," see, for example, 418a14, 420a10–11, a26–27, 422b14, b32, 423b27–424a7 (cf. *Meta.* 980a26–27). The sensibles within the range of the senses, namely, colors, flavors, and so on, can be called differences because they are the different forms in terms of which we distinguish sensibles.[9] Sensibles differ from each other *and* from the sense apparatus. Aristotle in later discussion of the particular senses, especially of touch

[8] This will be seen to contrast with *phantasia*, which is not a discriminative or critical faculty (see 428a1 ff.). On the use of *krinein* (to discriminate) in Aristotle's time, see Ebert 1983. Touch has more ranges of differences than the other proper senses, as will be explained in ii 11, though in 422b23–34 Aristotle tries to make the disparity less great.

[9] Identifying differences is fundamental to animal and human life. Aristotle is allowing for sense perception to deal with the ordinary and the striking. The animal is aware of the routine things in its environment and ready to respond to things that are noticeably different. John Dewey and Martin Heidegger, speaking primarily of what Aristotle calls accidental sensibles, have made the perception of the unusual, e.g., the breaking of the tool so that it ceases to function, fundamental for sense perception and even for the mode of being of things (cf. Rousseau *Second Discourse* [1959–1995, iii 144]). Such views contrast the wonderful with the routine and suggest that one or the other of these is the object of sense perception. Aristotle's view of sense perception as discriminative permits both the usual and unusual to enter into perception, and we may extend to the beasts as well the experience of disruption in the world. An unusual object especially causes them to take notice. If an animal perceives many things at once but takes notice only of some of these, this indicates that change of a sort in the sense organs may be necessary and even sufficient for sense perception, yet much of what is thus perceived impacts little upon the animal and is little registered in making discriminations. Hence what goes on in the sense organs in one way is determinative of what is perceived but is not determinative of what the animal notices in what it perceives and deals with critically. Cf. Miller 1999, 208–209, who instead insists that material process in the sense organ can only be necessary but not sufficient for sensing as discriminating. But while perception is a discriminative faculty, it perhaps is not always much discriminating all that is perceived, and therefore we may allow that some material process is both necessary and sufficient for perception of the widest sort while agreeing that attention and discrimination are hardly determined by what occurs in the sense organ. See *De sensu* 447a12–20, which suggests focusing attention on some things prevents us from perceiving others, but Aristotle here seems to be arguing dialectically and the very argument presupposes that there is some limited awareness even of what one is not much noticing.

(see 423b26–424a15), will indicate that sense gives awareness of differences from its own sensitive mean. Hence sense perception is a discriminative or critical faculty of differences among sensible objects and differences from the sense itself. Though the sense in perceiving somehow becomes likened to what it perceives (418a3–6), it nonetheless perceives differences from itself. Since animal desire is for what is in some way lacking, if sense is to contribute to the satisfaction of desire, it must give awareness of differences from the sentient being. The lower beasts do not speak and name things, yet they discriminate them since this is the basic task of sense perception. Only through such discrimination does sense perception contribute to recognition of things, voluntary motion of animals, satisfaction of the appetites, and the possibility of developing intellect.

418a16–20 In his elucidation of the common sensibles, Aristotle says,

Now such sorts of things are said to be the proper sensibles of each, but common are motion, rest, number, figure, magnitude; for such sorts of things are proper of no sense but common to all. For indeed by touch a motion is perceptible and by sight. τὰ μὲν οὖν τοιαῦτα λέγεται ἴδια ἑκάστου, κοινὰ δὲ κίνησις, ἠρεμία, ἀριθμός, σχῆμα, μέγεθος· τὰ γὰρ τοιαῦτα οὐδεμιᾶς ἐστιν ἴδια, ἀλλὰ κοινὰ πάσαις. καὶ γὰρ ἁφῇ κίνησίς τίς ἐστιν αἰσθητὴ καὶ ὄψει. (418a16–20)

This brief statement lists the common sensibles, shows why they are "common," and indicates that they are perceptibles in virtue of themselves. Five are here listed, motion, rest, number, figure, magnitude, but elsewhere in this treatise at least unity may be added (see 425a15–16 in the version of many manuscripts) and in other works others. For example, roughness, smoothness, sharpness, bluntness, and time are offered as common sensibles in *De sensu* 442b5–7 and *De memoria* 450a9–10 and 451a16–17. Though Aristotle does not mention direction or place as a common sensible, each of the five senses is cognizant of directionality, and hence he allows that we can be mistaken about where the pale thing or the sounding thing is (see 418a15–16). This is not "place" in the technical sense of *Physics* iv 4, and place such as "in the Lyceum" is probably an accidental sensible, but the directionality linked with proper sensibles may also be a common sensible. Perhaps the reason he does not refer explicitly to other common sensibles is that they can be understood in terms of the five types named; for instance, rough and smooth have to do with figure, time is a kind of number or magnitude of motion, and number presupposes unity.

There may be some confusion about what the things listed as common sensibles really mean. Regarding motion (κίνησις) and rest (ἠρεμία), many changes of quality can be perceived by but one sense, such as becoming red or redder or warm or warmer. Only motion or rest in place, that is, locomotion or its lack, and either rapid change in size or such change over a long enough time, that is, change or lack of change in quantity, are perceptible by several senses. And number (ἀριθμός) only becomes a common sensible when the number is a number of things all perceived by more than one sense. The number of stripes on a tiger or the number of sounds heard since perceptible by but one sense are not common sensibles. Neither would a color and a sound, counted as two, be common sensibles since both are not perceptible by

the same sense. Unity as a common sensible presents the difficulty that one color, one sound, one odor, or so on, is simply a proper sensible. Figure (σχῆμα) that is a common sensible must again be perceptible by more than one sense. A cloud may exhibit a figure, as may the stripes of a tiger, or the colors in a two-dimensional painting, but such figures are not perceptible by any other sense than vision, and therefore they are not common sensibles. Magnitude (μέγεθος) has to mean the size of a bodily being or perhaps a magnitude of time. Such is perceptible by more than one sense, unlike any quantity of proper sensibles.

Aristotle explains that the listed common sensibles are common rather than proper because they are perceived by *all* the senses (cf. 418a10–11 and a18–19). He illustrates this by pointing out that some motion (κίνησίς τίς) is perceived by at least sight and touch – or the Greek may also be translated that motion is a sort of perceptible perceived by sight and touch. Should common sensibles really be common to *all* of the senses, then, or does being perceptible to more than one sense, especially sight and touch, suffice? In fact, though the common sensibles are routinely perceived most readily by sight and touch, the other senses also perceive them, or most of them. We can tell, for example, numbers of foods by taste and smell. The motion of a passing object can be detected by shifting smells and sounds. Similar accounts can be offered of other common sensibles perceived, if obscurely, by the various senses.[10] Perhaps the best evidence is Aristotle's reference in 418a16 to *where* the sensible is. Each of the five senses perceives its object with some sort of direction or location. This clearly applies to the distance senses, but also to the contact senses. So long as all the proper sensible objects seem inevitably to have some position, they must connect with some common sensibles.

Now why are the common sensibles perceived *in virtue of themselves*? Since these are *common* sensibles, as, for example, motion is perceived by touch and by vision, their being perceptible is not in their very account, as is the case with proper sensibles. For example, color is what is visible to sight and sound audible to hearing, but being perceptible does not fit similarly into the accounts of motion, rest, number, figure, and magnitude. And since these are common, perception of them can hardly be the end of each of the senses as with the proper sensibles. Thus perceptibility in virtue of themselves is not so much a formal condition or a final cause in the case of common sensibles. It must then pertain to their being moving causes of the senses, but just what sort of movers are they? Later we learn that the common sensibles are perceived in virtue of themselves because they necessarily accompany the proper sensibles that are perceived in virtue of themselves. Hence Aristotle will say that we perceive the common sensibles by each sense according to accident (ἑκάστῃ αἰσθήσει αἰσθανόμεθα κατὰ συμβεβηκός, 425a14–15). He can hardly mean that we

[10] See the commentary on 425a21–27 for further argument that the common sensibles are perceptible by all five proper senses. Aristotle is happy enough here merely to get agreement that at least sight and touch perceive motion. In *De sensu* 442b5–7 roughness, smoothness, sharpness, and bluntness are called common sensibles; these seem especially perceptible by sight and touch. These have to do with figure, which is only fairly precisely perceived by sight and touch. Hearing, smell, and taste have extremely imprecise input with regard to figure and features connected to it.

perceive the common sensibles accidentally in the way that the accidental sensibles are perceived accidentally. Instead he means that we necessarily perceive the common sensibles along with the proper sensibles: that is; they are essential accidents along the lines of *Metaphysics* v 30.1025a30–33.[11] Proper sensibles are fundamentally what animals perceive because they act upon the media, sense organs, and senses. And since the proper sensibles are accompanied by common sensibles, the common sensibles are perceived directly as well (see, e.g., 425b5–9 about the common sensibles accompanying proper sensibles). By way of the proper sensibles that each sense perceives, common sensibles can also be said to act upon the senses. For example, figure accompanies color and if the limit of a tangible body is a common sensible. Though animals only perceive common sensibles because they perceive proper sensibles, the common sensibles are hardly reducible to the proper sensibles. Since the common sensibles are perceived by more than one sense, they cannot simply be any of the proper sensibles. Figure is perceived along with color, but it cannot simply be color since figure is also tangible. Thus figure, by means of color and hardness, acts directly upon the senses.

The reason why Aristotle does not here trace the common sensibles in any great detail is that it would raise unnecessary complications and take him away from the more crucial proper sensibles. As noted before, all color defines figure at its termini, but not every such figure is necessarily also perceptible by another sense. Colors define figures that are not the limits of bodies or not tangible, such as the stripes of tigers, the colors on a two-dimentional painting, or clouds. Hence such figures may not be perceptible by more than one sense. Similarly we can feel black cattle on a completely dark night but without seeing them. Common sensibles as sensible objects necessarily accompany the proper sensibles, but they may only be perceptible as such for the most part. Frequently we only perceive a common sensible by one sense, as when we see a figure at a distance, so its being a common sensible is just the capability for acting upon multiple senses. It will be seen that since nearly any sense-perceiving must perceive a proper sensible or its privation – there may be some strange exceptions, such as vision of the phosphorescent – while common sensibles do not so clearly always have to be involved in the perceiving, the account of sense perception and its objects and operations may concentrate upon perception of the proper sensibles (see 418a24–25).

The account of why common sensibles are perceptible in virtue of themselves, that they necessarily accompany the kinds of proper sensibles and so act upon the senses as well, helps explain why Aristotle can sometimes expand the list of common sensibles to include time, roughness, smoothness, and so on. These can be common sensibles because they also as sensibles inevitably accompany proper

[11] The background for this may be seen in Plato's *Meno* 75b9–11, where it is said, "Let us say that figure is that which alone of existing things always follows color" (ἔστω γὰρ δὴ ἡμῖν τοῦτο σχῆμα, ὃ μόνον τῶν ὄντων τυγχάνει χρώματι ἀεὶ ἑπόμενον). Yet only figure both visible and tangible will be a common sensible. Eventually motion and rest will be seen crucial for perceiving all of the common sensibles. Without motion of sensible objects and of the sense organs and senses, it seems unlikely that percipient beings would become very aware of common sensibles (see 425a14–30). Hence, motion and rest reasonably head the list of common sensibles.

sensibles or other common sensibles, as time goes along with motion (see *Physics* iv 11). But we may then wonder why if the common sensibles are thus necessarily accidental, there should be any further "accidental sensibles." Aristotle has such a class of sensibles due to their not being perceptible in virtue of themselves, and hence these are especially accidental sensibles.

418a20–25 About the accidental sensibles, Aristotle states,

According to accident it is said sensible, for instance if the pale thing would be son of Diares; for according to accident this is perceived, because the pale thing has happened to be this which is perceived. Hence indeed it [the sense] is not at all acted upon by the sensible as such. κατὰ συμβεβηκὸς δὲ λέγεται αἰσθητόν, οἷον εἰ τὸ λευκὸν εἴη Διάρους υἱός· κατὰ συμβεβηκὸς γὰρ τούτου αἰσθάνεται, ὅτι τῷ λευκῷ συμβέβηκε τοῦτο οὗ αἰσθάνεται. διὸ καὶ οὐδὲν πάσχει ἢ τοιοῦτον ὑπὸ τοῦ αἰσθητοῦ. (418a20–24)

If such perceptible things as humans are accidental sensibles, why does Aristotle pick a convoluted case like the son of Diares as his illustration here, and in 425a25–27 the son of Cleon? One reason is to make clear that accidental sensibles are perceived accidentally. It might be supposed that we perceive such things as bodies, plants, and animals in virtue of themselves since these are what we often say that we perceive and these may seem to act directly upon the senses. But that we perceive substantial beings in relation to others, such as the *son of Diares*, in virtue of themselves seems less likely. The pale thing that we perceive necessarily is at rest or in motion, has some figure and magnitude, and is one or many, and along with the proper sensibles these common sensibles act directly upon our senses, but that a pale thing is son of Diares is not similarly necessary, for he might happen to be dark and we only perceive the son of Diares by means of the proper sensibles and common sensibles that work directly on the senses. Hence Aristotle says that sensible objects like the son of Diares do not *as such* act on the sense (οὐδὲν πάσχει ἢ τοιοῦτον ὑπὸ τοῦ αἰσθητοῦ, 418a23–24). Among the categories of being, qualities and quantities, motion and place, action and passion, and some relations seem to work directly upon our senses as proper sensibles or necessarily accompanying proper sensibles. But substances and certain other relations are not thus necessary and do not as such work on our senses.[12] The colored and figured thing that we see happens to be the son of Diares.

None of this means that accidental sensibles are perceived by an inference or require speech.[13] That Aristotle uses the example of the son of Diares helpfully suggests that the accidental sensible is being *perceived* rather than identified through

[12] Relations such as son and father are accidental sensibles, but other sorts of relations, such as greener or paler, are proper sensibles, and others, such as faster or bigger, common sensibles. The paleness that along with other sensibles discloses the son of Diares is lightness due to fair complexion and lack of tan rather than racial characteristic. *Metaphysics* 1044b25–26 seems to prove this since Aristotle speaks of dark persons' becoming light, and vice versa (cf. 1058b34–35). Talk of persons as light may be a slight joke since philosophers are ridiculed in Aristophanes' *Clouds* and Plato's *Gorgias* 485d–e as unmanly and pale because they sit around in a corner talking rather than going outside in the Sun.

[13] Some commentators supposing accidental sensibles not to be strictly sensibles include Block 1960, 94 and Kahn 1966, 46.

thought. We might see that someone is the son of Diares without knowing the person's name and without even ever having seen him before.[14] We *perceive* the pale thing as the son of Diares. If even lower animals perceive such accidental sensibles, this forcefully impedes supposing speech and reason in play. And they do, for many animals recognize their young offspring, so they in effect perceive the sons or daughters of themselves, or tame animals recognize their masters. The essence of a substantial being as such, however, and some of its relations hardly directly act upon the senses. The essence and these relations and qualities are primarily matters for thought. In a way, then, sense perception when it perceives accidental perceptibles such as the son of Diares also perceives accidentally the essence and these relations, as when it perceives any particular sensible object it accidentally perceives the intelligible universal instantiated (see, e.g., *Post. An.* 100a16–b1). Sense thus accidentally perceives intelligibles, and one proper sense accidentally perceives the proper sensibles of another sense. In general in accidental perception the accidental sensible is perceived not in virtue of itself but by way of some directly perceptible attributes, namely, proper and common sensibles.[15]

The accidental sensibles that Aristotle lists in ii 6 are such as the son of Diares. But in other contexts there is mention of other sorts of accidental sensibility. (a) The proper objects pertaining to a different sense are only accidentally sensible by another proper sense. For example, when I perceive sweet honey by sight, its sweetness is only accidentally perceptible by sight (425a30–b2). (b) Universals are sometimes considered accidental sensibles. In *Metaphysics* xiii 10.1087a19–20 Aristotle says, "Accidentally sight sees universal color, because this particular color which it sees is color." Since we perceive particular things that belong to universal kinds, we accidentally perceive the kinds and so the objects of knowledge (universals) are somehow accidental sensibles. (c) The common sensibles can be said to be accidental to proper perception inasmuch as they always accompany it (see 425a14–16). (d) Though Aristotle never calls the transparent accidentally sensible, he does say it is not seen in virtue of itself but only by another's color (418b4–6).

It should not be very surprising that Aristotle's reflection upon sense perception reverses the standard relationship of what is accidental. From the usual standpoint of thought and speech, where substrata take precedence, substantial being is primary, and attributes are accidental to it or accompany it. We say such things as "Socrates is pale." But the analysis of sense perception discloses that proper and common sensibles are perceived in virtue of themselves whereas the accidental sensibles, substantial beings and some relations, merely accompany these, and so are accidents of these. Therefore Aristotle says that the pale thing has happened to be the son of Diares (418a22–23), as if the substantial being were accident of its

[14] This point is made by Cashdollar 1973, 168n24. That we perceive someone as the son of another person perhaps not even present, Diares, may emphasize the way the perception is accidental inasmuch as we seem to perceive the son of Diares by way of Diares.

[15] Plato makes this fairly explict in *Republic* ix 598a–c when he emphasizes that the painter depicts the couch as it looks from here. We do not strictly perceive the intelligible essence of things, and we cannot perceive at once the whole substantial being. But the parts perceived accidentally by way of proper and common sensibles allow for accidental perception of the greater accidental sensible.

attribute (cf. *Prior Analytics* 43a32–36).[16] The reversal is not disorienting since our knowledge of universals develops from initial sense perception of the particular sensible objects (see *Post. An*. ii 19 and *Meta*. i 1).

After demarcating the three sorts of sensible objects, the chapter ends by giving priority to the proper sensibles. Aristotle states, "Of the sensibles in virtue of themselves the proper sensibles strictly are sensibles, and with respect to which is the essence by nature of each sense" (τῶν δὲ καθ' αὑτὰ αἰσθητῶν τὰ ἴδια κυρίως ἐστὶν αἰσθητά, καὶ πρὸς ἃ ἡ οὐσία πέφυκεν ἑκάστης αἰσθήσεως, 418a24–25). What the treatments of the particular senses will especially have to account for is the perception of the proper sensibles. This focus on the proper sensibles seems appropriate for dealing with the sense faculty and its operation if proper perception is not deceptive and even more direct than common perception. This will be so because the proper sensibles are proper and only in virtue of perceiving them are the common sensibles and the accidental sensibles perceived. Treatment of a function should concentrate upon the fundamental objects with respect to which it is the potentiality. The very being of each sense is correlated with its proper sensible object. As sense power was defined in ii 5, it is the potentiality to be what sort the sensible object already is in actuality (418a3–4). What the sense especially will be prepared to be likened to is its proper sensible.

Because the common and accidental sensibles are perceptible by more than one sense, it cannot be the special function of any one of the senses to perceive these. The most proper function of the senses is to perceive their proper objects, and no perception of common or accidental sensibles can take place without perception of the proper sensibles. In certain conditions the proper sensible may be perceived even without common sensibles. For example in the dark of night or in a fog or before a large colored surface there might be perception of proper sensibles without perception of figure, even if magnitude is still perceived (see, e.g., *Meteor*. 342b11–14). This further suggests that the account of the senses need consider only the proper sensibles as objects because these or their privations pertain essentially to the function of the senses and enter into just about any other sense perception.

Aristotle's concentration upon the five senses in relation to their proper perceptible objects, and analogously his concentration upon the essential intelligible objects, because he is attempting in the *De anima* to account for the functions of soul, explains his not seeking a thorough elaboration of human experience. He is not attempting a full-blown phenomenology of lived experience. Rather, Aristotle traces the most proper objects, operations, and faculties of soul, and what goes along essentially with these. Yet since his concern is comprehensiveness of treatment within the scope of his present investigation, the thought is not too confined.

[16] Trying to identify the pale thing resembles the waxen block discussion in Plato's *Theaetetus* 193b–194b. Aristotle perhaps suggests a view of the development of understanding. We begin from what is immediately perceived and try to identify, e.g., what the pale thing is. Memory of the way things operate and enter into motion leads us to standard, substantial beings as most evident to us: thus the reversal from "the pale thing is Socrates" to "Socrates is pale." In the progression of thought, we attempt by analysis to determine the principles, e.g., form and matter, of standard things, such as Socrates.

He does not just consider the sensible objects as forms, but he also considers them as enmattered when he deals with colored *things*, flavored *things*, and so on. Since he does to some extent consider accidental perception of various sorts, he touches on the way we perceive a world of things. His theories are detailed and fit together into a coherent fabric. Large patterns of analogy sustain the possibility of scientific treatment and much analogy pervades the account of the various senses.

The priority given to proper sensibles and their recognition as undeceiving takes Aristotle's account of the senses in quite different directions from the atomists and skeptics. As indicated previously, the atomists suppose that atoms only have a few primary features, particularly figure and magnitude. Atomic films thrown off by collections of atoms, that is, emanations or effluences (ἀπορροίαι), give rise in percipient beings to perceptions of color, odor, flavor, and so forth. What Aristotle has as the proper sensibles are all reducible for the atomists in some way to the common sensibles (see *De sensu* 442a29–b12). Such reduction of quality to quantity was embraced in the early modern period by Galileo and others. Some of Descartes's grounds for doubting may be attributed to skepticism that external bodies have in themselves colors, odors, flavors, and so on. Descartes argues that bodies exist outside us and truly have mathematical features, but color, odor, and so on, appear in bodies solely as warnings to protect our bodies against harm (*Meditations* vi). Robert Boyle and John Locke introduce the terminology "primary" and "secondary" qualities, where the traditional proper sensibles are now secondary qualities and the traditional common sensibles have largely become primary, that is, the real basis of sense perception.[17] Whether or not modern thinkers are atomists, they often tend to retain the ancient atomists' bestowal of primacy upon mathematical perceived features of reality. David Hume provocatively declares, in favorably contrasting the "modern philosophy" to that of the "antient philosophers": "The fundamental principle of that philosophy [the modern] is the opinion concerning colours, sounds, tastes, smells, heat and cold; which it asserts to be nothing but impressions in the mind, deriv'd from the operation of external objects, and without any resemblance to the qualities of the objects" (Hume 1888, 226).

[17] In fact the modern "primary qualities" do not exactly correspond to Aristotle's common sensibles, since the former are more restricted. They are merely the quantitative features of extended bodies whereas the common sensibles perceived by more than one sense include such things as time that are not simply attributes of bodies.

7

Vision, Medium, and Object

Aristotle's accounts of the five senses can concentrate upon their proper sensible objects and the way they operate through a medium and sense organ. Since he has already developed a general account of a sense faculty in ii 5.418a3–4, "The sense power is in potentiality the sort of thing the sensible object is already in actuality," all that is needed to develop a definition of a particular sense is insertion of the sensible object. For example, vision is in potentiality the sort of thing the visible object, that is, color, is in actuality. Similar accounts readily apply to the other senses (see esp. 422b15–16). Hence these definitions do not receive much explicit formulation. Instead Aristotle concentrates on what the sensible object is and how the sensory apparatus including the medium and sense organ permits the operation of sense perception such that the sensible object can be perceived as it is. Thus he justifies his general understanding of sense. Since his general account of sense is open to many objections from the phenomena of the particular senses, Aristotle, wishing to make his case as strong as possible, introduces these phenomena to show that they fit his account. Hence each of the proper senses is treated for its own sake and for sustaining the general account of sense, to which ii 12 returns after the chapters on the five senses.

In focusing upon the proper object and the normal operation of the faculty, Aristotle will also consider unusual relationships and where things go wrong. Often these unusual objects and functional breakdowns enter into crucial arguments because clarity about standard functioning derives from contrasting less than standard functioning.[1] Through attention to perceptual difficulties and odd objects, factors not themselves obvious or directly perceptible manifest themselves. Absence of light and phosphorescence are instances. A list of possible perceptual malfunctions may prove illuminating for the treatment of sight and the other senses. Perception is hindered by the following: (1) problems with the sensible object – too intense or too

[1] In *Politics* 1254a34–36 Aristotle says, "we must look for the intentions of nature in things which retain their nature and not in things which are corrupted." Nevertheless, understanding the natural requires some attention to and contrast to what is unnatural.

weak sensible objects, or interference from factors such as echo and reflection, or for sound the striking of soundless bodies or too slowly, or for taste no moisture in the object; (2) problems with the medium – absence of medium as when the object is placed on the sense organ or there is too little light or too much wind obstructs sound or odor; (3) problems with the sense organ – a missing organ or damaged organ or hard flesh or an organ that is too cold or hot or an organ moved by too intense a sensible object; (4) problems with the animal – fatigue, passion, disease, drunkenness. If any of these hampers perception, then there can be an argument that lack of such a problem is a necessary condition for good sense perception. For example, if we generally do not see without light, light is a necessary condition for vision.

Why does Aristotle begin his accounts of the particular senses with the sense of sight rather than, as we might expect, the most separate and indispensible sense, the sense of touch (see, e.g., 413b4–7)? Several reasons suggest themselves. By dealing with a distance sense he will more readily establish the role of the sense organs and media in sense perception. Introduction of the medium is most crucial to the attack on his predecessors' accounts of sense perception. Atomists, Empedocles, and maybe even Plato seem to account for sight and the other senses through effluences or mobile particles. If the effluences travel all the way to the percipient being, perception becomes a kind of touch, that is, contact with quantitative features rather than Aristotle's sort of touch (see *De sensu* 442a29–b12). Aristotle instead has perception due to the action of form: the sensible object assimilates the sense power to its sensible form by way of the medium and sense organ. The predecessors suppose vision makes their case; if Aristotle shows their accounts need not be accepted, he sets the stage for his own accounts of the rest of the senses. Vision works most effectively because for him it involves no locomotion, and so no flow of effluences (in contrast with the other distance senses that do involve locomotion; see *De sensu* 446a20–447a10). Also, the medium for sight is rather obviously available or not, since light is present or not, and hence the need for a medium is clearest for this sense. Another possible reason for dealing with the other senses by analogy with sight is the prominent link of vision with intellect and *phantasia*. Plato's *Republic* v–vii uses such analogies, and Aristotle employs these himself, especially in iii 5. The appropriate understanding of sight thus widely impacts accounts of the soul's cognitive faculties.

How might Aristotle treat sight? In antiquity there was a science of optics, a mathematical science exploring such topics as angles of reflection. Mathematicians such as Euclid and Ptolemy and those involved in scene painting would be interested in optics. Aristotle's treatment of vision is largely divorced from this science of optics, perhaps because that was mainly a part of mathematics rather than physics. His account focuses upon the operation and experience of vision, the capacity of soul and the bodies making it possible. Long after Aristotle, Arab thinkers, following the lead of Euclid and Ptolemy, combine optics with theory of vision in a way taken up by Roger Bacon and eventually Kepler, who has the retinal image theory of vision. The retinal image view explains vision not by a sensible form in

the sense but a pointillistic representation on the retina due to motions further transmitted to the brain. This retinal image view passes into Cartesian and later thought.[2]

418a26–419a1 We expect Aristotle's treatment of a sense, as a faculty or potentiality, to consider its operation and its object (see 415a16–22). That of which there is vision (ἡ ὄψις), he says, is visible (ὁρατόν), and both color and something else with an account but lacking a name are visible (418a26–28). Greek in his time has no name for phosphorescent or bioluminous things, which are those seen in the dark rather than in light, as discussed in 419a1–7. Mentioning two sorts of things that are visible, Aristotle is more comprehensive regarding the phenomena than his predecessors, and we soon find that acknowledging that there are visibles in darkness, a seeming obstacle to his account, supports it and reinforces the centrality of light for color vision.[3] Both color and the phosphorescent are visible, yet he states simply, "for the visible is color" (τὸ γὰρ ὁρατόν ἐστι χρῶμα, 418a29). This could be the start of the explanation of the unnamed visibles by contrast to color vision, and the seeming shift that has bothered commentators may turn us to *the* visible rather than just what is visible. Color is properly visible in virtue of itself: "This [i.e., color] is the visible in virtue of itself in the case of the visibles" or "This is the visible in virtue of itself upon the visibles" (τοῦτο δ' ἐστι τὸ ἐπὶ τῶν καθ' αὑτὸ ὁρατῶν, 418a29–30). Many commentators take Aristotle to be saying that color is what is on the surface of that which is visible in virtue of itself, but nothing said so far in the treatise leads to the view that surface is visible in virtue of itself.[4] Rather color is what is visible in virtue of itself, and it is visible in virtue of itself either on visible surfaces or among the various things visible. By "in virtue of itself," Aristotle explains, he here means not by definition, but as having in itself the cause, that is, the moving cause, of being visible (a30–31). Color need not have visible in its definition; that is, being visible is not the very essence of color as it is the essence of object of vision, but insofar as color is cause of visibility by acting upon the sense, color is visible in virtue of itself

[2] For treatment of the science of vision in antiquity, see Lindberg 1976. Regarding the different strands of ancient speculation on vision Lindberg observes, "three broad traditions appear to contain the great bulk of Greek optics: a medical tradition, concerned primarily with the anatomy and physiology of the eye and the treatment of eye disease; a physical or philosophical tradition, devoted to questions of epistemology, psychology, and physical causation; and a mathematical tradition, directed principally toward a geometrical explanation of the perception of space" (1).

[3] Plato *Timaeus* 30b5 contends that without fire nothing could become visible. This might mean that light is always needed for vision or perhaps that even the phosphorescent is somehow fiery. The ancient commentators expanded the two classes of the visible, color and phosphorescent, with the addition of light, fire, Sun, and other stars (on fire, see 419a23). About these we may say that light is not visible in virtue of itself (since the transparent is not and Aristotle later suggests that shadow is the criterion of light, 419b32–33), and fire and Sun are visible as causes of light. Hence we may well be reluctant to expand Aristotle's classes of visibles. See also n. 15 this chapter.

[4] Surface in virtue of itself has color (see *Top*. 134a18–25, *Phys*. 210b4–6, *Meta*. 1022a29–32, 1029b16–18), but color or colored surface is what is visible in virtue of itself.

(cf. a8–9, a24–25, b4–6).[5] The phosphorescent is also visible in virtue of itself, but in contrast to color, the phosphorescent does not show its own color (see 419a6) and does not appear upon something visible, that is, a visible surface, because of the darkness when the phosphorescent is visible.

Near the very start of the discussion of vision Aristotle at once defines color. Unlike other definitions emerging as the conclusion of much discussion during which its terms have been elucidated, the proposed definition of color initiates the discussion and only subsequently is it elucidated. Perhaps this is the case because the predecessors' approach to color and light offers little assistance, and he must launch a radically different approach. What he wishes to ensure, in accord with 418a30–31, is that color does not have being visible in its account and yet that color causes visibility. He states, "Any color is what is capable of moving the transparent according to actuality, and this is the nature of it" (πᾶν δὲ χρῶμα κινητικόν ἐστι τοῦ κατ' ἐνέργειαν διαφανοῦς, καὶ τοῦτ' ἔστιν αὐτοῦ ἡ φύσις, 418a31–b2; cf. 419a9–11).[6] It soon becomes clear that the "transparent according to actuality" in the definition is the illumined transparent, and that this account of color is based on Aristotle's understanding of light and the medium for vision. Here and in 418b2–3 Aristotle refers to "*any* color" (πᾶν χρῶμα) or "all the color" (πᾶν τὸ χρῶμα) to emphasize that each color moves the medium, and the nature of color is entirely to move the medium. He is not giving an explanation in which, for instance, pale colors move the medium and dark colors do not, or in which color has some further being than as the mover of the medium. Accounts of such manifest things as color inescapably seem pedantic. The purpose is to fit with a theoretical understanding of vision, sense perception, and soul. Aristotle avoids defining color in terms of vision and the visible to leave room for an account of soul's faculty in terms of its object.[7] Some circularity of definition is still perhaps unavoidable since color is defined in terms of the transparent, and that is defined in terms of visibility and color.

Aristotle's definition of color defines its nature in terms of its capacity to act upon the medium, the illumined transparent. In *De sensu* 439b11–12 there is a different but connected sort of definition of color: color is the limit of the transparent in a bounded body (ὥστε χρῶμα ἂν εἴη τὸ τοῦ διαφανοῦς ἐν σώματι ὡρισμένῳ πέρας). Rather than looking toward the impact of color upon the medium stretching from visible body to the eye, this definition looks to color as a condition of a body that is colored. All body is more or less transparent; the color of a body limits its transparency. Again Aristotle is scrupulous not to define the object in terms of the faculty. A more complete definition of color might put together the two definitions so that color is the limit of the transparency of a bounded body capable of moving the medium, the transparent according to actuality.

[5] Though being perceived or perceptible need not belong in the account of each proper sensible, i.e., color, sound, odor, flavor, and the tangibles, such accounts can be given for them so that they seem perceptible in virtue of themselves *by account*.

[6] Contrast the definition in Plato's *Meno* 76d in the style of Gorgias: "color is an effluence from shapes commensurate with sight and perceptible by it."

[7] Recognizing this point about escaping circularity, Plato in the *Timaeus* has light from the eye mixing with light from a light source to constitute a visual cone that can be acted upon by the colored object.

Is the proffered account of color as that capable of moving the transparent according to actuality an obvious account or highly disputable? Many predecessors instead suppose that the perceptible object gives off an effluence that travels through the distance to the eye, and the expanse may even be void. Aristotle insists that color acts upon the transparent medium. That color is not visible without light, that all the color of each thing is seen in light, motivates this definition of color (418b2–3). The fact about light is announced as *following* from the account of color – note the διόπερ ("wherefore indeed") in b2 – so Aristotle takes his account of color as that which moves the medium to explain the obvious fact that color is only seen in light. Aristotle doubts that effluence theories can readily explain the role of light in color vision. Effluences might help with phosphorescence or the visibility of fire in darkness, but the evident fact that color vision needs light gravely threatens the view.[8] Thus that color is seen in light can confirm Aristotle's definition of color and lead into his whole understanding of sense perception as involving media and the reception of forms. Perhaps other accounts of the role of light in vision are possible, at least until Aristotle proves his account of light, but surely it follows from his definition of color that light is needed for color vision.

Announcement that without light color is not visible, so color vision requires light as a necessary condition (418b2–3), suffices for securing, if such evidence is needed, *that* light is; hence Aristotle may proceed to inquire *what* light is (b3–4). The account of light supports the whole treatment of color and vision. For determining what light is, the transparent, which so far is an unclarified term in the account of color, awaits exploration (see 418a31–b1). Aristotle begins proclaiming *that* there is something transparent (ἔστι δή τι διαφανές, b4), and he then clarifies *what* it is. Once he discloses what he means by the transparent, its ubiquity should be evident. The transparent is "what is visible, but not visible in virtue of itself so to say simply, but through another's color" (ὃ ἐστι μὲν ὁρατόν, οὐ καθ' αὑτὸ δὲ ὁρατὸν ὡς ἁπλῶς εἰπεῖν, ἀλλὰ δι' ἀλλότριον χρῶμα, b4–6). Because this account of the transparent is insufficiently transparent, Aristotle hastens to offer examples. While the definition obviously eliminates proper and common sensibles, since the transparent is not visible in virtue of itself as these are, accidental sensibles that are visible but not in virtue of themselves might seem to be the transparent (see ii 6). Yet as visible through "another's color" rather than its own, the transparent will not be the accidental sensible, because, for instance, the son of Diares is visible as a result of his own pale color. It thus looks as if the account successfully eliminates most other candidates as the transparent, but perhaps the reflecting surface or mirror is still not eliminated. Such a reflecting surface is visible through the color of another (cf. Parmenides DK 28B14 about the way the Moon shines with another's light). Therefore Aristotle must resort to examples: air, water, and many other solids (πολλὰ τῶν στερεῶν) are transparent (418b6–7). Since three-dimensional bodies rather than surfaces serve to illustrate the transparent, all other candidates have now probably been eliminated.

[8] Plato's account in *Timaeus* 45b–d of the way the visual ray and the light of day create a readiness for the action of color helps prepare Aristotle's conception of light.

The transparency is not due to being the bodies that they are – that is, it is not *as* water or *as* air that they are transparent (οὐ γὰρ ᾗ ὕδωρ οὐδ' ᾗ ἀὴρ διαφανές) – but that they have some shared inherent nature (τις φύσις) as does also the eternal body composing the heavens (418b7–9). The heavens must be transparent if they are bodies and we look through most of them. Thus three of the five elemental bodies, air, water, and aether, evidently have transparency. Belonging to such different bodies, transparency cannot be the very nature of any of these but some nature of its own shared by these. Other sublunary bodies also share in the transparent nature more or less, such as glass, quartz, amber, olive oil, and wine. *De sensu* 439a21–25 contends that in fact all bodies have more or less transparency. Since transparency belongs to bodies, it cannot itself be a body, or there are bodies within bodies (see 418b17), but transparency must be a feature or nature of bodies. Aristotle calls it a "nature" (τις φύσις, b8; cf. *De sensu* 439a23) because it is a passive principle of undergoing the motion or action of color. Transparency belongs to *body* as solid whereas being reflective as a mirror is pertains, as does color, more to the surfaces of bodies. The genus of the transparent is some nature of a solid and with the difference supplied in 418b4–6 there is a complete definition of the transparent: a nature of body that is visible not in virtue of itself but through another's color. The other's color limits the transparency – hence *De sensu* 439b11–12 defines color as the limit of the transparent in a bounded body (ὥστε χρῶμα ἂν εἴη τὸ τοῦ διαφανοῦς ἐν σώματι ὡρισμένῳ πέρας).

Color limits the transparency of a colored body *and* it limits the transparent bodily expanse of water, air, or aether between the perceiver and the colored body. Color can be seen across the transparent, and only in virtue of the color does the transparent itself somehow become visible. Since we do not see objects right up against the eye, whenever we see color we see an object at a distance, that is, with some transparent expanse separating us from it, which expanse we only thus see by way of the perceived color. There can be a continuity of transparency through many bodies. For example, water, air, aether, and any number of other bodies in succession may form a single transparent "body" finally limited by some color. If the eye is itself largely a transparent body, it continues the sequence. The reason the definition of color in *De sensu* is "the limit of the transparent in a *bounded* body" is probably this possibility of continuity of transparent bodies. Moreover, that this bounded body is only bounded in some directions explains why a person looking at a colored body sees the color through the transparent, while someone looking perpendicularly across the intervening expanse does not see any color in the medium caused by that colored body.

The account of the transparent as that which is visible not in virtue of itself but through another's color might seem universally acceptable. Who denies that what is transparent is visible only because of other things? Yet Aristotle makes the transparent some nature of *body* (see 418b6–9). Those predecessors accepting void do not restrict the transparent to any type of body, but they have void as transparent and the very explanation of any transparency of bodies. Aristotle's account of the transparent, therefore, ultimately depends upon his rejection of void in *Physics* iv 6–9. Assumption of body without void is needed to defend the necessity of a medium

for vision and sense perception generally. Thus, for the transparent, as previously for color, there is an account that seems on the one hand based upon indisputable points and yet on the other hand tightly fitted into Aristotle's own framework. The account of the transparent as some nature not visible in virtue of itself but through another's color defines it in terms of color, and previously color was defined as that which is capable of moving the transparent according to actuality. The accounts of color and transparent interlock.

"Transparent" is a direct translation of the Greek διαφανές: appearance through or across. Color appears through the illumined transparent body. Light is the actuality of the transparent *as transparent*, rather than as water, air, and so forth (φῶς δέ ἐστιν ἡ τούτου ἐνέργεια, τοῦ διαφανοῦς ᾗ διαφανές, 418b9–10). Of course the actuality of air as air or water as water is just air or water. *Energeia* in 418b9 and in 419a10 is used for actuality, but in 418b12, b30, and 419a11, Aristotle substitutes *entelecheia*. Perhaps this alternation supports light's completeness and lack of involvement with motion. Light is the *actuality* of the transparent since the transparent when merely in potentiality is in darkness (418b10–11; cf. b18–20 and b31–419a1). The observational support for the account of light is that transparent body has two most opposed conditions, light and darkness. When in darkness the transparent is only potentially transparent, as no color shows through it, but when the transparent is transparent according to actuality color is visible through it. Light must be the condition of the transparent according to actuality. Fire or some heavenly body such as the Sun serves as cause of the actuality of the transparent, that is, as the source of light (418b11–13). In b7–9 the aether of the heavens was said to share transparency with air and water, and in b12–13 it and fire cause the nature of the transparent to enter into actuality. There must be a principle of illumination shared by fire and aether, as there is a shared nature of transparency of aether, water, and air. Aether can be both transparent and the principle of the actuality of the transparent as transparent. Since the sky can be dark, aether as such does not always illuminate, but certain heavenly bodies are luminous and visible even in darkness, as is fire.

Aristotle says that light is like color for the transparent (τὸ δὲ φῶς οἷον χρῶμά ἐστι τοῦ διαφανοῦς, 418b11; cf. *De sensu* 439a18–20, b1–2). It is merely like color rather than color since even the illumined transparent is only visible because of another's color. Color is capable of moving the transparent according to actuality (418a31–b1); light exists when the transparent is raised to actuality by a source of light. Light is the actuality of the transparent, and color acts on the illumined transparent making the color visible and thereby also the transparent. Aristotle finds it advantageous to compare light to color to overcome any temptation to view light as traveling particles. Color as such does not enter into locomotion, so light as the "color" of the entire illuminated transparent expanse will be where that is. Moreover, if the illumined transparent is already "colored" by light, then we might expect the transparent body itself not to take on any new color from the perpendicular direction when a colored body acts on the actual transparent, else it would cease to be transparent in that direction. Yet in the direction of the colored body there is somehow action upon the transparent so that this color may be seen. In addition, if the illumined transparent has its own "color," and the eye itself

is transparent, then vision can result from perceiving not only *differences* among sensible objects but also differences from the eye's own "color."

Whereas aspects of the accounts of color and the transparent might seem acceptable to everyone, the account of light as the actuality of the transparent is peculiarly Aristotle's own and in need of defense. Obviously his definitions of transparency, color, and light are designed to fit together, but does the definition of the transparent require the definition of light? Perhaps the transparent could well be some nature of body visible not in virtue of itself but through another's color, and color could be what is capable of moving the transparent according to actuality, and yet there might still be many possibilities left for what light is. Aristotle will try to make it clear, however, that his account of light accords with the phenomena and is required by his conceptual framework. This account of light as the actuality of the transparent sustains his whole treatment of vision and sense perception. It is a most straightforward, if unobvious, account.

Only while investigating the soul, vision, and visibles does Aristotle consider transparency and light. Light, causing little beyond color vision, pertains to perception rather than to physics more generally. Light does not, for example, heat bodies (see 424b10–11; cf. 404a3–4). *De sensu* 437b15–23 denies heat and dryness to light. Aristotle will not attribute the Sun's warmth to its light (see *Meteor.* 341a13–28); nor does he explain the burning glass nor the motion of the motes in a beam by light. Appreciating this narrow context of treatment aids understanding. Were light a stream of fire particles or some sort of effluence in locomotion, as it is for most of his predecessors, it would play a role larger than promoting color vision. But Aristotle's account of light takes the illumination of the day or a wide expanse, rather than a concentrated beam, as its principal explanandum. Shadows, light beams, lanterns in the night, and mirror reflections, which dominate his predecessors' discussions, he believes fit well with his account. In ii 8 it is made clear that daylight illumines the entire expanse in part through reflection, but all the reflection happens at once since there is no locomotion for light (see discussion of 419b27–33).Were light to fill an expanse by being particles in motion in various directions, or light taken to be rays that are streams of particles, this would conflict with Aristotle's whole view of the sublunary elemental bodies as having linear motions exclusively up or down unless undergoing compelled motion. Fire and aether as principles of light could hardly be compelling the motions of light particles by pushing them in various directions. Yet Aristotle makes different sorts of attacks upon the predecessors' views about light.

Beginning his defense of the definition of light, Aristotle indicates its implications, primarily that it is not a body and therefore does not travel. He says,

> Now what is the transparent and what is light, has been said, that it [light] is neither fire nor generally a body nor an effluence of any body (for thus it would indeed be a sort of body), but it is presence of fire or of something of such a sort in the transparent; for it is not the case that two bodies can at once be in the same place. τί μὲν οὖν τὸ διαφανὲς καὶ τί τὸ φῶς, εἴρηται, ὅτι οὔτε πῦρ οὔθ' ὅλως σῶμα οὐδ' ἀπορροὴ σώματος οὐδενός (εἴη γὰρ ἂν σῶμά τι καὶ οὕτως), ἀλλὰ πυρὸς ἢ τοιούτου τινὸς παρουσία ἐν τῷ διαφανεῖ· οὐδὲ γὰρ δύο σώματα ἅμα δυνατὸν ἐν τῷ αὐτῷ εἶναι. (418b13–17)

Light is no body at all, not fire and not effluences thrown off by bodies as subtle bodies. Not being a body, light cannot undergo locomotion. This recalls the attack in book I on soul as any sort of body that could therefore be in motion. In attaining actuality through illumination, the transparent gains the presence (*parousia*) of fire or of whatever principle of it or whatever else that is illuminative. This presence of the illuminative principle is hardly occupation by another body, or there would be two bodies in the same place. That two bodies cannot at once be in the same place, discussed in *Physics* iv 3, is an ultimate reason why soul and light cannot be bodies. The transparent is a body filling an expanse; the presence giving rise to light is a presence *throughout* the entire transparent expanse. Simultaneous pervasive presence excludes motion. This is decisive for Aristotle's whole treatment of sense perception. If at least one of the senses is not to be understood in terms of locomotion's moving the sensible object into collision with the perceiver, then sense perception generally is not merely some sort of locomotion. Hence there is need for a genuine medium that does something beyond permitting bodies to travel through it. The way is prepared for an account of perception through reception of form rather than locomotion set up by sensible objects.

Aristotle's defense of his account of light continues by reaffirming its basis in the phenomena:

> And it seems the light is contrary to the darkness; the darkness is a privation of such a disposition from the transparent, so that it is clear that the presence of this is the light. δοκεῖ τε τὸ φῶς ἐναντίον εἶναι τῷ σκότῳ· ἔστι δὲ τὸ σκότος στέρησις τῆς τοιαύτης ἕξεως ἐκ διαφανοῦς, ὥστε δῆλον ὅτι καὶ ἡ τούτου παρουσία τὸ φῶς ἐστιν. (418b18–20)

It only *seems* that light is the *contrary* of darkness since in fact for Aristotle darkness is the *privation* of illumination from the transparent that could be illumined. Contraries generally belong to the same genus (see *Metaphysics* v 10), but there is no genus encompassing darkness and light. This passage gives observational and technical reasons for thinking that light is the actuality of the transparent: without light there is darkness. Surely all of his predecessors saw this, so how is there any argument for his own position? The argument depends upon Aristotle's assumption, which is that light fills the entire transparent as the day illuminates the whole visible expanse (cf. Plato's *Parmenides* 131b). He is not primarily considering light as a mere ray or beam but as the light in a room or the whole outdoors. Hence he has spoken of the transparent as a body and of the *presence* (παρουσία, 418b16) of the fiery or some such illuminative principle pervading the transparent. He here indicates that light is some sort of disposition (ἕξις) present in the transparent (b20; cf. 430a15), and such a disposition cannot be a motion. Since darkness is the privation of the illumination of the entire expanse, light must be the actuality of the entirety of the transparent, that is, a presence throughout the transparent. If darkness is not a traveling body and not the privation of motion, neither should be light. Darkness is the privation of the disposition that is light, while light just is the actuality of the transparent or a certain disposition present throughout it.

The further defense of his account of light is an attack upon the predecessors' supposition that light travels (418b20–26). If light is not in motion, then it must be a

disposition of the transparent; he believes that he has the phenomena and argument on his side. For Aristotle light is present at once in the whole illuminated expanse, but predecessors such as Empedocles suppose that light is the locomotion of some sort of body such that the illumination of day requires travel across the heavens and to the Earth, though we fail to notice this (see *De sensu* 437b23–438a5, 446a25–28).[9] Aristotle thinks that our failing to observe any locomotion of light over such a distance if light is in motion goes against what is plain in argument and to the phenomena (παρὰ τὴν τοῦ λόγου ἐνάργειαν καὶ παρὰ τὰ φαινόμενα, 418b23–24). He contends that though the motion of light might escape our notice in a small interval, we could not fail to notice locomotion over the wide heavens (b24–26). The argument here seems to make two assumptions: (1) if light were the locomotion of some sort of body it should as such be visible; that is, it would not merely permit another's color to be visible by its means but would itself have some visible gleam conveyed by itself; and (2) the speed at which light is in motion is relatively small in relation to the size of the visible heavens. Aristotle supposes that his predecessors should be ready to accept both assumptions, in which case he has demonstrated his point. Nevertheless, both assumptions are problematic and cast doubt upon the force of the argument. Aristotle himself denies the first assumption – not light itself but its cause, fire or Sun, is visible or any colors that appear in the light – and the second can surely be difficult.[10] There is the additional problem for Aristotle that if light is in motion across the distant sky, he can hardly expect such motion to be observed until the light reaches us, but by then it may well have completed its journey. Though the heavens are huge, they are so far from the observer that in the time it might take for the light to reach the Earth it could also cross the heavens.

Aristotle has argued as strongly as he can that light is not involved in locomotion, without introducing the difficulty of light rays' being in motions other than upward as fiery particles. He has developed interlocking accounts of color, the transparent, and light that resist any locomotion. For him light is the actuality of the transparent as transparent (418b9–10). Since some actualities (ἐνεργείαι) are motions (κινήσεις), Aristotle has taken pains to show that he does not conceive light as locomotion, or in fact any kind of motion. His calling light "color of the transparent" (b11; cf. *De sensu* 439a18–21), "presence of fire or such a sort of principle in the transparent" (418b16–17), and darkness a "privation of such a disposition (ἕξεως) from the transparent" (b18–20) tells against viewing light as any sort of motion at all. These remarks instead indicate that light is some condition that the transparent takes on when it functions as transparent. Perhaps the transition from darkness to light is some sort of qualitative change, as *De sensu* 6.446b27–447a3 suggests happens in the freezing

[9] In 418b20–23 Aristotle says, "And not rightly Empedocles, nor if some other thus has said that light is in locomotion and stretching at some time between earth and the encompassing [heavens] but escaping our notice." Surely many besides Empedocles suppose light in locomotion between heaven and earth, but perhaps they are not so explicit about it, and it does Aristotle little good to admit that his account of light opposes the thinking of nearly all his predecessors.

[10] In 419b32–33 Aristotle indicates that we demarcate (ὁρίζομεν) light by shadow. Might he then suppose were light to travel that it should continually shift the shadow?

of a pond.[11] Being illumined is presence or a disposition and no change at all, and even the transition from being transparent according to potentiality to transparent according to actuality seems unlikely to be strictly a change, since light is only *like* color but not such a quality, and the transition is the actuality of the very same nature of the transparent rather than a change in the transparent to a different nature (see 418b31–419a1). Becoming illumined is analogous to the transition from developed potentiality to its operation since the transparent according to potentiality is all ready to be illumined. The *actuality* of the transparent as transparent, however, is actuality as a disposition (*hexis*), and in this way very unlike the operation of a developed potentiality. Light is not a motion, and neither is it an activity in contrast with motion. Though called *energeia* of the transparent as transparent, light is a disposition rather than activity, a disposition enabling animals to enter into the activity of seeing. Activity complete at every moment is restricted to ensouled or thinking beings. Color and light, not simply being in the soul, are not themselves such activities complete at each moment as are the acts through which they are perceived. For Aristotle sensible objects hardly merely exist in the sense, and neither do the media as intermediaries (see 417a4, b20, b28).

Having established accounts of color, the transparent, and light, Aristotle announces that the colorless (τὸ ἄχρουν) is receptive (δεκτικόν) of color and the soundless of sound (418b26–27).[12] He will disclose that the transparent is colorless, and most importantly, though not yet revealed in the discussion, the transparent serves as medium for sight and constitutes the sense organ. In this passage, then, Aristotle in effect raises the important issue of the way sensible objects act upon the sense medium and sense organ. He proceeds to say that "colorless is the transparent and the invisible or that seen with difficulty, as the dark seems" (ἄχρουν δ' ἐστὶ τὸ διαφανὲς καὶ τὸ ἀόρατον ἢ τὸ μόλις ὁρώμενον, οἷον δοκεῖ τὸ σκοτεινόν, b28–29). This use of the form "*A* and *B* or *C*" allows *B* (the invisible) to go with *A* (the transparent) or *C* (that seen with difficulty). When he says "and the invisible," either this could be epexegetical, indicating that since the transparent is itself invisible it must also be colorless, or he could be conjoining to the illumined transparent the quite invisible unillumined transparent or the obscurely seen body in darkness that hardly allows color vision. He confirms that he speaks of the transparent when he adds, "Such

[11] It is a mistake to suppose that Aristotle means that the whole pond freezes instantly, in which case it could not be a change at all because all change takes time. What he means rather is that the water freezes throughout the whole pond because of the same process, perhaps more in one area than another, rather than starting to freeze at one end and progressively freezing toward the other end of the pond. If light filling an expanse resembles the freezing of the pond, the reflection or bending back of the light must be simultaneous throughout the expanse (see 419b27–33).

[12] We might be inclined to say that things not pertaining to color at all are colorless, e.g., sound and odor. But these are better said to be *not* colored and *not* visible rather than colorless and invisible since such things are not at all receptive to color. Shorey trans. 1937, i *Rep*. iv 429d–e, p. 354 n. a, suggests that Plato's idea of dyeing cloth using neutral color with Anaxagoras's account of sense is here picked up by Aristotle. See also *Timaeus* 50d–e, referred to by Shorey. But neutral color is not the same as being colorless, and to prevent us from thinking along these lines, and to be clearer that at issue is the receptivity of the medium and organ, Aristotle has added in 418b27 that not only is the colorless receptive to color, but also the soundless is receptive to sound.

[i.e., dark] is the transparent, but not when it would be transparent in actuality, but when in potentiality; for the same nature is sometimes dark and sometimes light" (418b29–419a1). The transparent is colorless when either illumined or dark: the same transparent nature can be either dark or light. If the transparent either way is colorless, how is it receptive to color? We recall that color is that which can move (κινητικόν) the transparent according to actuality, so it may only be the illumined transparent that is receptive to color (418a31–b2). Aristotle soon observes that the phosphorescent is seen in the dark without color being seen (419a1–7), and hence such visibles move the unillumined transparent while color moves the illumined transparent.

When the colorless, illumined transparent is receptive to color it is not undergoing an ordinary alteration in which an original color is destroyed as a new color replaces it. The colorless transparent has no color to be destroyed or changed. And whereas a body in darkness barely or not at all reveals its color, in the light its true color shines forth, but this is hardly receptivity to color, for in the light the color of the body moves the illumined transparent. The transparent according to actuality is receptive to color; the receptivity is neither a standard alteration nor a usual disclosing of color when light allows the color of a body to be seen. Light is like the "color" of the transparent (418b11–13), but even the illumined transparent is colorless and receptive to color. This *receptivity* is to be acted upon by color without becoming colored. Subsequently we learn that sense is *receptive* to sensible forms without the matter (ii 12), whereas now Aristotle has the colorless as receptive to color with no mention of matter or its absence. Hence we can conclude that the way the illumined transparent is receptive to color involves matter and is not capability as a sense perceiving color is. Thus the illumined transparent's receptivity to color is neither to display color as does a colored body in light, nor to alter in its own color, nor to perceive color. The illumined transparent is receptive by a nonstandard alteration to undergo action from color: it lets the color of another be seen through it. The transparent is only visible through another's color, and it remains transparent through not taking on color in a standard way. The colorless transparency extending from a colored body through the medium into the eye is receptive to the action of the other's color so that color vision can arise.

Only what is colorless can be receptive to color in the way necessary to serve for the sense medium and sense organ for vision. The transparent when illumined can then allow another's color to be seen through it. Darkness and light are not really contrary qualites within a genus, so becoming illumined is no standard aleration and neither is the action of color on the colorless (*Physics* vii 3 has all alterations only in perceptible qualities, and the transparent is not perceptible in virtue of itself). Aristotle has two main levels of receptivity for sense perception: (a) as the transparent is receptive to color through being moved by the colored object and (b) as the sense is receptive to the sensible form of color without the matter.

419a1–21 The passage 418b26–419a1 has given some initial notion of the receptivity to color of the visual medium and sense organ. This receptivity is in light. Aristotle juxtaposes to this usual receptivity to color in the light treatment of things

visible in the dark (419a1–7). At the start of considering vision, he claims that color and something else unnamed are visible (418a26–28). This he now speaks about, as indicated by his again referring to these things as nameless (ἀνώνυμα, 419a4). Having concentrated upon color as *the* visible, he justifies the relative neglect of the phosphorescent while also strengthening his position regarding color, light, and the senses generally.

The sense of vision exceptionally has sensible objects that do not require the usual sense medium for their perception, inasmuch as these visibles (ὁρατά) are perceived in darkness (419a1–3). The unnamed visibles are not visible in light: what is visible in light is "only the own color of each thing" (μόνον ἑκάστου τὸ οἰκεῖον χρῶμα, a1–2). The nameless visibles give rise to perception in darkness, as evidenced by the fiery appearances and flashings (τὰ πυρώδη φαινόμενα καὶ λάμποντα) of such things as fungus, horn, and the heads, scales, and eyes of fishes (a2–5).[13] They are shiny in the dark but not with their own color (οἰκεῖον χρῶμα); their own colors are what can be seen in the light (a6). Further account of the way these cause vision is reserved for elsewhere (a6–7).[14] If phosphorescence is such a rare phenomenon in comparison with color, it need not receive overmuch examination in the account of vision. Aristotle thus justifiably attends to color as object of vision and supports generally focusing his accounts of the senses on the proper sensibles. Since of the two classes of visibles one kind is seen in darkness and without its own true color, it is manifest (φανερόν) that what is seen in light is color (a7–8). If the fiery appearance of the phosphorescent were color, then color would do more than move the transparent according to actuality. But because the true colors of what is phosphorescent are not being seen, Aristotle can maintain that color alone moves the illumined transpararent. This in turn supports his view of light, since the fact that the phosphorescent can be seen without any light whatsoever makes it unlikely that any traveling of light is required for color vision.[15]

If what is seen in light is color, then color cannot be seen without light (419a7–9). Now begins the crucial argument that vision requires a visual medium, that is, the illumined transparent. This is central for Aristotle's whole framework for

[13] Horn (κέρας) reappears in 420a16, where it may perhaps also mean a large seashell shaped like a horn. Might, then, what is said to be phosporescent in 419a5 include hornlike material such as mother of pearl?

[14] Aristotle might not be promising an account elsewhere, but merely saying such an account is another discourse (ἄλλος λόγος). Though Aristotle never elsewhere provides a full account of the phosphorescent, perhaps his discussion of the way the eye when pressed in the dark seems to give rise to fiery appearance (*De sensu* 437a23–b10) suggests that he supposes that everywhere a smooth reflective surface and perhaps quick motion contribute to the extraordinary visibility of things in the dark. The phosphorescent somehow excites the eye so that its own transparency comes into play, as must be the case with the pressing of the eye. The way the eye seems so ready to operate even in the dark resembles the way there is generally ringing in the ear as disclosed when a horn is held over it (see 420a15–18). Another possible use of speaking of the phosphorescent along with ringing in the ears, then, is to show how pregnant with sensitivity the material of the sense organs is (cf. Burnyeat 1995a, 19, but this hardly forces acceptance of the "spiritualist" interpretation of sense perception).

[15] Other possible visibles in the dark, flames and heavenly bodies, are not so helpful for Aristotle's argument because as principles of light they might be seen as a result of traveling of light.

understanding sense. Emphasizing that we see color in light and not without light reinforces that we do not see their own colors of the nameless visibles. Color has been established as that which in its own being (τὸ χρώματι εἶναι) is the capacity to move the transparent according to actuality where the actuality of the transparent is light (a9–11; cf. 418a31–b2). If color is that which moves the illumined transparent and nothing more, without light there is nothing color can accomplish. He elaborates upon the implication of all this: the requirement for light for color vision is for Aristotle the requirement of a sense medium. His previous accounts of color, the transparent, and light lead to the necessity of a medium for color vision. The transparent may be in potentiality or actuality; only the colorless transparent in actuality serves to receive the action of color. But Aristotle cannot leave much of the case for a sense medium to his various definitions. He has an observation independent of all his definitions that prevents the appearance that he begs the question.

There is a sign manifest (σημεῖον δὲ τούτου φανερόν) that without the transparent according to actuality, that is, without a sense medium, vision is impossible (419a11–12). A colored object (τὸ ἔχον χρῶμα) placed right next to the eyeball is not seen (a12–13). Here it is not an issue of the actuality or potentiality of the medium, but the medium's complete elimination due to proximity. Since Aristotle refers to colored objects that someone puts upon the sense organ – using his normal term for vision, αὐτὴν τὴν ὄψιν, perhaps to make the point more strikingly – he reflects not so much upon dust particles accidentally in the eye as the active experiment that one might perform of bringing a colored object right up to the eye's surface. This case may be more telling than dust particles because the object confronts the pupil of the eye and is of sufficient size that its color should be obvious. Similar experiments are possible with the other distance senses, hearing and smell, though these might be less obvious signs of Aristotle's point of the need for media (see a25–30 and 421b16–19).

Were it conceded that a medium is necessary for color vision, "color moves the transparent, for instance air, and by this since it is continuous the sense organ is moved" (419a13–15). The visible object's color acts upon the medium, which in turn acts upon the sense organ: the medium is the illumined transparent body lying between the object and the eye. The eye is continuous with the medium not only because it is in touch with it but also because the body of the eye is itself transparent. Could objects be perceived right up against the sense organ, the distance senses would hardly be distance senses after all but in fact merely additional contact senses. That the sense medium and sense organ are typically quite similar in material composition may make it surprising that the sensible object cannot act directly on the sense organ but that the organ can only be moved by the medium that has been moved by the sensible object. Yet there is definitely for Aristotle a sequential order of receptivity by the colorless to color. The medium must first be acted upon in a peculiar way by color, and then the medium in turn acts in its special way on the sense organ and this finally gives rise to sense perception. Elimination of the medium by placing the sensible object beside the sense organ takes away the required sequential order of receptivity and sense perception.

Compelling as it may seem that eliminating the medium by proximity precludes vision, it actually still begs the question. It may only confirm, what all are prepared to grant, that without light vision of color is impossible. The object placed too close to or placed on the eyeball cuts off light, as does closing the eyelids, and hence the color of the object cannot be seen. But the issue is whether light is serving as a medium in the way that Aristotle supposes. What has been said so far cannot prove that it in fact is.[16] A further consideration is therefore offered.

Aristotle contrasts his view of the role of the medium in vision to the position of Democritus (419a15–21; cf. 419b33–420a2). Whereas Aristotle has spoken of a performable experiment in 419a12–13, Democritus has only a thought experiment. Democritus speculates that were the region between the object and the eye completely void (εἰ γένοιτο κενὸν τὸ μεταξύ) we could see precisely even an ant in the heavens (a15–17). In this case, perhaps, since the object of vision remains at a great distance from the eye, light is not obstructed as possibly with Aristotle's experiment. For Democritus τὸ μεταξύ (that which is in between) can only mean the interval between object and eye rather than as it does for Aristotle "the medium," that is, some cooperating body serving to transmit the action of the sensible object to the sense organ. Though Democritus has atomic films traveling between the object and the eye, the intervening medium and light have no clear role. What intervenes, if not void, may even interfere with vision rather than foster it, so then with pure void extending to the heavens we might even see the ant at a huge distance. Aristotle protests that the faculty of sense is a passive power and that the sense organ must be acted upon for seeing to arise (πάσχοντος γάρ τι τοῦ αἰσθητηρίου γίνεται τὸ ὁρᾶν), and that the sensible object cannot itself act upon the sense faculty except through the medium, so that a medium is necessary for vision (λείπεται δὴ ὑπὸ τοῦ μεταξύ, ὥστ' ἀναγκαῖόν τι εἶναι μεταξύ, a17–20). Hence for Aristotle τὸ μεταξύ (the medium or what is between) is not merely the intervening space likely to interfere with vision but some sort of body having an essential role in vision. Were there merely void between the object and eye, not only would the object not be seen precisely, but nothing would be seen at all (419a20–21).

The obvious major assumption of this argument is that the sensible object cannot itself act upon the sense organ, but something else must act on the sense (419a18–19). But Democritus might grant this because he supposes it is not the sensible object directly but atomic films flying off this object that act on the sense organ. But then there must be a further less obvious assumption of Aristotle's argument that only the sense medium is left to act upon the sense organ (a19–20). This is his attack in *Physics* iv 6–9 on his predecessors' belief in the void by denying it would allow any motion; he depends here upon this refutation of motion in the void to leave only the sense medium to act on the sense. The supposition of void between the

[16] Perhaps when the case of sight is related to the other distant senses, i.e., putting an object of hearing or smell upon its own sense organ similarly prevents perception, the argument grows stronger through the analogy. See 419a25–b3. Burnyeat 1995b, 427 says "the function of the medium is primarily to separate rather than to join," but as part of the necessary sequence of movers, the medium also is linking the sensible object with the sense.

object and the eye, if void serves no role in transmitting the action of the sensible object to the sense organ, differs little from the previous experiment in which the sensible object is placed right upon the eye. Void is no true medium, and hence the predecessors are left with what seems to Aristotle the absurdity of an effluence or atomic film traveling through void so that all sense perception becomes some sort of touch (*De sensu* 440a15–20, 442a29–b3). Because void is nothing at all and is capable of doing nothing at all, an object separated by void from the organ is as if it were directly contacting and acting upon the organ, and no distance senses remain. Democritus requires locomotion in the void, but Aristotle's arguments in the *Physics* against travel in void and the case in this chapter against light's travel work against Democritus. Thus the argumentation for a medium for vision depends upon Aristotle's understanding of light, positions set out in the *Physics*, the observation about an object on the eye, and analogies with the other distance senses.[17]

419a22–b3 In 419a22–23 Aristotle says that it has been shown why it is necessary that color be seen in light. This summary of the result attained confirms that much of the chapter aims to show the necessity for a medium for vision, that is, Aristotle has explained the obvious fact that we see in the light by the unobvious medium. This has involved elaborate argument because there are alternative theories of vision. In *De sensu* 437b11–14 Aristotle asks pertinently, "if the eye were fire, just as Empedocles says and it is written in the *Timaeus*, and seeing happened to be the emitting of light just as from a lantern, why has vision not also seen in the darkness?" But color vision occurs only in the light, and this accords best, Aristotle holds, with his view that the illumined transparent is the medium for vision. The *Timaeus*'s suggestion that darkness extinguishes the light emitted by the eye seems empty because light is not, as is fire, the sort of thing that can be extinguished (*De sensu* 437b14–23).

But there is still the problem that fire is seen in both light and darkness, so that light might not be needed for color vision (419a23). If we see fire's "own color" and that of the stars in darkness, color vision can occur in the dark. Fire can be seen in darkness, as presumably can the stars, Aristotle explains, because as a result of such a light source the transparent is transparent (a24–25). Were there no cause of light, nothing could be transparent in actuality. Fire and the heavens even in surrounding darkness act on the transparent so as to allow themselves to be seen. Were all visibles like fire, the medium for vision could be the unillumined transparent. Fire and the heavens are the extreme of the presense of media. Unless they are blocked by something opaque, they can make themselves perceived under all conditions.

The effort to defend the necessity of a medium for color vision now seeks strength in analogies with the other senses (419a25–b3; cf. 421b17–18). If all the other senses

[17] In modern times there has been the experience of evacuating spaces such as bell jars. The result, interestingly, is that the evacuated space remains transparent and illumined so that we see into it and through it, but sound disappears completely. Without body in the evacuated space there is nothing to serve as medium for sound. Of course we could not have respiration in void, so there is not odor either.

involve media as well, that is, in no case does the sensible object act directly upon the sense organ, we might have more confidence in the case for sight. The analogous role of media, even for the other distance senses, is unobvious, however, because the medium is typically always present. In Plato's *Republic* 507c–e light is introduced this way:

> Have you considered how very lavishly the maker of our senses made the faculty of seeing and being seen? . . . Look at it this way: do hearing and sound need another kind of thing for the former to hear and the latter to be heard, and in the absence of this third element the one will not hear and the other not be heard . . . Neither do many other senses, if indeed any, need any such other thing, or can you mention one? . . . But do you not realize that the sense of sight and that which is seen do have such a need? . . . What you call light.

Is Plato denying that the other senses require media, or instead exploiting the point that generally only for sight may what enables the medium to be effective, namely, light, be absent? Holding our ears or not inhaling more resemble shutting our eyes than the existence or absence of light. Therefore the other two distance senses, hearing and smell, resemble vision of fire inasmuch as their media are hardly ever absent or merely in potentiality. Fire is visible in light or dark, and availability of air or water to serve as medium for hearing or smell usually suffices without something such as light to actualize the medium. This Plato notes in the *Republic* and Aristotle suggests by observing that fire is seen in darkness and light. When Aristotle asserts that the same account or argument as for vision applies to sound and odor (ὁ δ' αὐτὸς λόγος), he means both that the other distance senses also require media, and that as for the case of vision of fire their media are typically always functionally present (419a25–26).

As colored objects cannot be seen right up against the eye, Aristotle denies that sound and odor produce perception when they contact the sense organ (419a26–27). Odor and sound instead move the medium (τὸ μεταξύ) and this in turn moves each sense organ, but when someone places what sounds or smells upon the sense organ, no perception is produced (a27–30). As with vision, the other distance senses require a definite sequential order of receptivity to the action of the sensible object. Though the medium for hearing and smell is generally always present, unlike for vision, which requires light that may be present or absent, yet there is a way to eliminate the medium completely. Just as placing the colored object right upon the eye or having void between object and eye would eliminate the medium for vision, putting the sounding or the odorous object upon the sense organ eliminates the medium and so upsets the needed sequential order.

Aristotle relies upon the experiment of eliminating the medium by moving the sensible object right up to the sense organ. It may seem doubtful that this experiment proves that the illumined transparent acts as medium because obstruction of light could be the difficulty. Similar experiments for hearing and smell may also seem dubious. Sounding is possible right in the ear, unless the eardrum is contacted, and we might be able to smell things that are not too large even within the nostrils (421b14–19). A rigid body directly in contact with the eardrum prevents its vibrating and what is large enough to obstruct respiration prevents smell. Even if contact with

the sense organ means just such things, however, these may well support the need for sense media for the distance senses because what is happening is disrupting the required sequential order of receptivity.

The contact senses, touch and taste, do not allow the experiment of putting the sensible object right upon the organ to decommission sense perception. At least it cannot be done without great injury to the animal if the ultimate sense organ is the heart or some analogous internal part. Hence such argument through eliminating the medium is inapplicable in their case, and it is unobvious whether media analogously exist for them as well. Nonetheless, Aristotle insists that there is a parallel requirement for the contact senses to have media, the reason for which will be clear later, as well as why they do not appear to require a sense medium (419a30–31). It will be argued that the flesh in contact with the object of touch or taste is in fact itself the medium for touch or taste rather than the sense organ; the sense organ is farther within (see 422b34–423a17 and 423b1–26).

The principal argument for sense media in book 2, beyond the coherence and plausibility of Aristotle's accounts of color, transparency, and light, is the experiment of placing the sensible object right beside the sense organ. He has another possibly effective argument, however. This only appears in book 3 since it escapes the narrow focus of treatment here in book 2. In book 2 the function of single senses in regard to their primary sensible objects holds center stage. But in iii 2.426b12–17 Aristotle observes that sense must discriminate the objects of different senses, such as white and sweet, and therefore flesh, that is, the outer flesh, cannot be the sense organ, or to discriminate sensible objects the animal would have to be touching all of them. This allows for the argument that to distinguish the various sensibles the ultimate sense organ must undergo the action of sensible objects, and if it cannot do so directly by contact, then it must do so through various media and suborgans. Because all the senses are analogous in the way they are acted upon, the ultimate sense organ is not the outer flesh but the heart or something comparable within the animal.

Disclosing some of the other media beyond that for vision buttresses Aristotle's contention that the senses require media and that the media are rather elemental (419a32–b3). For sounds (ψόφων) the medium is air, for odor (ὀσμῆς) the medium is unnamed (ἀνώνυμον), but some affection (πάθος) common to air and water serves as medium for odor, just as (ὥσπερ) the transparent for color (a32–34). Perhaps Aristotle speaks of sounds (plural) and odor (singular) because animals can hear several sounds at once but tend to perceive one odor at a time, if they even smell anything at all. He explains that what has odor pertains to both air and water for the water animals appear to have the sense of smell (a34–b1). But human beings and the land animals that have respiration can only smell when breathing in air; the reason why they only smell odor when respiring is to be provided later (b2–3; see 421b13–422a6).

Somewhat surprisingly, Aristotle here merely offers air as medium for hearing, though animals may also hear in water. Yet for odor he has said that the medium is some unnamed affection common to air and water, much as the transparent common to air and water is medium for color. Water animals or animals that are

under water hear sounds originating in the air outside the water, and air is the better medium for sound (see 419b18). The body serving as medium for sound requires fluidity and continuous travel without breaking apart too readily, and air serves excellently and is the primary medium for sound (see 419b34–35). But animals ordinarily smell odor *either* in air *or* in water but not in both. This is most clear for the respiring animals that have to breathe in air in order to smell. These animals that smell through respiration do not necessarily have a better sense of smell than those that smell through water. When Aristotle says that some affection *common* to air and water is medium for odor, "just as" (ὥσπερ) the transparent for color, he takes into account the way odor and smell do well through either as vision through transparency of various sorts.[18] Both air and water by some shared nature can receive the action of the odorous as transparency is a shared nature of transparent bodies. Water is much inferior to air as medium for sound.

Aristotle perhaps exposes a continuum of availability of sense media for the distance senses. Vision of fire and the heavens is at one extreme since they are seen in light and darkness and always have the necessary medium present so long as no opaque object obstructs vision. Hearing typically has air present, or water, except too much turbulence may interfere. Smell, though requiring breathing in some animals, still usually has what is common to air and water available as medium. But ordinary color vision, needing light, which can often be lacking, is the other extreme of availability. For the contact senses, touch nearly always has present the medium, flesh, while taste just needs the tongue ready to be moistened.

This whole chapter is a tight cluster of argumentation supporting the requirement of a medium for vision. Such argumentation is necessary because the medium as medium is not something itself directly perceived: the existence and account of a medium are based on inference. The obvious need for light for vision of color, when explained by Aristotle's accounts of color, the transparent, and light, forms the major argument. This is supported by the argument against the motion of light. Also, that phosphorescence is seen in the dark reinforces the point that native color is seen only in light and that the traveling of light is unnecessary for visibility. Additional evidence for a medium is derived from the experiment of placing the object beside the organ and the attack on Democritus's thought experiment. Aristotle upholds the need for a medium for sight by showing that this coheres with the need for media by the other senses as well. The consistency maintained by these many considerations contributes to the theory's probative force.

The media for the senses will generally be somewhat peculiar, just as the transparent enters uniquely into color vision. Transparency is not a body but a certain nature or feature of bodies. Similarly, the medium for smell is something common to water and air. Sensibles as sensibles, except for tangibles, act hardly at all on bodies (see 424b3–16.). Even sounding only causes motion in air or other bodies of little significance otherwise. There must then be some special features of the bodily media that the sensible objects act upon in a way that can be passed along to the

[18] Also, the sense organ for hearing may be airy whether in water or land animals (see 420a3–7), whereas the organ for smell varies in elemental composition.

sense organ to cause perceiving. If sensible objects possess affective qualities and can alter in such qualities, the media for sense perception are not generally in the same way susceptible of the action of affective qualities. The bodily media are colorless, soundless, odorless, flavorless, though having tangible affections, and hence they do not undergo standard alterations in which one sensible affection replaces another. We may say that they undergo merely a quasi-alteration. Consider how a transparent body remains transparent though color is seen through it. The action upon the medium and in turn upon the sense organ is not itself sense perception, since the sense, soul, or animal perceives by means of these. The medium and sense organ must be as "transparent" as possible so that they can be moved by the sensible object and by their means inform the sense so that it can receive the sensible object just as it is. If in the case of vision the transparent medium, the illumined body, merely allows color to be seen across it but does not itself become colored, since light is already its "color" (see 418b11) and it can have no further color so long as it is transparent, then neither does the sense organ take on color during sense perception inasmuch as the sense organ continues the transparency.[19] Nonetheless, both are "moved" or acted upon in the special way that medium and sense organ can be acted upon by the sensible object.[20] That something is going on in medium and sense organ, quasi-alterations, is shown by several facts: (a) there is a necessary sequential order of receptivity; that is, the medium is first acted on and then the sense organ; (b) perception has directionality; that is, we see the color through the transparent looking in this direction but not in that direction; and (c) too intense sensible objects cause so much disturbance that subsequent perception is impaired. In the case of touch the outer flesh in at least some small part undergoes genuine alteration, as when there is heating or cooling of the tip of the finger, clearly displaying that some material change can occur in the medium, though even here the flesh generally is unlikely to become much assimilated to the sensible object. For vision the transparent medium and sense organ pass on the form of color without themselves becoming colored. The media and sense organs of the rest of the senses are comparably "transparent" to their sensible objects.

The sense medium is crucial for Aristotle's whole account of sense perception as a critical faculty apprehending the sensible forms of things. Because action upon the medium is generally quasi-alteration, the sense's even more wonderful reception of "form without the matter" (ii 12) is anticipated. The "transparency" or neutrality

[19] Talk of the eye jelly's becoming red is no more plausible than talk of the illumined transparent air's becoming red. See Slakey 1961 and Sorabji 1974 and 1995 about the eye jelly's becoming red in seeing red.

[20] Burnyeat 1995a attacks the view that anything happens in the medium and organ. He has Aristotle holding that directing the sense organ toward its object suffices for awareness to arise without any material change. But though Aristotle hardly stresses the material change in the *De anima*, since as Kahn 2005, 200 points out this treatise "is primarily concerned with the role of the psyche, as the title indicates, and only marginally interested in the corporeal or material underpinnings of psychic function," and this material change is generally an inference rather than observable by Aristotle, the whole account of perception supposes action of the sensible object upon the medium and sense organ giving rise to perception.

of the medium and the sense organ permits the sensible object to act upon these as it is, while also permitting sense perception to be critical through comparing the sensible object to its own ground state. If in the case of the flesh there is already some temperature against which comparison is made, this will not harmfully distort the purposiveness of touch since the extent of opposition to the body is what is significant. And since the medium and organ only undergo quasi-alterations, while largely remaining neutral, they are ready to perceive subsequent sensible objects, except when they have been acted upon so strongly that further perception is for some time impaired.

Media for the distance senses are air and water or certain features especially pertaining to them. These elements and their features enabling them to be media are less perceptible than earth and fire, so that they naturally can be more readily acted upon by the sensible objects. The term "medium" (τὸ μεταξύ) or that which is between seems particularly appropriate for air and water because they fill the interval between the sensible object and the sense organ. Moreover, in Aristotle's scientific thought about the elemental bodies, air and water are elements between fire and earth. Water and air are fluids between the two dry extreme elements. It will be seen in iii 1 that fire and earth as extremes seem generally inappropriate as media compared to air and water.

Though Aristotle does not need to treat this in the *De anima*, probably the reason that all the media and sense organs can be acted upon and act in turn in their special way is that the media are something like connate *pneuma* and the organs all have *pneuma* in their composition.[21] This fits well with viewing the medium for vision, the transparent, as being akin to the aether of the heavens (see 418b7–9; cf. *GA* ii 3.736b29–737a1), and generally air and water are media for the distance senses and connect with *pneuma*. Aristotle's view may have some resemblance to the Stoics' theory of tensions of body and field concepts in modern physics. Sensible objects subtly alter their surroundings; they cause quasi-alterations in them, rather than simply emitting particles through them. This can explain why transparency has directionality, that is, we see a colored object through it only in a certain direction.

Chapter 7 never gives a definition of vision, which presumably is the capacity to perceive the visible or the potentiality of becoming like what the visible is already in actuality. Definition of sense appears initially in chapter 5 and then finally in chapter 12 so that definitions of the special senses and their operations are unnecessary. The main attention of this and the four subsequent chapters focuses on the object and medium of the sense. These receive definition along with some defense of the existence of the medium. Dealing adequately with these not only provides sufficient accounts of each of the proper senses but also defends Aristotle's general account of sense perception as a critical faculty apprehending sensible things as they are. The following four chapters also speak more about the differences or forms of their sensible objects, for which perhaps the discussion of the phosphorescent in this chapter substitutes. Each of the chapters has a multipurpose comment about the

[21] See Peck 1953, appendix B; Nussbaum 1978, 158–164; and Freudenthal 1995, 119–148 for discussion of *pneuma* and its possible role in sense perception and other life functions.

insensible, such as the colorless or soundless. These contribute to understanding sensible objects, media, organ, and sense. The chapter on touch importantly has as "intangible" what is the same temperature or hardness as the flesh, and this "blind spot" case leads to the sense as a mean discerning differences. Sense perception involves at least the following: sensible object, medium, sense organ, sense. The factor introduced by the account of sense perception not present in the account of nutrition is the medium, which is after all analogous to the proximity of the potential food. Just as we can only assimilate food when it is suitably close, we can only perceive what is properly affecting the medium so that that can in turn affect the sense organ. Whereas largely standard changes familiar to physics come into play in nutrition, the "motions" entering into sense perception are primarily nonstandard.

8

Hearing, Sound, and Voice

Color vision contributes greatly to the case for a sense medium. Hearing tests the case. Its object, sound, seems to travel through the air, so it is unlikely to be an affective quality of some substratum, as color is such a quality of a surface. Thus sound may well be that horror for Aristotle, an effluence. And bodies striking each other set up motions in air or water, that is, in the medium, but sound is heard rather than these motions. In this way Aristotle's realism, that perception of proper sensibles perceives things just as they actually are, is seriously tried by hearing because sound rather than the motion is heard. He will meet these challenges head on.

Commentators observe that the treatment of hearing and sound is more thorough than some of the others, and this is due to sound's seemingly different status from the other proper sensibles. Only by clarifying the origin of sound can Aristotle reflect upon what sound is and its medium, thereby handling the mentioned difficulties.[1] Not until the *De sensu* does Aristotle discuss the origin of the other sensibles – except for tangibles in *On Generation and Corruption* 329b5ff. and *Meteorology* 340b5ff. and 385a1ff. – but having treated sound here in ii 8, he need say little in *De sensu* about its origin. Since sound arises from the striking of bodies, it could hardly be an effluence from a single body, and since what is heard depends upon what bodies strike and how, animals do hear what causes the sound and sound as it is in actuality. Also differences in sound relate to differences in motions that seem as much qualitative as quantitative. And because bodies strike in air and air can even be one of the bodies struck, the locomotion involved in sounding must be a locomotion of a collected mass of air rather than of particles through air or void. Thus sound in its relation to its medium resembles color and light surprisingly more than it might have seemed, and Aristotle's emphasis on echo of sound and reflection of light accentuates the similarities.

[1] See discussion of this point in Aquinas *In de an*. §439. Aquinas says that the other sensibles "have a fixed and permanent existence in their subjects . . . But as sound is caused by change and has no fixed and stable existence in a subject, but actually consists in a movement or change, therefore it can be considered at one and the same time in its objective origin and in its effect on the senses."

419b4–420a2 Aristotle deals "first" (πρῶτον) with sound and hearing in accord with the order of inquiry set out in ii 4, to investigate object and operation prior to faculty (419b4). He takes up hearing and its object by making a distinction: sound can be something in actuality (ἐνεργείᾳ τις) or in potentiality (δυνάμει, b4–5). The distinction is apparently a division into sound actually heard and sound only potentially heard. Sound in potentiality should seemingly be that which a sentient being could hear were it available to hear it, such as the tree falling in the forest without anything around to hear it.[2] What Aristotle goes on to articulate contributes to clarifying the distinction. He observes that "we say that some things do not have sound, such as sponge, wool, but others have, such as bronze and so many as are solid and smooth, because they are able to sound (δύναται ψοφῆσαι)" (b6–8). Natural sponge that is very light or wispy wool gives rise to hardly any sound and surely has no characteristic, readily recognized sound. He here discloses that some things because they are so porous and yielding do not have sound in potentiality or in actuality since they can give rise to no heard sound at all or hardly any, whereas others readily enough give rise to sound. He explains that "sounding" – "this" (τοῦτο) refers to "sounding" (ψοφῆσαι) – is to produce sound in actuality between what sounds and the sense of hearing (τῆς ἀκοῆς, b8–9). Clearly sounding means there is sound in actuality, that is, sound presently being heard (cf. 425b25–426a8). That sounding producing sound in actuality must be heard is shown by its being between what sounds and the hearer; that is, there is a sentient being available to hear it, and so it must be heard. If we distinguish: (a1) the capacity to generate motion or sound in air that percipient beings can hear, (a2) the lack of such capacity, (b) the production of such motion or sound in air when unheard, and (c) sounding heard by a percipient being, Aristotle after naming the distinction of (b) and (c) mainly speaks of (a1) and (c).

Regarding the essentials of the origin of sound, Aristotle says,

> Sound according to actuality always arises of something with respect to something and in something; for that productive of it is a blow. Hence indeed, there being but one thing, it is impossible for sound to arise; for the thing striking and that being struck are other; so that which sounds sounds with relation to something; but a blow does not arise without locomotion. γίνεται δ' ὁ κατ' ἐνέργειαν ψόφος ἀεί τινος πρός τι καὶ ἔν τινι· πληγὴ γάρ ἐστιν ἡ ποιοῦσα. διὸ καὶ ἀδύνατον ἑνὸς ὄντος γενέσθαι τὸν ψόφον· ἕτερον γὰρ τὸ τύπτον καὶ τὸ τυπτόμενον· ὥστε τὸ ψοφοῦν πρός τι ψοφεῖ· πληγὴ δ' οὐ γίνεται ἄνευ φορᾶς. (419b9–13)

He here speaks of "sound according to actuality" (ὁ κατ' ἐνέργειαν ψόφος) rather than as previously of "sound in actuality" (ἐνεργείᾳ). Whereas sound in actuality must be heard, sound according to actuality might be either sound in potentiality that could be heard or sound presently heard, that is, (b) or (c).[3] Sound heard or

[2] Hamlyn 1993, 109 objects, "The distinction made here between actual and potential sound is one between things actually making sounds and things being able to. It is not a distinction between heard and unheard sounds." But Hamlyn misses the distinction between sound in potentiality (δύναμει) and what has sound or is able to sound (δύναται ψοφῆσαι).

[3] In ii 7 Aristotle speaks of the transparent according to actuality (τοῦ κατ' ἐνέργειαν διαφανοῦς, 418b1 and 419a10–11) and the transparent in actuality (ἐντελεχείᾳ διαφανές, 418b12 and b30), but these are not different in the case of the sense medium as they are in the case of the sense object itself.

that might be heard arises when something receives a blow in something such as air. Hence, a single thing cannot produce sound, for a blow is productive of sound, and a blow requires something that strikes and something being struck.[4] That no single body gives off sound would seem to undermine any view that has the sensible object as effluences or particles given off by a body. The thing that is struck seems to be that which sounds (τὸ ψοφοῦν) *in relation to something* (πρός τι) that strikes it (b12–13). For a blow to occur at least the body that strikes the other must be in locomotion. A definite sort of situation is needed to cause sounding and therefore the kind of sound produced is hardly arbitrary. Aristotle elaborates further upon some of the aspects of his basic account of how sound arises.[5]

Not any chance thing can be that which sounds from a blow, as already indicated (419b13–14 referring to b6–8). It matters what the struck body is made of and how configured since striking wool makes no sound, but striking bronze or something smooth and hollow does (b14–15). Smooth bodies such as bronze, that are also presumably therefore solid (see b7), cause sound when struck, and when the body struck is hollow or concave (κοῖλα) the initial blow causes many subsequent blows by reverberation (τῇ ἀνακλάσει) because the motion set up cannot escape (b16–18).[6] The hollowness of the body makes the contained air become involved in giving and receiving further blows, thus setting up echo. This discussion is an indication that the sound arising from the striking of bodies has a character dependent upon the sorts of bodies that strike and the way they strike. Since this is so, hearing can be said to hear what is sounding as it actually sounds, and Aristotle's overall realism about sense perception turns out to cohere with hearing and sound. Having resolved the possible difficulty that we do not hear what really sounds, he further explores air's role in the origin of sound to compare more closely hearing and vision so that despite the locomotion involved in sound the analogy with color becomes compelling.

Color, Aristotle has stressed (418b2–3, 419a22), is seen in light; sound is heard in air *and* water, with water a less effective medium for sound (419b18). The medium for sound can transmit it more or less well. That the medium can impact upon how well things are perceived need not affect the truthfulness of proper perception under optimal conditions. Air and water are not responsible for or sovereign over (κύριος) sound, even if things sound in air or water, because what gives rise to sound is the blow of solids against each other and against the air (b19–20; cf. b33–35).[7] Commentators disagree whether Aristotle's reference to striking against the air

[4] The lexicon (LSJ) indicates that both πληγή (a blow) and τύπτω (to strike) were used by Homer to refer to hand-to-hand combat rather than striking with a missile.

[5] It is an interesting observation that sight and touch enter prominently into the account of the origin of sound. We hear the sounding impact, but we see or feel the whole course of events leading to the sounding. Development of an account of the proper sensible may thus depend upon more than one sense.

[6] Ἀνακλάσις, literally meaning bending back, is used here in 419b16 for reverberation of sound, and soon again in 419b29–31 for the reflection of light (cf. 435a5–6).

[7] The issue of what is responsible for (κύριος) sound perhaps arises in view of Plato's *Republic* 507d11–508a6, though Plato speaks of the Sun's responsibility for light rather than light's responsibility for color. See later on 419b33–35.

(πρὸς τὸν ἀέρα, b20) applies to most cases of sounding or merely to such special cases as high winds or whips in which the air itself is one of the things striking or struck. Probably he means both: sound results from striking the air (or water) and all sounding requires that what sounds also impacts the air (or water). A great role for air in sound production resembles the role for light in color vision. To set up sound, the blow of the bodies, one of which might just be the air (or water) itself or the striking bodies that are in air (or water), has to be sufficiently rapid and strong that under the blow the air (or water) endures (ὑπομένῃ) to take the motion without dissipating (μὴ διαχυθῇ, b21–22). Whether air (or water) is struck when other bodies collide or is itself one of the bodies struck, it must hold together enough to be in motion so as to convey sound. The air (water) must be able to take the motion of what strikes it sooner than breaking into pieces (b22–23). This holding together of air for sound propogation also counters other theorists' suppositions of effluences of particles on atomic films. Aristotle's examples of air as a heap or a dust devil that someone might strike in rapid motion (εἰ σωρὸν ἢ ὁρμαθὸν ψάμμου τύπτοι τις φερόμενον ταχύ) support both interpretations of b20 by illustrating how air, even in rapid motion, can hold together and be unbroken sufficiently to strike or be struck (b24–25).[8] The special cases in which the medium, air, also acts as one of the things striking or struck has particular pertinence to the just-raised topic of air's responsibility for sound (ψόφου κύριος, b19). Aristotle has spoken of hollow vessels with rebounding blows (b15–18), and he will speak of echo (b25–420a2) and of how respired air gives the blow for producing voice (see 420b27–29). If the medium can also be involved in engendering sound, does it not have overriding responsibility for sound? When the medium is one of the bodies striking or being struck, it may surely have greater causal responsiblity for sound. But echo, even if a pervasive phenomenon largely due to air, still is not the primary cause of sounding. So the blow is cause of sounding, and Aristotle will go on to say that air is responsible for *hearing* rather than for sounding (see 419b33–34). Nonetheless air plays a role for sound.

Echo enters into consideration because it is a case in which air itself strikes and is struck (419b25–27). When a vessel keeps air confined and prevented from breaking up (κωλῦσαν θρυφθῆναι) so that another mass of air coming upon it from a previous blow rebounds from it (ἀπωσθῇ) as a ball does from a wall, this causes reverberation and echo. From this account of the commonly heard echoes, Aristotle draws implications with only limited support from actual hearing but fitting with his explanation and paralleling light. It seems, he says, that there is always echo but indistinctly (οὐ σαφής, b27–28). Air set in motion by striking bodies will rebound from surfaces nearby or far away causing reverberations, as happens with light (b28–29). The Sun's light produces full daylight wherever there are not obstructions, but even areas blocked from direct exposure receive light and are not in total darkness because light always bends back or reflects (ἀνακλᾶται, b29–31). As light directly

[8] The suggestion that ὁρμαθὸς φερόμενος is the revolving ring of a sand whirl or dust devil is from Beare 1905, 73–74 (see Hicks 1907, 377 and Ross 1961, 248).

or by bending back applies to expanses and allows color to be seen over distance, sound fills expanses.

In the previous chapter it was argued that light, unlike sound, does not enter into locomotion, so consistency demands that "bending back" of light is just from the standpoint of its source, that is, the Sun or fire. While all of the illumination of light is simultaneous throughout the extension from the present perspective of physics, Aristotle may allow for a mathematical science of optics that facilitates its calculations by assuming that the light travels and reflects sequentially from surfaces. There is significant bending back of light from most surfaces, but this is not like that from some of the smooth surfaces (419b31–32). Mirrorlike surfaces such as water or bronze reflect so well that what receives the reflection is in intense light, while other areas are in relative shadow, and the intense reflection can readily form shadow, so that the reflection of light due to these is much more obvious than that due to other surfaces (b32–33). Aristotle says shadow is that "by which we define (or limit) light" (ᾗ τὸ φῶς ὁρίζομεν, b33). Shadow as darkness is the potentiality of the transparent and the actuality, light, cannot strictly be defined by its potentiality. But as we recognize the transparent "by another's color" (see 418b5–6), by shadow we make out light or we confine it. Illumination takes place instantly, but the extent of illumination is determined by the sorts of surfaces bending back the light from the source of light. What all this means for echo is that smooth surfaces that contain the air, preventing it from breaking up, may give rise to clear echo, since sound does travel and the bending back leads to sounds subsequent to the initial blow. Where, however, the air is less well contained the rebounds are less strong and sharp; hence the echo is indistinct or inaudible. Loud echoes are analogous to reflections in a room of mirrors. Besides the intrinsic interest of echo and reflection, Aristotle's attention points up important parallels of the media for sight and hearing. The way air holds together for sound propogation and the ubiquity of echo seem to tell against any view of sound as an effluence from a body, and especially from a body in the void. The void could not allow air to be one of the bodies striking and void offers little support for echo as we experience it.

Aristotle has been emphasizing sound's origin in striking of bodies and subsequent reverberations. Air and water were denied responsibility or causal predominance regarding sound in 419b19, since smooth solid bodies typically strike to produce sound. But air can be responsible for *hearing*. Resuming his earlier suggestion (b22–23) that the striking must outpace the breakup of air, Aristotle declares that the void is rightly said to be responsible for hearing (τὸ δὲ κένον ὀρθῶς λέγεται κύριον τοῦ ἀκούειν, b33–34). "Void," of course, recalls Democritus's space with nothing in it (419a15–17), but such emptiness could hardly be the medium, so here Aristotle means just the expanse of air that is commonly called empty or void (b34).[9] Such an expanse of air when it holds together sufficiently is responsible for hearing by taking sound to the ear and acting upon the ear. Unexpected use of the term "void" emphasizes ironically that the expanse of air is not really empty, and that it is the expanse that crucially serves as medium for hearing. The background

[9] That it might be common to speak of the expanse of air as *kenon*, see 420a18–19.

for speaking of what is "responsible" may be Plato's discussion in *Republic* 507d11–508a6 of the way Sun is responsible for light and light for vision. Light does not give rise to color but it occasions visibility and vision. Similarly, air does not usually give rise to sound – for this a blow of solids is needed – but it determines whether hearing may occur. Hence Plato speaks of light making vision to see (τὸ φῶς ὄψιν τε ποιεῖ ὁρᾶν, see 508a5), and Aristotle speaks of air as making us hear (ὁ ἀήρ . . . ποιῶν ἀκούειν, 419b34–35).

Hearing takes place, that is, air can be its cause, when the air is in motion together as continuous and one (ὅταν κινηθῇ συνεχὴς καὶ εἷς) taking sound to the ears (419b34–35). If the air merely breaks up and scatters, as it may as a result of being friable (ψαθυρός), rather than keeping together as it will when a smooth surface is struck, no sound reaches the ear (b35–420a1). A smooth surface that is struck tends to keep the air together as a unity since a smooth plane is one and continuous (a1–2). What Aristotle emphasizes is that air must remain unified and in motion together to cause hearing. Were Democritus correct that there is absolute void, hearing would derive from atomic particles traveling through the void. Aristotle contends, however, that the "void" pertinent to hearing is the expanse of air, and rather than having particles traveling through it, a mass of air is in motion *together* when hearing takes place. Hence, he seems to have a pulsating motion of the medium in a more or less compact mass covering the expanse as the cause producing sound. And since hearing may occur in all directions, the mass should be in motion outward in all directions. If the friable air breaks apart too much, sounding and hearing cease. The compact motion of the air for sound and hearing resembles as far as possible the instantaneous and continuous illumination of the transparent medium for color and vision. Perhaps the entire mass of air between the sounding bodies and the ear is not simply one and continuous but only largely so; otherwise how could echo develop, and sound dissipate with distance and take longer to get to greater distances? Yet air must hold together quite a bit to cause hearing, and hence the fairly close analogy with color and sight.[10]

Aristotle has provided an account of the origin of sound, usually a blow of a solid against another smooth solid in air; noted the cases in which the air itself is one of the objects doing the striking or being struck; considered the ubiquity of echo; and spoken of the role of air and water in causing hearing to clarify the sensible object and medium of hearing and to show the power and consistency of his accounts. What applies for vision has its counterpart for hearing. Discussion of the origin of sound and echo fortifies the view that hearing requires a medium: air must be unified and in motion together for sound and hearing to occur. The motion taking place for sounding, then, does not threaten the need for a medium for hearing. Moreover, the fact that sound arises from colliding bodies does not undermine Aristotle's realism about perception, that each sense perceives its proper sensible

[10] Were Aristotle to embrace any view such as Plato's cave analogy in *Rep*. vii in which ordinary visible things are shadowy images seen projected on a wall or as in the *Timaeus* reflections of the Forms on the cosmic mirror, the receptacle, as of course he does not, the resemblance of hearing to vision might become even greater.

as it is, since what sounds primarily is a smooth solid body in relation to what strikes it and what is heard is the characteristic sound arising from the sort of body struck and the way it is struck.

420a3–19 Accounting as the chapter does for the origin of sound clarifies the sensible object and medium and the way they affect the sense. Sound can arise when a body is struck within the medium such that a unified mass of air is put into continuous motion: "Now what is capable of sounding is what can set in motion a single mass of air continuous to the organ of hearing" (ψοφητικὸν μὲν οὖν τὸ κινητικὸν ἑνὸς ἀέρος συνεχείᾳ μέχρις ἀκοῆς, 420a3–4). By defining the ψοφητικόν, what is capable of giving rise to sound, Aristotle provides an account of what has sound, that is, what can give rise to sound in potentiality or in actuality. What thus has sound must be capable of acting upon the medium, which can in turn act upon the sense organ and sense. Only air with sufficient continuity moves the organ and sense. The continuity here is a unity of a mass of air and its holding together in continuous motion all the way to the ear rather than necessarily being a single continuous mass of air extending all the way from sounding objects to the ear. What is defined here as capable of sound is perhaps the smooth, solid body that only needs to be struck to give rise to sound or the body that strikes it or the entire origination of sound through the striking of such a body by another body in air.

For hearing to occur, the ear must be naturally conjoined to air (συμφυὴς ἀέρι); it is after all in the air, so that the action upon the external air due to what can sound will in turn move the ear (420a4–5). Aristotle is claiming not only that the ear is in the air but also that in its very nature the ear is airy. Air pertains to the ear both externally and internally since the outer air is continuous all the way to the eardrum and within the eardrum air is contained in an enclosure. Commentators have been disturbed that Aristotle suggests that the ear naturally attaches to the external air since elsewhere he uses συμφυής for cases in which things are naturally grown together rather than merely in contact (see even a12 and 423a5). But perhaps somewhat metaphorically Aristotle wishes to stress that the ear is a natural continuation of the outer air, because the ear is predominantly air, even if separated by the eardrum. Since the ear, meaning especially the internal air, must be naturally connected and allied with the external air to be moved by it, the animal hears not with just any of its organs or has air penetrate it just anywhere, but that inner ensouled airy part movable by the sonant external air must be in play (420a5–7). The entire living body is ensouled, and land animals may take in air with nose and mouth, but the ear is ensouled with the power to be acted upon by air to contribute to hearing.

It has been established not only that a unified body of air is the medium for sound set in motion by the sounding body, but also that air constitutes the principal part of the organ for hearing. His claim about the ear is the first time that Aristotle makes explicit that the sense organ and medium are materially the same or quite akin. Of course this refines the predecessors' view discussed in book I that cognition is through like by like. It is the sense *organ*, rather than the sense or soul, that is materially like the *medium*. As the ear is quite airy, the eye should be quite

transparent, and similarly with the other sense organs. And when the *De sensu* gives accounts of the potential objects of sight, smell, and taste, it puts the nature of the medium into the substratum for the sensible objects as well. Hence in the realm of each sense, the substratum for the sensible object, the sense medium, and the sense organ all have a similar nature. Consequently, each of them is "transparently" receptive to the sensible object so that the sensitive soul can perceive the sensible object just as it is. This all sustains the attack on effluence theories.

Air itself is soundless (ἄψοφον, 420a7). We recall that wool and sponge do not have sound because they are not smooth and solid (419b6–7), but Aristotle now speaks of the *soundless*, which recalls 418b26–419a1, and especially 418b27. As there, he here takes up the medium and sense organ as capable of affection by sensible objects. Air is typically soundless because it easily breaks apart (διὰ τὸ εὔθρυπτον) unless somehow hindered from breaking up so that it may take on the motion that is sound (420a8–9; cf. 419b26). These remarks concern the suitability of air as medium for sound more than as what can be struck to generate sound. As is the case for the transparent that in itself is colorless and invisible, air is soundless and inaudible, and only what initially lacks the sensible object completely while being in potentiality to it can be suitably acted upon by it as medium. Regarding the sense organ, the ear is constructed to contain air relatively motionless thereby enabling the animal to be moved by sound and accurately to perceive all the differences of motion (ὅπως ἀκριβῶς αἰσθάνηται πάσας τὰς διαφορὰς τῆς κινήσεως, 420a9–11). A proper sense should accurately perceive its proper sensible objects (cf. 418a11–12, a15), and Aristotle describes a contributing condition: the sense organ is relatively motionless to be sensitive to subtle differences in motions. The air is also contained in a relatively small space in the ear and prevented from escaping to enhance sensitivity. The organ of hearing, as a bodily part, enters into motions caused by motions in the medium. The differences of motion give rise to sense perception of various sounds (see 420a26–27 on differences of *sounds*). Aristotle's formulation in 420a9–11 may also suggest that the animal becomes used to background noise and barely hears it, as the Pythagoreans supposed that we are oblivious to the music of the spheres. Only new and different motions intrude themselves on the animal's hearing to cause it very evidently to perceive. The senses thus register differences and are discriminative.

Because the air enclosed within the ear is relatively motionless and protected from the outside, it may be acted upon by motions not only of air but also of water (420a11–13). We hear in water so long as the water does not get into the inner ear itself.[11] Were the water to enter, as when the eardrum is damaged, there would be no hearing just as there would be no seeing were the membrane covering the eye

[11] Perhaps Aristotle switches from speaking of animals generally (420a5–6) to us humans (a11–12) because only in our case does he have direct evidence that the animal that hears in the air also hears when submerged in water. The inner ear is protected by its spiraling (τὰς ἕλικας) as well as the eardrum. The αὐτὸν τὸν συμφυῆ ἀέρα (the connate air itself) in a12 should be compared with συμφυὴς ἀέρι (in natural union with air) in b4. Previously it suggested the continuity of the internal to the external air, but in a12 it means the air intact in the ear.

damaged (a13–15).[12] Seemingly, much as the transparent air is continuous with the transparent eye jelly, but separated by a membrane, so the outer air is continuous with the inner ear, though also separated by a membrane.

Starting in 420a7–11 Aristotle speaks of the soundlessness of air generally and the relative motionlessness of the air in the ear to ensure their suitability for motions of sound either as medium or as sense organ. Yet a phenomenon regarding hearing calls for some natural motion of the air in the ear. Echo or ringing in the ear, either when a horn (κέρας) is held to the ear or just on its own, could hardly be ignored by Aristotle since it was apparently a common medical observation in connection with hearing capacity (420a15–16).[13] Doctors might recognize hearing impairment in those who hear ringing even when not holding a horn to their ear or in those who do not hear any ringing when holding the horn. Aristotle's contribution could be the explanation of the ringing by the air's own motion, which occurs always within the ear (ἀεὶ γὰρ οἰκείαν τινὰ κίνησιν ὁ ἀὴρ κινεῖται ὁ ἐν τοῖς ὠσίν, a16–17). Those who hear some echo or ringing, either as appropriate when the horn is held over the ear or all the time because of disability, seem to be hearing the motion of the air in the ear. If the air in the ear is at all one and in continuous motion, it will echo as it bounces off the walls of its confined place, but the echo is generally inaudible to us since we are so used to it. Only in special circumstances can the ear's own motion be heard; sound instead usually comes from outside (a15–18).

Though sound is the proper sensible of hearing (τὸ ἴδιον, 418a10), Aristotle insists that the sound that some hear from the motion of the ear itself is "foreign and not proper" (ἀλλότριος καὶ οὐκ ἴδιος, 420a17–18). We are to understand that the ear's "own motion" is some sloshing motion of the fluid air as a result of the animal's motion rather than any further natural motion of air. Even heartbeat and breathing might be enough to keep the ear's air in motion. What is heard by the healthy because of the horn, or a shell, or cupping of the hand over the ear, but by those who have ringing in the ear much of the time, since it is not sound entering from outside, is not the proper sensible of hearing, as neither is the phosphorescent the proper sensible of vision. Might we gather that as the sense organ for hearing has some internal motion that prepares it to hear differences of external motions and

[12] The Greek in 420a14–15 has τὸ ἐπὶ τῇ κόρῃ δέρμα (the skin upon the *korê*). *Korê* is a word for girl and it becomes a term for the pupil of the eye because people are reflected in the pupil; that becomes part of Democritus's account of vision (see *De sensu* 438a5ff.). Bremmer 1983, 17n11 gives a possible archaic explanation, "the free soul resided in the eye in the form of a homunculus." But the term apparently may also mean what is under the pupil as well, i.e., the entirety of the "eye jelly" or transparent fluid connecting with the pupil, which makes better sense in this and other contexts (cf. Sorabji 1995, 209–210). In speaking of possible injury, Aristotle makes use of medical knowledge for contributions to knowledge of the soul, as when he goes on to speak of ringing in the ears (420a15–16).

[13] Aristotle probably uses "some motion of its own" (οἰκείαν τινὰ κίνησιν, 420a16–17) regarding the air's own constant motion within the ear, which is nonetheless "foreign and not proper" for hearing (a17–18), to help recall to us that only in light is the thing's "own color" (τὸ οἰκεῖον χρῶμα, 419a2) seen, while in seeing the phosphorescent we do not see the thing's own color (οἰκεῖον χρῶμα, a6). Whereas the ear's own motion is not what is usually heard, we usually see an object's own color, though with the phosphorescent we are not seeing its own color. The strikingly interlinked uses of "own" may draw attention to the important connections of these passages.

also sometimes to be heard itself, so the eye has some fieriness and mirrorlikeness that that we disclose by pressing the eye and that also somehow comes into play in our perceiving the phosphorescent? Aristotle continues to suggest remarkable analogies of sight and hearing.[14] Because the ear is primarily a cavity filled with air and this can ring, Aristotle says that it is widely held that we hear "by the empty and echoing" (τῷ κενῷ καὶ ἠχοῦντι, a18–19). Surely we hear by means of the confined air that is the ear. Exactly what role the internal motion of the air within the ear plays in hearing is left unspecified, but the internal motion does not generally impede openness toward external motion, and it might well serve as basis for detection of differences of sound.

When echo was first discussed in 419b25–33 it was determined that sound always sets up at least an indistinct echo. Aristotle provides an echo of this in the disclosure that there is typically a ringing or echoing within the ear that is only audible under unusual circumstances. Similarly there seems always to be some bending back of light, and as indicated the eye internally has some fieriness and mirrorlike limit to its transparency, and so it has limited "color" of its own, insofar as light is the "color" of the transparent. Hence, vision may detect differences from its own "color," as hearing detects differences from its own motion and sound, and each of the other senses discerns differences from itself. This situation of the eye as having light reflecting in it is suggested by pressing upon it even in the dark to reveal fiery sparks (see *De sensu* 2.437a22–b10). Aristotle must allow the sense organs to be pregnant with sensibility and take account of phenomena noted by his predecessors in which the senses directly if peculiarly perceive themselves. He tries to explain these unusual cases of self-perception not by having the sense organs composed just of the sensible object so that perception is simply through like by like but by having the sense organs share the nature of the sense medium. But the medium is colorless, soundless, and so on, while the sense organ more complexly has some fieriness, motion, and so forth, of its own. This helps explain why the medium must be acted upon prior to the sense organ, and also how the sense organ prepares the sense to discern differences from itself and among the sensible objects. What may seem to be merely distracting discussions of the phosphorescent in ii 7 and ringing in the ears here in ii 8 are in fact prefigurations of the more obvious point with regard to touch in ii 11, that we do not perceive objects the same temperature as the flesh. As this point regarding touch strongly supports the view that sense perception generally is discrimination of differences through difference from the perceiver, Aristotle has already been preparing the view by these analogous phenomena brought up in his accounts of the other senses. He adds greatly to the subtlety of understanding of the way sense perception is by way of like by like and unlike by unlike.

420a19–b4 Sound results from the striking of bodies in air, but which sounds, the body struck or that which strikes (420a19–20)? It seemed near the start of the chapter that it is primarily the body being struck that sounds, yet since sounding

[14] Most manuscripts have ἀλλὰ καὶ σημεῖον τοῦ ἀκούειν ἢ μὴ in 420a15, but Ross 1961 substitutes ἀλλ' οὐ σημεῖον. . . . This change is unnecessary, however, and gives a poorer reading.

is due to the striking of one body against another, there is a way in which both are sounding, if in different ways (a20–21). Were only one sounding, no relation of one body to another would be needed, but a blow is required: "For sound is motion of that which is able to be moved this way in which things bounce off from smooth objects whenever someone would smite them" (ἔστι γὰρ ὁ ψόφος κίνησις τοῦ δυναμένου κινεῖσθαι τὸν τρόπον τοῦτον ὅνπερ τὰ ἀφαλλόμενα ἀπὸ τῶν λείων, ὅταν τις κρούσῃ, a21–23). Sound is audible motion set up by certain collisions of bodies in air or water rather than the motion that is a common sensible, that is, the usual locomotions of bodies. The genus of sound is motion, and it is motion of a certain sort, like that of something springing off from the smooth object that is struck. Aristotle perhaps pictures something like a tray or table with objects thrown off as it is hit. What springs off this way to be audible must be a mass of air (or water). This explains what sound is and why both that which strikes and what is struck contribute to the sound, while maintaining the prominence of what is struck. A collision sets off a mass of air together in agitated motion to the ear. It also explains why not all things that strike and are struck sound. Pins colliding cannot set up such motion because there is insufficient even (ὁμαλόν) surface in what is struck for the air to collect together to spring away and to shake (τὸν ἀέρα ἀθροῦν ἀφάλλεσθαι καὶ σείεσθαι, a23–26). The verbs ἀφάλλεσθαι and σείεσθαι in b26 suggest that a blow causes the sounding air to spring away together from an even surface and to vibrate as the Earth shakes in an earthquake. Such motion set up in the air is audible sound. Sound is surely motion that travels, but specifically the motion is the agitated shaking of a mass of unified air caused by a blow to an even surface. That the mass of air seems to spring from the striking and that this mass of air travels while shaking, as well as the phenomenon of echo, preclude our supposing that it is a single continuous mass from the sounding object all the way to the ear, but it is a good-sized mass in agitated travel.[15]

Aristotle understands the differences of sound in terms of this general account of the origin of sound:

> The differences of the sounds are made clear in the sound according to actuality;[16] for just as without light colors are not seen, so neither without sound the sharp and flat. These are said

[15] Burnyeat 1995b, 429–430 insists that "the air between me and the place of the blow stays put (*hupomenei*, 419b21). It rebounds and vibrates as a single whole (*athroun aphallesthai kai seiesthai*, 420a25–6) without being dispersed (*me diachuthei*, 419b21–2)." This exaggerates the extent to which air has to hold together, and it makes echoes rather inexplicable. But even if it is correct that sound in air is a "quasi-movement" that is "like a wave or vibration," this hardly supports Burnyeat as he supposes, unless we unnecessarily accept that waves and quasi-motions are simply or strongly identical to perceiving. Burnyeat asserts, "the vibration or resonance in the ear (*psophesis*) is identical with the hearing (*akousis*) of the sound" (431), but the identity here is not the tight sort that Burnyeat needs. In fact there is no evidence that Aristotle could really understand waves as translation of "energy" (in the modern sense of "energy"), though clearly he would correctly have to deny that they are in motion since only bodies can be in locomotion.

[16] Jannone 1966 follows manuscripts having τῶν ψόφων in 420a26 rather than τῶν ψοφούντων. Since it is the differences *of the sounds of the things sounding* that is here under consideration, both texts ultimately have much the same meaning.

according to metaphor from the tangibles; for the sharp moves the sense much in little time, the flat in much time little. The sharp is not fast and the flat slow, but the one such motion arises on account of the speed and the other on account of the slowness. αἱ δὲ διαφοραὶ τῶν ψόφων ἐν τῷ κατ' ἐνέργειαν ψόφῳ δηλοῦνται· ὥσπερ γὰρ ἄνευ φωτὸς οὐχ ὁρᾶται τὰ χρώματα, οὕτως οὐδ' ἄνευ ψόφου τὸ ὀξὺ καὶ τὸ βαρύ. ταῦτα δὲ λέγεται κατὰ μεταφορὰν ἀπὸ τῶν ἁπτῶν· τὸ μὲν γὰρ ὀξὺ κινεῖ τὴν αἴσθησιν ἐν ὀλίγῳ χρόνῳ ἐπὶ πολύ, τὸ δὲ βαρὺ ἐν πολλῷ ἐπ' ὀλίγον. οὐ δὴ ταχὺ τὸ ὀξύ, τὸ δὲ βαρὺ βραδύ, ἀλλὰ γίνεται τοῦ μὲν διὰ τὸ τάχος ἡ κίνησις τοιαύτη, τοῦ δὲ διὰ βραδυτῆτα. (420a26–33)

The way things sound can only be clear when they actually sound and are heard. The point here is that things have characteristic sounds that hearing is discerning. Only in light can differences in color be seen, that is, there are only things having the potentiality to be seen before there is the transparent in actuality to be acted upon by the color, and similarly there must be sounds acting upon the medium in the way indicated in a21–23 before the differences in sound are perceived (a26–29). The differences in sounds mentioned are the sharp (τὸ ὀξύ) and the flat (τὸ βαρύ, heavy), the extremes in this genus of sensibles. These terms for high and low notes derive, Aristotle suggests, from metaphor with tangibles (a29–30). In the next chapter on the sense of smell, odors are said to be named after flavors because taste is a more precise sense (see 421a31–b1). Since touch may be more precise even than hearing and other senses (see 421a18–22), the explanation for the priority of names is partially the relative precision of the senses. We might expect the blunt (τὸ ἀμβλύ) as opposite of the sharp (see *Problems* 918a19 and 420b1–2), but the ancients generally used τὸ βαρύ (heavy) for low, bass, or flat sounds. The heavy is a tangible, if not the tangible contrary of the sharp. Aristotle gives some explanation of the derivation: the sharp moves the sense much in a little time, whereas the flat (heavy) moves it little in much time (420a30–31). This follows the Pythagorean and Platonic lead (see *Timaeus* 67b, 80a) in linking sharp notes with rapid vibrations of strings and low notes with slower vibrations; Aristotle wishes the high note to be piercing and penetrating; thus it moves the sense a good deal, whereas the low note has a smaller and more extended impact. A taut string vibrating rapidly in small amplitude gives a piercing sound, while the looser string vibrates more slowly in greater amplitude to give a lower but more lasting sound.

Yet, Aristotle perhaps surprisingly denies that the sharp is quick (ταχύ) and the low slow (βραδύ, 420a31–33). While in the previous lines he spoke of moving the *sense*, he now considers traveling through the expanse to the ear. Commentators explain that he is concerned that high notes not travel faster to the ear than low notes since then the possibility of chords, that is, several notes heard together, is endangered. Quickness and slowness pertain to the rapidity of vibration of strings or of the vibration of the air mass and the impact on the senses rather than to the speed or slowness of travel of the air mass through the expanse to the ear. High and low notes as heard are neither in themselves quick nor slow.[17] Aristotle is also

[17] Hicks 1907, 384 proposes that Aristotle merely describes "the character of the contrasted sensations as facts of experience, and not as physiological processes." Philoponus *In de an*. 373,13ff. points out that quicker or slower vibrations need not travel more quickly or slowly. Both interpretations should be embraced.

contributing to the defense of his perceptual realism, that we perceive things as they are in actuality, by deemphasizing the locomotion of air and linking differences of sound to the quality of the air's vibrations. Insistence that difference in sound has nothing to do with difference in speed of locomotion diminishes the significance of locomotion.

The analogy with touch is reinforced by noting that the sharp stabs (τὸ μὲν γὰρ ὀξὺ οἷον κεντεῖ) and the blunt or dull pushes (τὸ δ' ἀμβλὺ οἷον ὠθεῖ), because the one moves something in a little and the other in much (διὰ τὸ κινεῖν τὸ μὲν ἐν ὀλίγῳ τὸ δὲ ἐν πολλῷ, 420b1–4). If sharp notes can derive from taut strings vibrating rapidly with small amplitude, and flat notes from looser strings vibrating more slowly with greater amplitude, then they move the air such that the eventual effect upon the ear accords with it. Analogy with tangibles reinforces that sounds are affective qualities and not merely motions. The mass of air need not travel more quickly or slowly to the ear, but in impacting upon the ear, the sharp note pierces by setting up vibrations in the ear like those from which it derives – it moves "in a little" place *or* time, that is, the vibrations are small in amplitude and brief in time – while the flat note pushes because it sets up vibrations like those from which it derives – it moves "in much" place *or* time; that is, the vibrations are large in amplitude and lengthier in time. What is rapid (ταχύ) or slow (βραδύ) is the sort of impact on the sense organ. Blunt or dull, though not the common terminology for low notes, fits with the impact upon the ear. Were effluences, rather than vibrating masses of air, explaining sound and differences in sound, high and low notes would probably involve different rates of travel of particles, but Democritus may think all atoms move at the same speed (at least Epicurus has atoms in motion with the same speed in the void; see Diogenes Laertius x 43 and 61).

420b4–421a6 Having disclosed the origination of sound, what it is, and its differences, Aristotle has given enough of an account of sound generally, and so he turns to a type of sound supremely important for investigation of soul, voice (φωνή, 420b4–5). Voice demands special attention for several reasons. One reason is that sound typically results from the collision of bodies such that no single body sounds (see 419b9–11), but voice seems to have sound issuing from one ensouled bodily being. Another reason for dealing with voice is that this kind of sound pertains uniquely to soul since only ensouled beings have voice. Voice is a vital function and operation of soul for the animals possessing it. And among sounds, voice is the crucial object for hearing. So pivotal is voice for awakening the human mind that hearing, in itself one of the least disclosive senses, becomes the most important of all the senses for humans (*De sensu* 437a4–17). A connected reason pertinent to this treatise on soul is that when Aristotle writes his thoughts, or has them written, writing is a way of symbolizing voice that in turn symbolizes thought (see *DI* 16a3–9). Thus in dealing with voice he studies what makes his whole enterprise possible. And another reason to treat voice is the question whether hearing hears what is actually there since in giving voice animals intend to convey more than the mere sounds they produce.

Voice (ἡ φωνή) is a certain sort of sound of ensouled beings and belongs only to ensouled beings in spite of our way of speaking of inanimate things such as

musical instruments as giving voice (φωνεῖ, 420b5–7). The pipe (αὐλός), lyre, and other inanimate things have range (ἀπότασιν), melody (μέλος), and articulation (διάλεκτον), which pertain to voice, and so they are said to give voice (φωνεῖν), but this is only a likeness to what properly belongs to animals (b7–9).[18] Having limited voice to ensouled beings, Aristotle limits it still further to some sounds of certain animals. Neither the bloodless animals – including insects, testaceans, crustaceans, and molluscs – nor, among those with blood, the fish have voice (b9–10; see *HA* iv 9). This is reasonably (εὐλόγως) the case, he says, since none of these has respiration, if the sound that is voice is motion of air (420b10–11).[19] Whereas mere sound can be motion of air or water, lacking respiration may preclude the sound that is voice. The fish in the Achelous supposed to give voice in fact make noise with their gills or some such part (b11–13; cf. *HA* 535b14ff.). As other fish, these do not breathe air and so cannot truly have voice.

Aristotle intends voice to be genuinely "sound of an animal" (ζῴου ψόφος), that is, due to sense perception, and by means of special bodily organs utilizing air from respiration rather than any chance part of the body (420b13–14). As does any sound, voice arises from something striking against something in something; if one or more of these factors is air, it is reasonly said (εὐλόγως) that those animals alone give voice that receive air in respiration (δέχεται τὸν ἀέρα) (b14–16; cf. 419b9–11). Respiration nature employs for two functions (*erga*), as the tongue has two functions (420b16–22). The tongue serves as organ both for the necessary, and hence widely shared, contact sense taste, and for articulation (διάλεκτον) restricted to those animals having expression (ἑρμηνεία) for the sake of living well (ἕνεκα τοῦ εὖ). Similarly respiration has the necessary role of cooling the animal, thus preserving the heat needed for life, along with enabling the animal to have voice for its well-being.

Nature skillfully employs the same instrumental part for more than one function. Functions are what something alone does or does best among those beings that might also perform the function, and what can do one well may also do something else well (cf. Plato's *Rep*. i 352d–353e and *Timaeus* 75a and 75e). The resourcefulness of nature enters into distributing functions and doubling them. Aristotle is fascinated by the extent to which voice uses this doubling; both respiration and tongue perform functions necessary for life as well as another function enabling the animal to live well by contributing to voice. For Aristotle respiration sustains the animal's life by moderating the animal's heat, which is vital to life. He says that elsewhere

[18] Skilled humans playing these instruments seem to imbue them with voice. On ἀπότασιν see *HA* 545a14–20; on μέλος see *Meta*. 1053b34–35, *Pol*. 1340a13, a19, 1341a1, a14; on διάλεκτον see *HA* 535a30–31. Hicks 1907, 387 suggests that Aristotle approximates the instrument to the human voice by stages. "Range" means that the instrument has high and low notes, melody means that it orders these into pleasing pattern, and articulation means it conveys things such that it appears to talk. Ross 1961, 251 suggests that ἀπότασιν, based on *HA* 545a14–20, should be volume rather than range, but the passage more easily reads the other way.

[19] In 420b11 and b15 (cf. 408a34, 410b14, 433a17) Aristotle says something is reasonably said (εὐλόγως). It means here that he can be making reasonable determinations based upon plausible assumptions. Others may use "voice" differently, but he thinks that he makes a good case for his way of taking it.

the cause of breath's contribution to heat's preservation is discussed (420b21–22; see *De juv*. 4–6 and *De resp*. 1–10). Breath from respiration also enables some animals to have voice, and a further function of respiration is for smell. The tongue serves for taste, assisting animals to feed and keep alive, and for articulation of the voice of animals having voice. These multifunctioned parts of the body assume their roles in voice because of the capacity of hearing. Hearing permits the animal to discriminate sounds, to warn of danger to its life, and to interpret voice, thereby fostering a higher life. The tongue's articulation (διάλεκτον, 420b18) aids expression or interpretation (ἡ δ' ἑρμηνεία, b19–20) so that an animal articulating voiced sounds expresses something meaningful for and interpretable by other members of its species. In humans such expression and interpretation are ultimately the life of the mind. From the standpoint of the lower function, the higher function is a mere accident, something that just happens to go together with it. But since the higher function fits so essentially with the animal's capacities, it must be most natural for the animal. That hearing leads to the double and higher functioning of these other parts seems evidence of nature's providential arrangement. What is necessary for the organism's very being nature uses further for its well-being.

The throat (φάρυγξ) is an instrument for respiration; it provides the lung a passage for breath (420b22–24). Those land animals with lungs have more heat than the other animals – enabling them to be longer lived – and respiration maintains the heat around the region of the heart by moderating it (b24–27). The whole body requires cooling, but the chest region first (πρῶτος) since here resides the primary organ of the animal body and the source of its heat (see *De resp*. 478a21–25). The air breathed in cools the lungs and exhalation also removes some heat (see *De resp*. 21). Since air passes in and out through the throat, the throat readily serves as well for giving voice (cf. *HA* iv 9).

The air breathed in by sanguineous animals for cooling purposes may be further utilized by the soul to give rise to voice: "With the result that the blow of the respired air by the soul in these parts against that called the windpipe is voice" (ὥστε ἡ πληγὴ τοῦ ἀναπνεομένου ἀέρος ὑπὸ τῆς ἐν τούτοις τοῖς μορίοις ψυχῆς πρὸς τὴν καλουμένην ἀρτηρίαν φωνή ἐστιν, 420b27–29).[20] This account of voice gathered from what precedes explains voice's origin, its restriction to animals, and its limitation to particular sorts of animal sounds. Aristotle has already justified much of this definition but not fully the role of soul and windpipe. That voice has to arise under the direction of soul accords with its restriction to ensouled, perceptive beings, and that the windpipe enters into play has been prepared by restriction of voice to respiring animals and to specific bodily organs (see b9–14).

Much of the sound produced by animals is not voice, as already indicated (420b29–30, referring to b13–16). Even some sound made with the tongue and respired air, such as coughing, is not voice. For voice the soul utilizes air guided by

[20] Aristotle speaks of the part "*called* windpipe" (τὴν καλουμένην ἀρτηρίαν, 420b28–29), Hicks 1907, 389 observes, "because ἀρτηρία in general denotes any tube in the body, especially the arteries," while here it means ἡ τραχεῖα ἀρτηρία, the trachea or windpipe. Yet we must be clear that it is called "windpipe" by Aristotle himself.

phantasia to strike against the windpipe (b30–32). Aristotle speaks of the very air used for striking as ensouled and with some *phantasia* (ἔμψυχόν τε εἶναι τὸ τύπτον καὶ μετὰ φαντασίας τινός), because there is a significant sort of sound intended by the animal to be understood (σημαντικὸς γὰρ δή τις ψόφος ἐστὶν ἡ φωνή, b32–33). He resorts to *phantasia* as guiding the striking air to show the way it is ensouled and to include nonhuman animals with voice. Beasts express their passions; humans may also give voice to thought. Even thought may connect with *phantasia*. Since voice is the expression or interpretation of the *phantasia* or thought of the animal, Aristotle previously used the terms διάλεκτον (articulation, b8 and b18) and ἑρμηνεία (expression, b19–20) regarding voice.[21]

Voice more subtly than cough employs the respired air. With this air breathed in the animal strikes the air in the windpipe, which in turn strikes the windpipe (ἀλλὰ τούτῳ τύπτει τὸν ἐν τῇ ἀρτηρίᾳ πρὸς αὐτήν, 421a1). Aristotle may here make the account of voice parallel that of hearing. Much as the outer air strikes the air within the inner ear eventually to produce hearing of sound, the respired air strikes air within the windpipe, which then strikes the windpipe to produce voice. The air within the windpipe is analogous to that within the ear.[22] A sign that voice is not just any striking of air but the subtle striking under the control of soul is that animals give voice neither when they are inhaling nor when they are exhaling but when they hold their breath (κατέχοντα, a2–3). This is not a complete holding of breath but a respite from the usual inhaling and exhaling so that the soul can utilize the inhaled air for the special task of giving voice.[23]

It is manifest (φανερόν), Aristotle says, why fish, lacking a throat (φάρυγγα) since they do not receive respired air (οὐ δέχονται τὸν ἀέρα οὐδ' ἀναπνέουσιν), are voiceless (ἄφωνοι, 421a3–6; cf. 420b22–24).[24] Aristotle says it is another inquiry to

[21] Voice in humans symbolizes their thought (*DI* 16a3–9; see Polansky and Kuczewski 1990 and cf. Plato *Theaet*. 206d). Human voice takes the form of speech (*logos*); speech that says something about something expresses thought. Aristotle's view, following Plato, that human voice signifies thought and in general that voice signifies *phantasia* clarifies the way those animals with voice aim to have something heard. Speech can have many uses – telling jokes, praying, expressing wishes, commanding, and so on, as well as conveying information through declarative statements – and may be true, false, or neither. Understanding human voice as expressing thought permits all the different types of speech while avoiding having speech simply present a picture of reality. To speak truly is to say the things that are (τὰ ὄντα), in the sense of saying both what one thinks about things and the truth about the things. Voice can be so expressive because soul directs the striking of air against the windpipe and animals have a sense ready to apprehend the resulting sounds. Probably the fine control of the air is due to the soul's use of the connate breath (*pneuma*) to direct the breath taken in (see *De motu animalium* 10 for the soul's use of connate *pneuma*).

[22] See Philoponus *In de an*. 384,4–5 and Themistius *In de an*. 67,14–17 for this interpretation.

[23] In other contexts Aristotle explains the way animals increase muscular strength and control by holding their breath (see, e.g., *De somno* 456a15–16), and giving voice seems a somewhat similar exercise of muscular control.

[24] In 420b11 and b15 it was "reasonably said" (εὐλόγως) that fish lacking respiration lack voice and only respiring animals might have it. Now in 421a3 it is "manifest" (φανερόν) why fish are voiceless. This is now much better established because it is much clearer what voice is and why fish must be without it. It might be noted how being voiceless (ἄφωνοι) relates to being soundless (ἄψοφον, 420a7–19). Fish are voiceless since without respired air, and air is what is soundless but crucial for the origin, propagation, and hearing of sound.

determine why fish lack these parts and functions (421a6). In the *Parts of Animals* 669a2–5 and *De respiratione* 474b25–475a11 and 476a1–2 he makes clear that fish as water animals do not need lungs and throat because they cool themselves by means of their gills. Though lack of the requisite body parts entails lack of voice, fish are voiceless and without the body parts for voice, Aristotle must believe, because their soul is incapable of it and without need of it, and hence they have the sort of body suiting their soul.

As the previous chapter on vision, this on hearing does not develop a definition of the sense but concentrates upon the sensible object and clears up the rest of the sensory apparatus. This suffices for ensuring that each of the senses will analogously be the capacity to become what sort of thing the sensible object is already in actuality. Confirmed is the role of a medium in sense-perceiving as becoming informed by the sensible object through the action upon the medium and sense organ. And treatment of the medium and unusual phenomena, such as the phosphorescent, echo, and ringing in the ear, discloses enough about the sense organ to hint at why the sense discriminates the sensible object through difference from its own condition.

9

Smell and Odor

The two senses already considered, sight and hearing, contribute most to the higher life of animals. Sight especially facilitates recognition of things by disclosing many differences (see *Meta.* 980a21–27), while hearing permits communication by voice for the greatest learning (980b22–25). The treatment of these distance senses shows the need for media and how sense perceives what is there in actuality to be perceived. The sense organ that is much like the medium receives the action of the sensible object by way of the medium, rather than being bombarded by effluences. Smell is also a distance sense, but more closely tied to the contact senses than the other distance senses. Odor and flavor are linked so that smell is somehow connected with taste, that is, a contact sense. Smell and taste may be particularly conjoined for animals that only smell by way of respiration through the throat. As a distance sense with close ties to the contact senses, smell is a sort of intermediate (μέση) of the senses (see *De sensu* 445a4–16). Typically lists of the five senses place smell between the distance and contact senses (e.g., 424b23). That there are two contact senses and three distance senses, with one of the distance senses standing between the two groups drawing them together, indicates some natural ordering of the five senses and possible completeness of the set of five.

The connection of smell with contact sense and its relative imprecision in humans put it last among the distance senses. The human sense of smell is poorest of that of any of the animals and the weakest of the human senses (*De sensu* 440b30–441a3). In this chapter Aristotle begins comparison of human sense capacity with that of other animals. Obviously humans have more direct access to their own sense perception than to that of the beasts, but the perception of the other animals can be understood through perceiving them perceive, that is, observing their body parts and their actions, and by analogy with human perceiving. In making comparison of human sensitivity with that of other animals, it might be supposed that Aristotle mainly deals with animals of comparable size since very tiny animals might perceive very tiny things better than would large animals. Yet because for Aristotle, unlike Democritus and Plato, the world is infinitely divisible and generally uniform in composition all the way down, the size of the animal impacts little on comparative

precision, though Aristotle says the human distance senses are the worst for animals its size, while it has the best discriminative powers (see *GA* 781b17–22).

This chapter faces the special difficulties that this sense of smell and its object pose for the general account of sense. If the human sense of smell is imprecise, can it avoid being deceptive, or will the human sense of smell still perceive things truly as they are to determine exactly what odor is? Will this sense resemble the other distance senses in employing a medium rather than arising through effluences? And might smell be more than one faculty because some animals smell in water without respiration whereas others only smell in air through respiration? Many animals see or hear in both water and air, but they smell just in one or the other, so can there be but a single sense of smell?

421a7–b8 Aristotle begins his account of smell and its object (ὀσμῆς καὶ ὀσφραντοῦ) by declaring them less well determined (ἧττον εὐδιόριστόν) than the other distance senses and their objects because it is much less clear what sort of thing odor (ὀσμή) is than sound, light, or color (421a7–9). The word for smell, ὀσμή, can obviously be used for the faculty of smell and for its object, odor, since Aristotle uses it for the faculty in a7 and then quickly switches to the sensible object in a8. This rapid switch nicely suggests that obscurity about the object has to mean obscurity about the faculty and vice versa. The reason for the indeterminacy of smell and its object is that we humans do not have a precise sense (οὐκ ἔχομεν ἀκριβῆ) but one inferior to that of many animals (a9–10).[1] In *De sensu* 440b30–441a3 Aristotle goes further to say the human sense of smell is inferior to that of all the other animals. The *De anima* does not need to make such a vast claim, and it is not the place for the causal explanation, as urged in *De sensu* 5, that the human sense organ's position in the head with coldest brain limits its sensitivity.

Aristotle gives this account of the human situation with regard to the sense of smell and its objects:

> The reason [why odor is unclear to us] is that this sense we have is not precise, but inferior to that of many animals; for the human smells poorly, and smells none of the odors without the painful or the pleasant, since the sense organ is not precise; it is well said also that the hard-eyed animals thus perceive colors, indeed the differences of the colors are not distinct to them except by the fearful and unfearful; thus also is the class of humans with respect to odors. αἴτιον δ' ὅτι τὴν αἴσθησιν ταύτην οὐκ ἔχομεν ἀκριβῆ, ἀλλὰ χείρω πολλῶν ζώων · φαύλως γὰρ ὁ ἄνθρωπος ὀσμᾶται, καὶ οὐθενὸς ὀσφραίντεται τῶν ὀσφραντῶν ἄνευ τοῦ λυπηροῦ ἢ τοῦ ἡδέος, ὡς οὐκ ὄντος ἀκριβοῦς τοῦ αἰσθητηρίου· εὖλογον δ' οὕτω καὶ τὰ σκληρόφθαλμα τῶν χρωμάτων αἰσθάνεσθαι, καὶ μὴ διαδήλους αὐτοῖς εἶναι τὰς διαφορὰς τῶν χρωμάτων πλὴν τῷ φοβερῷ καὶ ἀφόβῳ· οὕτω δὲ καὶ τὰς ὀσμὰς τὸ τῶν ἀνθρώπων γένος. (421a9–16)

Whereas in the cases of sight and hearing we see colors and hear sounds without regard to whether they are pleasant or painful to us, thus we are aware of the

[1] *GA* 781a14–16 says regarding precision with the senses, "one way to hear and to smell precisely is to perceive all the underlying differences of the perceptibles, one way is from far both to hear and to smell." The human sense of smell may be imprecise in both ways.

differences of colors and sounds throughout all or much of their ranges, we tend to be limited only to odors that are pleasant or painful. The hard-eyed animals, Aristotle suggests, are in a similar situation with regard to colors: they distinguish well only differences in colors of things fearful and not fearful.[2] Though Aristotle makes it sound as if humans smell none (οὐθενός) of the odors without their being painful or pleasant (a11), he has also indicated that we do smell poorly (φαύλως), and when he speaks of the hard-eyed animals he says that the differences of color are not distinct (διαδήλους) to them except for the fearful and unfearful ones, and he adds that this is the way humans are with odors (a13–16).[3] Hence it must in fact be the case that while humans tend to smell only certain odors, they can smell, if not well, other odors. If this were not so, how would we know that there are other odors besides those we are precise about? Aristotle is exaggerating to emphasize his point, for surely we smell odors that are neither pleasant nor painful to us, but we are generally hardly concerned about these and do not perceive them too distinctly.

That humans tend only to smell odors that are pleasant or painful does not mean that they only smell what contributes to nutrition, since they also smell such things as pleasant flowers or offensive odors. *De sensu* 5.443b17–444a3 distinguishes two classes of odors, those connected with nutrition and taste that are only pleasant when the animal is hungry or likes the food, and so pleasant or painful accidentally, and those that are pleasant in virtue of themselves, such as flowers. Aristotle observes that only humans smell this latter class, though the beasts do smell malodorous things that are destructive to their being (444b28–445a4). Perhaps the beasts merely pay little attention to the odors pleasant in themselves? He also reports that other sorts of things have odor: the four elements are odorless, but combinations such as salt, certain metals, and wood have some odor (443a9–21). Clearly then, while humans readily smell what is pleasant or painful, if they care to pay attention, they may smell dull odors that are neither particularly pleasant nor painful, such as metals. Obviously Aristotle has smelled such objects. Yet even though humans pay attention to a class of odors ignored by the beasts, still Aristotle assigns imprecise smell to humans. But neither what is said about the imprecision and limitation of the human sense of smell here in the *De anima* nor the classes of odors distinguished in the *De sensu* lead to the view that humans are deceived about odors. They tend to notice only certain odors, but they can be precise about these and when concerned to do so they can discern more odors than these. It is the case, though, that we do not take much interest in these other odors and cannot smell them from any great distance as seems possible for other animals with a better sense of smell. None of what Aristotle says about smell and odor need harm his realist view that perception perceives its objects as they are.

[2] Referring to *PA* 657b29–658a10, Hicks 1907, 391 suggests that insects are the hard-eyed animals. Ross 1961, 254, referring to *HA* 525b15–526a11, 537b12, and *PA* 683a27, adds hard-skinned crustaceans, and referring to 691a24 adds oviparous quadrupeds such as lizards.

[3] For further use of διαδήλους, see 421a31, and for clarification of the use of φαύλως, see 421b8 (and 422a26–31), which shows that it is applicable when we perceive sensible objects though hardly at all and poorly because they are too weak or too strong.

Since Aristotle explains the limitation of precision in smell to pleasant and painful odors by the sense organ's not being precise (421a12–13), and hard-eyed animals have analogous limitation, the condition of the *sense organ* appears to account for the precision of sense perception. Humans have their nose in the extremely cold head and must inhale to smell, and hard eyes perhaps are moved less well by colors than soft eyes. But while the sense organ may be better or worse suited for certain perceptions, and hence provide some explanation for not being precise, in fact the sense, that is, the capacity of soul, should be determinative of the animal's precision in sense perception. Individual animals may have defective, diseased, or mutilated organs (see 408b21–22 and 432b21–26), but a whole species or genus of animal cannot be excluded from superior sense perception merely by its sense organ. Sense organs are instruments of the soul, and even the senses that are not precise do well with certain classes of sensible objects; nature provides the animal the sorts of sense organs the type of soul and life requires.

A way to get clearer about odors is to consider the way the forms of flavor (τὰ εἴδη τῶν χυμῶν) are analogous (ἀνάλογον) to the forms of odor (421a16–18). This is the first prominent appearance of "forms" (εἴδη) regarding the sensibles and their range. Plato's *Timaeus* 66d denies that odors can be distinguished into various forms; Aristotle seems to be challenging this view so that smell can be like the other senses. If humans have a more precise (ἀκριβεστέραν) sense of taste than we have of smell, because taste is a contact sense, but odors follow along with flavors, we can have some confidence in our discernment of odors (421a18–19). He assures us that the contact senses of humans are most precise, and though humans are surpassed by many animals in the other senses, humans have by far the most precise contact senses of any of the animals (ταύτην δ' ἔχειν τὴν αἴσθησιν τὸν ἄνθρωπον ἀκριβεστάτην· ἐν μὲν γὰρ ταῖς ἄλλαις λείπεται πολλῶν τῶν ζώων, κατὰ δὲ τὴν ἁφὴν πολλῷ τῶν ἄλλων διαφερόντως ἀκριβοῖ, a19–22). Nothing was said previously to discredit human vision or hearing, but he here acknowledges that these distance senses in humans are less precise than those of some other animals. This need only mean that some other animals see well and hear well over greater distances. If human distance senses do not surpass those of the rest of the animals but their contact senses do, then will humans not only have the best contact senses but also contact senses that surpass in precision their own distance senses? This surely is the case in comparison with smell, but with regard to vision and hearing it is less clear.[4]

[4] Hicks 1907, 391–392 insists that Aristotle argues that the human contact senses surpass the human distance senses in exactness with the argument that the contact senses are more exact in humans than in any other other animal though other animals surpass our distance senses. But Hicks's way of construing the argument is question begging since even if we have inferior distance senses but the most precise contact sense of all, this would only mean the human contact sense is more precise than the human distance sense if the beasts have such good contact sense that our surpassing them in this has to mean that our contact sense must surpass our distance senses in precision. But Aristotle really only compares the same sort of sense for precision between humans and beasts (see 421a10, a20–21; and see esp. *GA* 781b19–22), except possibly for the comparison of the human senses of taste and smell, where there is a wide disparity in precision of perception (see 421a18–19, a31–32, and the parallel passage in *De sensu* 440b30–441a3).

If we look to the discussion of precision of sense in *Generation of Animals* 781a14–16, where greater precision has to do with (a) perceiving at greater distance or (b) perceiving a greater range of objects, sight and hearing must surely surpass touch with regard to (a) whatever the case is with (b). It is doubtfully edifying, then, to consider overmuch which of the human senses is most precise. But we may note that a passage such as *Metaphysics* 980a24–27 boosts vision as disclosing the most differences, though there is no mention of precision. How, we may wonder, can this be the case since touch has more ranges of sensibles, such as hot-cold, moist-dry, hard-soft, and so on? The answer seems to be that typically many, many more objects are presently visible that are not touching us than are touching us, and this applies for proper, common, and accidental sensibles. And in *Nicomachean Ethics* 1175b36–1176a3 Aristotle says that vision differs from touch in purity (καθαρειότητι), and hearing and smell from taste in purity. The distance senses presumably are more pure because they do not require contact with the sensible object and so involvement with its matter, and perhaps also because enjoyment of these pleasures less involves our body and is not so related with pains. Purity, however, is unlikely the same as precision (but see *GA* 781b19–22).

As some evidence that humans have the most precise contact sense, Aristotle insists that humans are the most intelligent (φρονιμώτατον) of the animals because of their most precise contact senses (421a22–23).[5] Superior human intelligence cannot derive from superior distance senses because their distance senses do not clearly surpass those of other animals, but intelligence may link with contact sense, if humans have the best contact sense. Aristotle says that a sign of the connection of superior contact senses to superior intelligence is that within the class of humans those groups having soft flesh (μαλακόσαρκοι) are better naturally endowed (εὐφυεῖς) with thought (διάνοιαν) than those that are hard-fleshed, and no other differences in sense organs have such an effect on intelligence (a23–26).[6] "Hard-fleshed" (σκληρόσαρκοι, a25) resembles "hard-eyed" (σκληρόφθαλμα, a13), which was also a liability, only this is a difference within the human species rather than a difference of a class of animals. Possession of the most precise contact sense does not by itself bestow greater intelligence, since it works along with the other capacities of the soul, but differences of the other senses within the human species do not similarly impact upon intelligence.

Why might superior contact senses contribute to greater intelligence, and among humans why are those with more supple flesh more intelligent? Both have to do with touch's status as the basic sense. Touch has the widest range of sensible objects: hot-cold, wet-dry, and so on. The more that this sense can discriminate, the better basis it gives to the whole of the sensibility of the animal. Softer flesh is more easily moved by tangibles with resulting greater sensitivity. Touch also enters prominently

[5] The term φρονιμώτατον may cover both practical and theoretical sagacity.

[6] While this passage might encourage interesting speculation about forms of intelligence testing in ancient schools, what Aristotle has in mind is the ancient linking of geographical and other factors to different human capacities (see, e.g., *Politics* vii 7).

into perceiving common sensibles and consequently accidental sensibles, so that a better sense of touch opens to many more differences. The more that the sensibility discriminates, that is, the more differences it distinguishes, the more it prepares intellect to be aware of things and just as they are. A good sense of touch serves as a basis for a good sensibility generally because of its range of sensibility; because touch pervades the whole body, each of the other sense organs is in addition an organ of touch. Thus, a good sense of touch requires a good composition in the body overall and a better body suits a better soul.[7] From a political-ethical standpoint, softness and refined touch and taste lead humans to be more demanding even in the satisfaction of their animal desires, and they may be driven toward desires going beyond necessities. The wish for luxuries accompanies development of the arts and sciences, fostering intellect while jeopardizing character. Thus refined touch and taste draw humans to greater cognizance of and conversance with the varied world of things. Aristotle does not suppose humans differ so much regionally with regard to the distance senses as with the contact senses, with corresponding differences in intelligence.

Aristotle observes that the names "sweet" (γλυκύς) and "bitter" (πικρός) are applied to both odors and flavors (421a26–27). This is not unprecedented because he previously pointed out that the names "sharp" and "flat" are used both for sounds and for tangibles (see 420a29–b4). Most things likely have their odor and flavor analogous (ἀνάλογον) or in proportion (cf. 421a16–18) – that is, what has a sweet odor also has a sweet flavor – but for some they are contrary, as cinnamon smells sweet but does not taste sweet (a27–29).[8] Other possible odors are pungent (δριμεῖα), harsh (αὐστηρά), sharp (ὀξεῖα), and oily (λιπαρά, a29–30). These also seem to be names of flavors, and now Aristotle can resume his argument that it is because odors are not very distinct (διαδήλους) just as flavors and that there is considerable similarity of the matters (τῶν πραγμάτων), odors have taken their names from flavors (a31–b1). That the sense of smell is not precise has been stated before (a7, a9–16) as has that odors are analogous with flavors (see a16–18). That the names of flavors have priority over those of odors arises not from etymological investigation, but the view of the respective precision of the senses. And the appropriateness of the shared names because of the similarity of the matters is illustrated by the sweetness of saffron and honey, pungency of thyme and other such things, and the same is said to hold for the other odors and flavors (b1–3). Examples provided of the various odors are saffron and honey for sweet, and thyme as pungent (b1–3). What these examples aim to illustrate is that odor and flavor correspond for many things, so that it is plausible that odors and flavors share names. We see as well how humans make the effort to develop analytically a set of descriptive terms covering the range of a sense's objects. We can speak of the characteristic and perhaps

[7] Aquinas *In de an*. §§483–485 stresses that touch is the basis of sensibility and requires a good composition of the body; and see *PA* 660a12–14.

[8] Aristotle eventually says that flavors pertain to the moist whereas odors pertain to the dry, so they should hardly be expected to correspond perfectly (422a6–7).

unique saffron, honey, or thyme flavor and odor with the terms "sweet," "pungent," "harsh," and so on.[9] The fact that not all of the flavors and odors correspond, as with cinnamon, shows that each sense has to be authoritative in its own domain.

In 422b12–13 in the treatment of the sense of taste, Aristotle adds to the list of flavors the salty (ἁλμυρόν) and the sour (στρυφνόν, cf. *De sensu* 442a19 and 443b10). This puts the number of named odors and flavors at eight. In *De sensu* 442a20–29 it is noted that there are seven colors. The underlying thought seems to be that where there is a continuous range between two contraries the continuity is potentially infinitely divisible if the divisions are unequal, but when there are equal divisions there is only a finite number of divisions (see 445b20–29). The continuous range might receive any number of divisions but Aristotle tends to have seven or eight. Starting from the octave in musical sound, his accounts of the rest of the special sensibles seek seven or eight within the range of each. There is thus some broad analogy of the ranges of sensible objects.[10] It should be clear that even where animals smell only selective odors, or are sensitive only to some limited class of sensibles, that these are part of the whole range of the sensibles of the sense. Humans can smell all of the named odors, but they perhaps only smell them well when they are pleasant or painful to the person. We may be pained or pleased by certain instances of any of the odors, as we might find pleasant the sweetness of honey but dislike the sweet smell of saffron. Thus both classes of odors distinguished in the *De sensu*, the odors pleasant or painful accidentally because connected with nutrition and those pleasant or painful in virtue of themselves, belong within the single range of odors distinguished into eight forms named after flavors. Because each of the proper senses has a range of sensibles with seven or eight main forms – and touch has multiple ranges – and animals with the appropriate senses have access to all these, more or less well, Aristotle can hold that animals with the five senses have access to all sensibles (see iii 1). Therefore too the five senses perceive their proper objects as they are.

There is further analogy among sensible objects regarding the strength of the objects. The sense perceives both the object and the privation of the object:

> Just as is the case in hearing also for each of the senses, hearing is of the audible and inaudible (τοῦ ἀκουστοῦ καὶ ἀνηκούστου), vision of the visible and invisible (τοῦ ὁρατοῦ καὶ ἀοράτου), and smell of the odorous and inodorous (ἡ ὄσφρησις τοῦ ὀσφραντοῦ καὶ ἀνοσφράντου). Inodorous may be that incapable of any odor (ὀσμήν) whatsoever, or that having slight (μικράν) or negligible (φαυλήν) odor. Similarly also the tasteless (τὸ ἄγευστον) is said. (421b3–8; cf. 422a20–31 and 424a10–15)

[9] It seems much less obvious that all the odors and flavors of things such as honey, saffron, and thyme could be derived from the mixtures of named odors and flavors than that any color, say of honey, saffron, and thyme, could be derived from the named colors.

[10] Perhaps Plato's *Timaeus* initiates both the analogy of all the sensible objects – he attributes all of them to cutting and compressing (65c2–6) – and the viewing of their range as like the musical octave. Clear advantages for Aristotle in having the limited number of sensibles within each range are its allowance for completeness and the aid it provides in resisting Democritean reduction of the proper sensibles to the common sensibles. E.g., since there are infinitely many figures, Democritus should have unlimitedly many flavors, and so on (see *De sensu* 442a29–b23, esp. b21–23; cf. 445b20–446a20).

These passages referring to sensible and *insensible* objects should not be too readily identified with the earlier passages on the colorless (ἄχρουν, 418b26–419a1) and soundless (ἄψοφον, 420a7–9) that pertain more to the sense medium and organ, though there is clear connection inasmuch as the colorless and soundless are subclasses of the invisible and inaudible, and sensible objects are rather like the sense medium and organ. Notice that the earlier passages referred to the sensible object more properly, colorless or soundless, to help determine what should be receptive to them, whereas the present passage refers to the sensible and insensible as inhering in its substratum. What is insensible, as the inodorous, may have no odor at all or weak odor; that is, it is incapable or little capable of moving the medium or organ. That the same applies to flavorless objects is only to be expected given the analogy of odor and flavor. In 422a20–31 it is added that not only weak sensible objects are insensible but too intense objects as well. This line of reflection shows that the imprecision of smell is not due primarily to lack of strength (or excessive strength) of its objects since there are weakly (or overly) perceptible objects of the other senses as well. Colors can be more or less intense, sounds can be loud or soft, and so on. Aristotle is referring to imperceptible objects, which include imperceptible differences of objects. Animals become unable to distinguish colors, sounds, odors, flavors when differences become too small or they make such discriminations only with difficulty. For each of the proper sensibles there will be at least one pair of contraries pertaining to kinds, such as white and black in color, high and low in sound, and sweet and bitter in odor. The other sort of contrariety, stronger versus weaker – whether in individual sensibles or in their differences, for example, brighter and duller color, louder and softer sound, or more intense and more insipid flavor – cuts across the sensibles and has to do with more or less rather than kind. This sort of discussion of what is sensible and insensible gets at the discerning power of the sense. Not only the proper sensibles are perceived, but also their privations and the failures of the sense to perceive. This again supports the reliability of the proper senses inasmuch as they perceive even problematic objects and when perceiving is not so successful.

There is now full clarity about how a sense may be imprecise. Where a sense tends to perceive merely what is pleasant or painful to it, it perceives other things poorly and indistinctly. In addition the sense may require more or less intensity of its sensible objects or closer proximity. A sense may only disclose quite strong or fairly close sensible objects. Something may be imperceptible not only by being outside the class of painful or pleasant sensibles the animal typically perceives but also by being only slightly sensible. Imprecision of the proper senses thus pertains to the extension and acuity of the sense rather than to distortion or deception of the sense. A sense despite not being precise will nonetheless be truthful about its proper objects. The sense of smell is imprecise in humans because of its usual limitation to pleasant or painful odors and to its requiring stronger smelling objects to become operative than required by other animals.[11]

[11] Modern discussions of the human sense of smell may seem to oppose Aristotle's emphasis upon the imprecision of smell and its inferiority to contact sense. For example, Collins 2004, 28 states,

421b8–422a7 Aristotle turns from the theme of the imprecision of human smell and the variety within odor, to the way smell occurs through a medium and consequently what odor, the object of smell, is. This reflection will confirm that odor is not an effluence. Smelling (ἡ ὄσφρησις) takes place through a medium, such as air or water (421b8–9). In fact, as suggested in 419a32–b1, the medium may be some feature common to air and water – as the transparent for vision – enabling animals to receive the action of odor. Aristotle cannot assume this now because he wishes to consider the way different animals smell in air and water. That aquatic animals (τὰ ἔνυδρα) seem to smell odor, whether they are bloodless or blooded animals, much as other animals perceive in air, would show that water can act as medium (421b9–11).[12] Evidence for this sensitivity to odor is that some of the aquatic animals seek nutriment at a distance drawn by its odor (b11–13). This poses a difficulty (ἄπορον) if smell is supposed the same sense in all animals, however, since most water animals do not have respiration, as do humans, and so cannot require respiration to smell (b13–15). Is the operation of smell, then, the same for all animals, or is there more than one faculty in play?

Obviously humans only smell when they breathe in air rather than when they exhale or hold their breath (421b14–15). This may apply as well to many blooded animals, but all Aristotle now needs is that at least humans only smell when they inhale. The case of the respiring aquatic animals, such as cetaceans and seals, may seem especially problematic since if they only smell when respiring air, how can they detect food in the water by smell? Whether humans are far from or near to their object, Aristotle says, even when the odorous is placed right up into the nostril (ἐπὶ τοῦ μυκτῆρος ἐντός), they do not smell if they are not inhaling (b15–16). That what is right up against the sense organ is imperceptible holds for the other senses as well – it is a key argument for media for sense perception (cf. 419a25–31) – but peculiar to the case of smell in humans is that it requires inhaling the air, which is evident enough if we try it (421b17–19). Hence the bloodless animals, none of which respires (and any blooded animals that do not respire), might have a sense different from smell and the five acknowledged senses (b19–21). But this is impossible if the animal perceives odor since Aristotle insists that it is the sense of smell (ὄσφρησις) that has perception of odor (τοῦ ὀσφραντοῦ), both the malodorous (δυσώδους) and fine odored (εὐώδους, b21–23). Back in 421a9–13 humans were said

"Researchers estimate that between 80 and 90 percent of a food's 'flavor' actually comes from its smell. The human tongue can detect five primary tastes: salty, sweet, sour, bitter, and *umami*, what the Japanese call a rich full taste stimulated by the amino acids in certain foods such as mushrooms and seaweed. By contrast, the human nose, with some 350 nerve receptors, can identify more than 10,000 distinctive odors. That sensitivity, some theorize, evolved to keep humans from eating spoiled or poisonous substances – the pungency making the substance unappetizing." Notice that this misses Aristotle's point, which is that smell does not seem to us to be in play often in ordinary human experience. Also in regard to flavors it lists kinds of flavors whereas with odors it lists various odorous things. Surely we can distinguish many, many foods by taste. Aristotle was likely quite clear that when we hold our breath or hold our nose we considerably weaken the flavor of food.

[12] Some aquatic animals breathe air, such as cetacea and seals. Among the blooded aquatic animals are fish and reptiles. Some bloodless aquatic animals are testacea, crustacea, and cephalopods.

to smell only what is pleasant or painful, so now he insists that whatever sort of odor is perceived, the malodorous or fine odored, must be a case of smelling. That animals necessarily have a sense of smell even without respiration is confirmed by the apparent destruction of such animals from the same strong odors that harm humans, such as bitumen and brimstone (b23–26).[13]

That animals can smell even without respiration has been suggested by the way aquatic or bloodless animals locate food at a distance by odor and the vulnerability of bloodless animals to noxious odors. Aristotle needs a way to account for perceiving odor by respiring and nonrespiring animals that obviates dividing the capacity into more than one sense. Those animals such as humans that must breathe to smell differ in their sense organ because it has a kind of protective barrier, much as eyelids cover the eyes of some animals (421b26–28; cf. *De sensu* 444b20–28). As the eyes of animals with eyelids are to the eyes of hard-eyed animals, so the organ of smell of animals with respiration is to the organ of those that do not have to respire to smell. When the eyelids cover the eyes, there is no seeing, and similarly so long as the animal does not inhale it is as if the organ for smell is covered (b28–422a3). Hard-eyed animals lacking eyelids do not first have to open their eyes to see; similarly, animals that do not smell along with respiration have an uncovered organ capable of smell (τὸ ὀσφραντικὸν αἰσθητήριον τοῖς μὲν ἀκάλυφες εἶναι).[14] The requirement of respiration for smell thus compares to a covering of the sense organ: inhaling removes the covering thus opening the passages. Such explanation of the role of respiration for smell, with the attendant clarification of the medium for smell, justifies viewing smell as a single kind of sense. Were additional sense faculties needed, there would have to be more than five senses (see *De sensu* 444b19–20). Respiration, for animals having it, may serve the double function of cooling the animal and allowing for voice (420b16–22), and it may have the further function of permitting smell (see *De sensu* 444a25–28 and *De resp*. 473a23–25). Hearing seems the only distance sense with no natural covering; this may contribute to its significance for humans.

Since respiring animals need to inhale to smell, and otherwise the sense organ is as if covered, they do not smell in water (422a3–6). But rather than saying "water," Aristotle uses the word for moist or fluid (ἐν τῷ ὑγρῷ, a4 and a5). In fact air is also fluid (see *De sensu* 443b5–6). His purpose in using the term for moist rather than that for water is to prepare for the coming point that the odorous is dry.

[13] Aristotle says "*appears* being destroyed" (φθειρόμενα φαίνεται) by strong odors in 421b23 because this is problematic. Too intense odors should just destroy the sense itself (cf. 435b7–9) rather than the animal and this is perhaps what he means. (He may ignore the difficulty since the arguments in iii 1 ensure that nonrespiring animals can still smell.) Not the odor but something else accompanying it should be lethal since death must result from an animal's becoming cold and dry (see, e.g., *De long*. 466a18–20). Hicks 1907, 396 recognizes this problem for the argument. In ii 12.424b10–12 it is not sound but what bears the sound that shatters the tree, and similarly not foul odors but they along with their substrata somehow kill animals.

[14] The hard-eyed animals have imprecise vision of color (421a13–15), but the capacity for smell of some nonrespiring animals surpasses that of some respiring animals. Not seeing when the eyes are shut is different from discriminating darkness when there is no light (see 422a20–21).

Whereas animals that hear in the air might hear in water as well – hearing has no covering – respiring animals only smell through breathing in air. Smell takes place for animals either in water or in air, but not in both. As with the other senses, there is a medium for smell, and this is something common to water and air (see 419a32–b1).

Smell occurs through water and air, both of which are moist and take on odor, so odor may have to do with what is dry. The moist medium, potentially dry, is capable of being acted upon by odor as dry. Thinking along these lines, Aristotle concludes discussion of smell by asserting that odor is among dry things and flavor among moist things, and the sense organ capable of smell is in potentiality dry such as the odor (ἔστι δ' ἡ ὀσμὴ τοῦ ξηροῦ, ὥσπερ ὁ χυμὸς τοῦ ὑγροῦ, τὸ δὲ ὀσφραντικὸν αἰσθητήριον δυνάμει τοιοῦτον, 422a6–7). This is an account of the object of smell and the sense organ by way of the medium. *De sensu* 5.443b1–8 develops the view that odor is the flavored dry (τὸ ἔγχυμον ξηρόν) that washes off (ἀπόπλυσις) in the moist medium and affects it. As the flavored dry, odors clearly are analogous to flavors. In fact the flavorful is always dry, but whereas odor as the flavored dry acts on the medium external to the sense organ, flavor for taste is already enmattered in a body that either is moist or becomes moistened in the mouth in order to be tasteable in actuality. Since the flavored dry washes off in the medium, the medium must be receptive to odor and its substratum, as wine mixed with water. This account opposes the effluence theories of odor that make it always smokelike, that is, projectile particles in air (443a21–28). Instead odor washes off the flavored dry affecting the moist medium. The odorous in conjunction with its medium impacts on the sense organ either something like the lapping of waves of the sea, which might also be something like the unified masses of agitated air that convey sound to the ear, or like wine dripped into water. The sense organ for smell, whether the airy nose of a respiring animal or a watery organ in an aquatic animal, will also be moist and capable of being acted upon by the dry odorous object by means of the medium. The sense will of course be what is capable of becoming the sort of thing its object is in actuality. Unlike in the two previous chapters on the distance senses, because of the imprecision of smell, it has taken the whole chapter to offer some account of the object of smell.

The *De sensu* provides some explanation of the poor capacity of smell in humans and our unique attentive perception of odors irrelevant to nutrition such as flowers (see 444a8–b2). The nostrils are in the head, a particularly moist and cool location in humans. Extreme moisture and coolness limit openness to the dryness of odor, but they also cause extra need for the heat deriving from odor of such things as flowers and perfumes. It is as if humans have a permanent head cold, at least with respect to the power to smell. Nonetheless, the imprecise sense of smell is not deceptive and suffices for human life.

10

Taste Is a Contact Sense; the Tasteable

Having completed the accounts of vision, hearing, and smell, Aristotle turns from the distance to the contact senses. He has investigated sensible objects and the distance senses' need for media to show that the sense power is potentially like what the sensible object is in actuality. The medium undergoes the assimilating action of the sensible object, as consequently does the sense organ, rather than serving as mere thoroughfares for effluences flowing from objects. His predecessors turn all sense perception into some sort of touch; that is, corporeal effluences or projectiles having magnitude, figure, and motion – common sensibles – give rise to what appears to be perception of proper sensibles (*De sensu* 442a29–b12). The accounts offered of the distance senses have attacked this approach. Can he follow through with the contact senses and reconceive them so that touch will in fact be the fundamental sense without succumbing to the predecessors' position? The contact senses should also require media in potentiality to their sensible objects. But taste and touch make a medium seem unlikely if the tongue or flesh is a sense organ tasting or feeling through direct contact. Aristotle argues instead that the tongue or outer flesh is part of the medium for taste or touch, the true organ being farther within.

Beyond cohering with the accounts of the distance senses, treatment of the contact senses has a key role in preparing for the final definition of sense. The objects of the contact senses, and the others as well, seem to be a *logos* or ratio of the contraries within the range of what is sensible. This pertains most obviously to the object of touch, a tangible body, and to the sense medium and organ that are also tangible bodies. As tangible they must be a ratio of at least hot, cold, wet, and dry. Since the sense itself must be in potentiality what the sensible object is in actuality, the sense too will be some sort of ratio or a mean between extremes. The sense as mean helps explain its cognizance of sensible differences. The differences are differences of the sensibles from each other and also from the sense apparatus itself.

A remarkable point about this chapter on taste is that it concentrates upon the tasteable (τὸ γευστόν) rather than flavor (ὁ χυμός). This is the first mention

of the tasteable as the object of the sense of taste (but see 421b8). Previously it has always been flavor (e.g., 414b11–14, 421a17–18, a26–b1). Whereas flavor is the form, the tasteable is composite of form and matter. Much as we see a colored surface, that is, the form color in its substratum, we taste a flavored body, which turns out to be flavored moisture. Contact senses must evidently have the sensory apparatus contacted by the sensible object in its substratum, as must be the case for the distance senses as well. Concentrating upon the composite enables Aristotle to clarify for this particular sense the sensible object, medium, and organ and the way tasting occurs, and to disclose more generally that sense media and organs are acted upon by the enmattered sensible object.

422a8–19 Aristotle's account of taste is largely an explication of the opening statement that that which is tasteable is something tangible (τὸ δὲ γευστόν ἐστιν ἁπτόν τι, 422a8). The Greek for the sense of touch (ἡ ἁφή) is used as well for contact, fastening, and kindling.[1] Obviously, then, touch is a contact sense, but he offers argument that taste is in fact also a contact sense, along with determining the implication of being a contact sense. Taste as a contact sense will not perceive through an external body between (μεταξύ) the animal that is tasting and what is tasted, for neither can the sense of touch, that is, touch will not perceive its object through an external body between the object and the animal (a8–10).[2] This is the implication of being a contact sense, and since it clearly applies for touch, the case is strengthened for taste, so that it is shown likely that taste is a contact sense. Now he does recognize that animals can feel objects without direct contact, when an external body is closely attached and flexible, as when humans feel things through gloves (see 423a2–8), or they may use a rigid object such as a cane to poke at things. But generally nothing can be between a contact sense and its object. This means that no external body acts as medium for taste since what is tasted must be in direct contact with the animal's body. Hence the tasteable rather than flavor is what is directly in contact for ordinary contact is with bodies.

With what is the animal in contact when there is tasting, that is, what more precisely is the tasteable? He announces, "and the body in which is the flavor, is the tasteable, in moisture as in matter" (τὸ σῶμα δὲ ἐν ᾧ ὁ χυμός, τὸ γευστόν, ἐν ὑγρῷ ὡς ὕλῃ, 422a10–11). A flavorful body is tasteable, for example, salt, but to be tasteable in actuality this body needs to be moistened (see a17–19). A tasteable body thus moistened is surely something tangible (ἁπτόν τι, a11). At the end of the previous chapter Aristotle suggested that flavor is among things that are moist (422a6–7). Flavor in actuality must be enmattered in moisture. Beverage and food mixed with

[1] Heraclitus DK 22B26 plays on these various meanings of the term: ἄνθρωπος ἐν εὐφρόνῃ φάος ἅπτεται ἑαυτῷ [ἀποθανὼν] ἀποσβεσθεὶς ὄψεις, ζῶν δὲ ἅπτεται τεθνεῶτος εὕδων [ἀποσβεσθεὶς ὄψεις], ἐγρηγορὼς ἅπτεται εὕδοντος. "A human in the night kindles (*haptetai*) a light for himself when his sight is extinguished; living he touches (*haptetai*) the dead when asleep, when awake he touches (*haptetai*) the sleeper."

[2] Ross 1961, 258 says it is necessary to replace the manuscripts' ἡ ἁφή with τῇ ἁφῇ, but the same meaning can be drawn from either. The former gives: "For neither is touch [possible through an intermediary body]."

saliva would surely be something tasteable in actuality, that is, flavored moisture, that the animal contacts when it is tasting.

Aristotle has thus given an account of the tasteable object and its contact with the animal. In *De sensu* 441b19–23 he says that flavor is the dry affection in the moist capable of raising potential into actual taste. What is tasteable in actuality, then, is flavored body that has become moistened, usually with saliva. Since tasting is by contact, were we to be in water and to taste something sweet thrown into the water, such perception would not be taking place through an external medium, but rather the flavor has been mixed into the water much as flavors are present in liquids we drink (422a11–14).[3] The water in which we are submerged through having the sweet flavor mixed into it has become itself the tasteable, and we taste by contact with it instead of through it as an external medium.[4] Aristotle can further clarify the relationship of sensible object and medium by comparison with color perception. Color is in a surface as its matter, and color is not seen through becoming mixed with anything further. It is not mixed with the transparent body even as an effluence traveling through might seem to mix with it (a14–15). Color acts upon the illumined transparent medium but without mixing with it, or what it would be mixed with would become the visible object. For taste there is no external body between the sensible object and sense, as the transparent body is between in color vision; hence, as color is the visible, flavor is the tasteable (ὡς μὲν οὖν τὸ μεταξὺ οὐθέν ἐστιν · ὡς δὲ χρῶμα τὸ ὁρατόν, οὕτω τὸ γευστὸν ὁ χυμός, a15–17). Either the flavor itself or the flavored thing can be spoken of as the tasteable, much as the visible is color or the colored thing. Color is the sensible form having surface for its matter, as flavor is the sensible form having moisture as its matter. The mixture of flavor in moisture constitutes the enmattered sensible object for taste, and it should be compared to color inhering in surface rather than to anything happening with the medium.

Nothing causes perception of flavor without moisture, then, because moisture is part of the tasteable as its matter and so a necessary condition for tasting (422a17–18). The tasteable has moisture in actuality or in potentiality, such as something salty (τὸ ἁλμυρόν, a18–19). A flavored thing, such as the salty, may be in actuality or merely in potentiality moist, and therefore in actuality or in potentiality tasteable. A dry salty body that is merely potentially moist is both readily soluble and capable of liquifying together with the tongue (εὔτηκτόν τε γὰρ αὐτὸ καὶ συντηκτικὸν γλώττης, a19). Moisture can evidently arise from the tongue as well as the tasteable, and the tasteable when actually moistened along with the tongue is tasteable in actuality, so that it acts upon the tongue as medium for taste. The substratum or matter for

[3] Aristotle's example of our being in water might be compared to *De sensu* 447a6–8, but there he is arguing that the medium is progressively affected by the sensible object, and he considers counterfactually the case where we might taste from a distance.

[4] Water as such has no flavor at all but is the potentiality to take on flavor. In *De sensu* 4.441a3–b23 Aristotle considers alternative views: (1) that water has all flavors already within it that need only to be released, (2) that it has some matter within it that has all these flavors, or (3) that it takes on flavor through the action of an external agent as by being heated. Aristotle rejects these in favor of the view that water has no flavor but is potentially any flavor. It receives flavor from what is dry and earthy by the agency of heat.

flavor, that is, moisture, enters so prominently because there must be contact with the flavored body in actual tasting.

It may just be wondered how the flavorful differs from the odorous. The flavored dry is moistened for taste and washed off by moisture for smell. We must keep smell as a distance sense with odor acting on the external medium whereas taste is a contact sense with the tasteable acting directly on the tongue. Besides acting on different media and organs, that odor and flavor do not correspond in cases such as cinnamon confirms that these are different senses (see 421a27–29).

422a20–34 Another way to look at the sensible object is by what is sensible only privatively. Each of the senses relates to its sensible object and the privation of it – for example, vision is of the visible and invisible and hearing of the audible and inaudible. Aristotle states,

> Just as vision is both of the visible and the invisible (τοῦ ἀοράτου) (for the darkness is invisible, and vision also discriminates [κρίνει] this), further of the too bright (for this also is invisible, but another way than the darkness), similarly also hearing is both of sound (ψόφου) and silence, of which the one is audible and the other not audible (οὐκ ἀκουστόν), and of great sound, just as vision is of the bright (just as also the small sound is inaudible, some way indeed are both the great and the violent), and invisible the one generally is said, just as also in the case of the others what is impossible, but the other if by nature it would not have it or poorly, just as the footless and the kernelless; thus also taste is both of the tasteable and tasteless (ἀγεύστου), and this is that having small or poor flavor (χυμόν) or destructive of taste (τῆς γεύσεως). (422a20–31; cf. 421b3–8)

Vision discriminates the visible and the invisible, whether the invisible is darkness or the overly bright or even that which is poorly or weakly visible. Similarly hearing discriminates sound and silence and the very soft or intense sound.[5] The invisible (ἀόρατον), or any such privation with the "*alpha* privative" prefixed, in one way generally means what is impossible or incapable (ἀδύνατον), as what is incapable of moving the sense at all, and in another way what lacks what it would have by nature or has it poorly (τὸ δ' ἐὰν πεφυκὸς μὴ ἔχῃ ἢ φαύλως), just as the footless or kernelless (422a26–29; cf. *Meta.* 1019b15–21, 1022b22–27). So something might be completely imperceptible, or a perceptible object might not have its natural perceptible feature, as a flower might be rather colorless or a fruit rather tasteless, or it is perceptible only poorly because it is too weak or too intense. Similarly, what is footless or kernelless can lack these completely, or have some foot or kernel but in an unnatural or defective way. Thus taste too, like the other senses, is of the tasteable and untasteable (οὕτω δὲ καὶ ἡ γεῦσις τοῦ γευστοῦ τε καὶ ἀγεύστου), but

[5] Silence is said not to be audible (οὐκ ἀκουστόν) rather than inaudible (ἀνήκουστος) since it is not heard at all (422a24). In 421b3–8 only insensibility due to too weak a sensible object was made explicit, but now it is clarified that too strong an object also is insensible and perceived poorly. It is more obvious that too weak an object is insensible; Aristotle is now more explicit because he works toward the view that sense and the sensory apparatus is a mean between extremes, helped along by the realization that we only perceive objects that are not too strong and not too weak. See 422b5–10 and ii 11. The "violent" (ὁ βίαιος) sound mentioned in 422a26 is probably not merely loud but so loud as to be destructive of hearing (cf. a31) or threatening sound, such as thunder (see 424b10–12).

the untasteable is what has little or poor flavor or is destructive of taste (τοῦτο δὲ τὸ μικρὸν ἢ φαῦλον ἔχον χυμὸν ἢ φθαρτικὸν τῆς γεύσεως, 422a29–31). We see from this that untasteable is used both like and unlike the other privations of the sensible objects. That what has little flavor or what is destructive of the sense of taste, at least temporarily, by having too intense flavor, is untasteable seems to parallel the other cases. But what has a poor flavor is untasteable may here have the special meaning that we do not like to taste what has a bad flavor: it is untasteable for us. This interpretation is confirmed right away (see a32–33).

This passage, as does 421b3–8, speaks mainly of the visible, audible, and so forth, rather than color, sound, and so on, that is, of the enmattered proper object instead of the proper object simply. It seems easier to include too weak and too intense objects within the invisible, inaudible, and so forth, than the colorless, soundless, and so on.

The line of reflection, that the sense relates to its object and its privation, confirms that as a discriminative power taste, as any sense, distinguishes its objects and those perceived with difficulty or when there is no perceiving at all. Aristotle is careful to say that sense is *of* the sensible and the insensible, rather than to say that it *perceives* the sensible object and its privation, since the privation may be impossible to perceive. Nonetheless, the sense *discriminates* (κρίνει) even what is insensible to it, as when we are aware of darkness by absence or difficulty of vision or hearing. This discussion shows the way the sense cannot merely perceive through like by like inasmuch as it is aware of the sensible and insensible. This flexibility of the sense regarding what it perceives leads to sense as a ratio (λόγος) and mean (μεσότης) ready to discriminate the various sorts of sensible objects or their privations within its sensible range.

Pulling together the points that the tasteable must be moist and that taste is of the tasteable and untasteable, Aristotle says,

> The drinkable and undrinkable seem to be a principle, for there is some tasting with respect to both; but the one is poor and destructive of taste, the other is according to nature. The drinkable is common of touch and taste. δοκεῖ δ' εἶναι ἀρχὴ τὸ ποτὸν καὶ ἄποτον · γεῦσις γὰρ τις ἀμφότερα · ἀλλὰ τὸ μὲν φαύλη καὶ φθαρτικὴ τῆς γεύσεως, τὸ δὲ κατὰ φύσιν. ἔστι δὲ κοινὸν ἁφῆς καὶ γεύσεως τὸ ποτόν. (422a31–34)

The drinkable has its own moisture, and so might be most readily tasteable. Mammals, at least, first taste drink. Water, the elemental fluid, is tasteless (see *De sensu* 441a3–29), so the drinkable extends beyond the tasteable. What is undrinkable has a bad taste or is destructive to taste, while the drinkable is natural to taste. If the drinkable is what is natural for the percipient being, Aristotle excludes terrible drinks as drinkable, so the undrinkable is a potion gross, insipid, or somehow destructible. Thus he takes into account differences of taste regarding taste. Being destructive to taste encompasses several possibilities: being too intenselessly flavorful, poisonous, or nonmoist. Any of these makes something undrinkable, destructive to taste, and untasteable. But here again untasteable can mean undesirable to taste rather than merely tasteless or barely tasteable (see 422a30). Since the drinkable is common to touch and taste, also that which is too hot or cold to drink will be destructive

and undrinkable and untasteable. The drinkable is something common to taste and touch inasmuch as by contact it is generally tasteable and tangible. The tasteable is tasted as flavored by the sense of taste, and the moisture of the tasteable is perceived as moist by the sense of touch. If taste is the sense most clearly allowing for diverse preferences, we may understand that the sense can reside in various means. Hence different animals, though tasting a great range of flavors, will be largely insensitive to flavors out of favor.

422a34–b10 As previously, once the sensible object is determined, the medium and sense organ can be understood suitably to receive the action of the sensible object. Having introduced moisture into the tasteable, Aristotle seeks to introduce it further into the medium and sense organ of taste. Since the tasteable is moist, that is, flavor must inhere in what is moist in order to be tasteable, the sense organ (τὸ αἰσθητήριον) that can undergo the action of the tasteable can neither be moist in actuality nor incapable of being moistened (μήτε ἀδύνατον ὑγραίνεσθαι, 422a34–b2). The sense organ referred to here must be the tongue, which strictly is the medium for taste rather than the sense organ, though it is commonly referred to as the sense organ. The tongue is not always actually moist, as it becomes when acted upon by something flavorful, but it is ready thus to be acted upon and moistened. Taste undergoes some action by the tasteable as tasteable (πάσχει γὰρ τι ἡ γεῦσις ὑπὸ τοῦ γευστοῦ, ᾗ γευστόν, b2–3). The use of ἡ γεῦσις conveniently covers both the bodily apparatus and the faculty of soul. Both the bodily apparatus and sense of taste undergo action of the tasteable as tasteable; that is, the flavored when moistened is tasteable in actuality. This sensible object in actuality acts on the tongue and ultimately the sense giving rise to perception of the tasteable.

Aristotle tries to give some account of the change involved in taste: the tongue is moistened in a special way by what is tasteable, as media undergo nonstandard alterations. Were ordinary moistening what the tongue undergoes, any case of moistening of anything might then be a case of tasting, and the tongue might stay moist for a long period so that it could taste nothing new. Instead the tasteable as tasteable acts to cause some sort of flavored moistening: "Necessarily, then, the sense organ for taste moistens, with the capacity for moistening being saved, but not being moist" (ἀναγκαῖον ἄρα ὑγρανθῆναι τὸ δυνάμενον μὲν ὑγραίνεσθαι σωζόμενον, μὴ ὑγρὸν δέ, τὸ γευστικὸν αἰσθητήριον, 422b3–5). The capacity to be moistened is neither initially in actuality moist before being acted upon (see b1–2) nor simply moistened and moist when acted on; that would be the destruction of the original quality by another, that is, a standard alteration, but rather its *capacity to be moistened by the tasteable*, that is, the flavored moist, is being preserved through being brought into actuality. This recalls ii 5.417b2–5 where the actuality of a developed potentiality saves it. The actuality of the sense apparatus, where this apparatus is part of the lived body, is an actuality that maintains the continued possibility of further such actualization. The flavored moisture of the tasteable quickly dampens the sense organ, which is just to realize its nature, while leaving it ready to be redampened by other tasteable items. Clearly the medium in the case of taste, that

is, the tongue, undergoes alteration of a sort due to the tasteable as tasteable, that is, a nonstandard alteration.

Aristotle proceeds to give a "sign" (σημεῖον) of what he has said (422b5–6). He needs evidence of the nonstandard change of the sensory apparatus. The sign is the way the tongue when extremely dry or too moist prevents perception by taste. Here the tongue either is not acted upon at all or it receives so much action that it undergoes a standard alteration. Excessive moisture of the tongue may occur because it is in continuing contact (ἁφή) with the "first moist" (τοῦ πρώτου ὑγροῦ) – which is either the tasteable or the moisture produced within the mouth and tongue itself – so when we taste some strong flavor we have trouble tasting another, or when we are sick everything appears bitter because the perceiving tongue is permeated by its own bitter fluid (b6–10). This shows that the sensory apparatus for taste undergoes moistening in a special and suitable way for perception to arise normally and to continue to be possible. Without moistening there is no perception, but moistening as in a standard alteration such that the ability to be moistened is not saved because the tongue has become full of moisture also destroys perception. The affection of the tongue by the tasteable as tasteable that gives rise to taste is not standard alteration. Talk of the medium's or organ's being too dry or too moist recalls talk of the sensible object's being too weakly or strongly sensible (422a20–31) and prepares for viewing sense and the sensory apparatus as some sort of a mean between extremes, as is explicitly discussed in ii 11.

422b10–16 Having treated the tasteable in general, as well as the medium or organ for taste, Aristotle considers the types or forms of flavors (τὰ εἴδη τῶν χυμῶν, 422b10–14). If flavor is the form of the tasteable (see 422a10–11), then the possible forms of this form are at issue. He can consider these quickly because most were already mentioned in the investigation of smell, and because flavors have simple (ἁπλᾶ) contraries, that is, just a single main contrariety as for colors the contraries are white and black, whereas the other contact sense, touch, has several such contrarieties. The main contrariety for flavor is the sweet (γλυκύ) and the bitter (πικρόν), as also was the case for odors (b11–12; cf. 421a26–27). Continuing to move in from the sweet there is the succulent or oily (λιπαρόν), and moving in from the bitter the saline (ἁλμυρόν). Between the oily and saline are further intermediates: the pungent (δριμύ), the harsh (αὐστηρόν), the sour (στρυφνόν), and the sharp or acidic (ὀξύ, 422b12–14). Aristotle speaks of some of these sensibles as between (μεταξύ) others, the same term used for the medium of perception. Without being explicit about it, he perhaps suggests that the various flavors are ratios (*logoi*) of the principal contrariety, sweet and bitter. Regarding flavors he adds two, the saline and sour, that were not mentioned previously regarding odor. This addition may have an explanation.

There are eight named forms of flavor. This accords with the seven or eight expected to fit with the musical scale (see on 421a26–30). But are just these the forms of flavors? Aristotle indicates that these seem perhaps (σχεδόν) the differences of flavors (422b14). Though flavors as contact sensibles are among the sensibles that

humans are best at discerning, confidence in this scheme of division must remain tentative. We lack a clear and fixed terminology for flavors in spite of excellent discrimination and no imprecision in the sense of taste itself. Demarcations along a continuum are difficult. The reason the forms of flavors can also be called the "differences of flavors" (διαφοραὶ χυμῶν, b14) is that if we consider the class of flavors as a genus, then the forms are species within the genus. But these are species that cannot be defined in terms of any further differences other than themselves. The differences here – all definitional differences are sorts of qualities (see *Meta.* 1020a33–b1) – are just the forms themselves. The particular proper sensibles generally are species or differences that can be defined in no terms beyond themselves; that is, we can define color but not white or green. In 422b27–32 we hear of further differences in sensible objects, such as brightness and dullness, that are not the forms of the sensibles and yet are perceptible differences. Hence differences extend more widely than the forms of sensibles.

Aristotle concludes by observing that what is capable of tasting is what is potentially any of these differences or forms of flavor in potentiality, and the tasteable is what can give rise to flavor in actuality in that which is capable of tasting (ὥστε τὸ γευστικόν ἐστι τὸ δυνάμει τοιοῦτον, γευστὸν δὲ τὸ ποιητικὸν ἐντελεχείᾳ αὐτοῦ, 422b15–16). Thus taste fits the general understanding of sense power as stated in 418a3–6: a sense power is in potentiality what sort the sensible object is already in actuality. Aristotle has explicitly paralleled that account for this particular sense. And what can cause the sense power to become what sort the flavor is in actuality is the tasteable. The tongue is moistened by the tasteable as tasteable in the nonstandard way of sense perception, and by this action the sense perceives flavor. Alone among the five chapters on the proper senses, this chapter clearly gives a definition of the sense in question, the sense of taste or that capable of tasting. In this way he can provide a very concise account of the tasteable, and he can also prepare for the treatment of touch. Issues regarding touch will be whether the sense is capable of becoming what sort the sensible object is in actuality, and since there are many sorts of tangibles, whether touch is more than a single sense.

11

Touch, the Tangibles, and Sense as a Mean

The treatment of touch completes the accounts of the five senses. The sense of touch presents a peculiar problem inasmuch as there is not a simple set of proper sensible objects, as there is merely color for sight or flavor for taste. Taste has a single contrariety, sweet-bitter, and sight the single contrariety white-black, which covers the entire range of types of sensibles. The tangible objects include several such contrarieties: hot-cold, wet-dry, hard-soft, and so on. Consequently, it is unclear whether there can be a single sense and sense organ for touch, as well as whether touch involves a medium at all, since it is a contact sense, and whether there can be but one medium for touch. Finally, it seems that the sensory apparatus in touch undergoes standard rather than nonstandard alterations. The flesh may surely be heated, cooled, dried, or moistened by the sensible objects that we feel, and perhaps when we touch something hard the compression hardens the flesh while touching the soft relaxes and softens the flesh. Touch may, because of such standard alterations, run afoul of the general account of perception in 418a3–6. If Aristotle can show that touch requires a single medium and sense organ, and that nonstandard alteration occurs regarding these, then he confirms the line he has taken throughout his earlier treatments. Since touch is the most necessary and fundamental sense, proof that it conforms to what is anticipated from the earlier accounts solidifies the entire Aristotelian framework. In this chapter it becomes explicit that sense is a sort of mean, so that it can discern differences, and therefore the sense and its objects seem to be relations or ratios. Moreover, since the sense organ for the basic sense of touch turns out to be something within the animal, acted upon in a nonstandard way, it appears that all sense perception connects with such an inner organ, and that there is a unification of sense experience. Sense perception thus joins in some sort of central sense, with the five senses as subfaculties of the unified faculty of sense.

In the midst of the argumentation of this chapter, especially regarding whether flesh is medium or sense organ, as also was prominent in the chapter on taste, Aristotle argues that touch is after all a *contact* sense. That this could be in doubt may cause surprise. There is the ironic situation, however, that when the predecessors have perception occur through effluences, turning all perception into touch (see *De sensu* 440a15–20 and 442a29–b3), touch too must occur through effluences, and

this prevents real contact. Thus the argumentation here that touch truly is a contact sense, and that the contact is with flesh acting as medium rather than sense organ, completes the attack on the predecessors' approach to sense perception.

422b17–34 Aristotle begins by saying that there is the same account (ὁ αὐτὸς λόγος) of the tangible object (τοῦ ἁπτοῦ) and of touch (ἁφῆς, 422b17).[1] This may mean that the same sort of account fits both the sense object and sense, or that these have accounts similar to those given in the previous four chapters. He in fact means both of these. The other senses discussed seem to have localized organs: eye, ear, nose, tongue. But touch extends over so much of the body, even to include these other sense organs, that touch might seem to be multiple organs. If there is not one organ and sense of touch but multiple sense organs and senses of touch, there would have to be many different tangibles, because where there are different senses and sense organs each should have its own proper sensible (b17–19). So the account of the sense of touch and the tangibles will be along the same lines as each other and the treatments of the previous chapters: if many senses, then many sensibles, or if one sense, then one sort of sensible.

There is perplexity (*aporia*), Aristotle states: (1) whether there are more senses of touch than one,[2] and (2) what the sense organ for touch is, that is, whether it is the flesh (or an analogous part in the animals), or the flesh is the medium and the primary sense organ (τὸ δ' πρῶτον αἰσθητήριον) is something else farther in (422b19–23).[3] The second perplexity may presuppose that the answer to the first is that there is but a single sense of touch with a single sense organ. Why the first *aporia* arises pressingly is not just that touch extends over so much of the body, but also that each sense seems (δοκεῖ) to have merely a single contrariety in its proper sensibles, as vision has white-black, hearing has sharp-flat, and taste has bitter-sweet, yet touch has various contrarieties among the tangibles: hot-cold, dry-moist, hard-soft, and others (b23–27). Perhaps this variety of kinds of tangibles can only be explained by multiple senses and sense organs.

[1] The term for touch, ἁφή, is that used in *Physics* v 3 for contact. Probably the choice of the term ἁφή rather than θιγγάνω (see 423a2 and 407a16–18) is explained by the fact that ἁφή more strongly suggests contact whereas θιγγάνω is just to touch lightly. The term for touch can refer either to the sense of touch or to the sense organ for touch (similarly for other terms for sense; see, e.g., 419b8 and 420a4 for ἀκοή possibly referring to the organ and 422b2–3 for γεῦσις referring to organ or sense of taste).

[2] It was argued in book 1 (esp. 411b3–30) that soul unites the whole body since plants only have nutritive capacity, and because the basic sense touch pertains to the entire body nearly all of it is percipient (see 409b2). Were touch to divide into several senses, the unity of body and soul might be threatened.

[3] On Aristotle's conception of flesh, see *PA* ii 8. Generally the flesh is soft material between skin and bone in higher animals or under the shell of other animals. Since it is soft it is not merely earthy but a blend of the elements. Thus, as will be seen later, it is capable of touch (see 423a11–17 and iii 13). As flesh is so crucial for the sense of touch, which after all defines being an animal, the parts of the animal are arranged by nature to preserve its flesh (653b30–36). Excluded from the flesh are bone, skin, sinews, and blood vessels, but along with the muscles perhaps the internal bodily organs such as heart, brain, liver, and so on, are sometimes considered flesh. The flesh is a uniform part (τῶν ὁμοιομερῶν), so the organs viewed as composed of flesh, i.e., uniform matter, are flesh. On such a construal the flesh would contain both the medium and sense organ for touch (653b24–27).

Regarding the variety of tangibles, *On Generation and Corruption* 329b18–20 lists them as hot-cold, dry-moist, heavy-light, hard-soft, viscous-brittle, rough-smooth, coarse-fine. Except for heavy and light, Aristotle links all the other tangibles with the first four. He says, "from these [moist and dry] are the fine and coarse, viscous and brittle, hard and soft, and the remaining tangible differences" (329b32–34). This sort of treatment of the tangibles is out of place in the *De anima*. Nonetheless, even if the other tangibles are linked with hot-cold, dry-moist, there are at least two or more irreducible contrarieties, hot-cold, dry-moist, and the linkage is at the level of potentiality for sensibility rather than actuality since when we touch something fine or coarse we are not simply perceiving the dry or moist. There seem, then, inescapably to be multiple sets of contrarieties for touch.[4]

To ease (τινα λύσιν) the first perplexity about whether there are many senses and organs for touch, Aristotle shows that what drives it, the contrast of the multiple contrarieties pertaining to touch with the single contrariety for the other senses, is not so great as it appears (422b27–29). In fact the other senses have more contrarieties. For example, in voice there are not only sharpness (ὀξύτης) and flatness (βαρύτης), but also loudness (μέγεθος) and softness (μικρότης), smoothness (λειότης) and roughness (τραχύτης) of voice, and so on (b29–31; cf. Plato *Timaeus* 67b-c).[5] Smoothness and roughness of voice might be pure tone versus scratchy tone. Comparable differences (διαφοραί) within color, besides white and black, might be bright and dull, sharp and fuzzy, and so on (b31–32).[6] The point here is that if hearing and the other senses can each discern several different contrarieties among their objects, rather than merely a single set, then touch's having several contrarieties within its sensible objects need not imply that there are several different senses and sense organs comprising touch.

[4] Hicks 1907, 405 suggests that the variety of tangibles "may be reduced to two main heads (1) resistance, (2) temperature." This seems helpful when we recognize that resistance connects with motion. Dry and moist, fine and coarse, viscous and brittle, and so on, are things we determine though motions of our hands or objects in relation to our hands, whereas hot and cold are felt without such motion. Even if we perceive, say, hard and soft through motion, it is these proper sensibles rather than just the common sensible motion that we perceive (see discussion of 425a13–20). Freeland 1995 usefully points out that our main places for touching are our hands, yet we evidently have the sense of touch all over. Interestingly, the rest of our body besides the inside of our hands and soles of our feet tends to have hair so that we feel objects even before they reach our skin as they touch our hair and move it. This reinforces the point that most tangibles are perceived through the motion of the sensible object or the motion of the flesh in touching them, with perhaps hot and cold as exceptions. Caston 2005, 274 usefully cautions against reading *On Generation and Corruption* as reducing the rest of the tangibles to hot-cold, dry-moist.

[5] Instead of contrariety within sound (ψόφος), Aristotle speaks here in 422b29 and b31 of voice (φωνή) perhaps because some of these descriptive terms apply most readily to voice among the sounds, and Plato in *Timaeus* 67b2 has used φωνή. See also *GA* 786b7–14.

[6] That these additional contrarieties within the sensible objects can be called differences (διαφοραί, 422b32), as the forms of the sensibles are also called (422b14) and as all sense is said to discriminate (418a11–15), indicates that proper perception, when it perceives its proper objects, e.g., red, sharp, and sour, and the aspects of them, e.g., brightness, loudness, and dullness, is perceiving differences. Hence sense perception truly discriminates many differences. Difference (*diaphora*) seems a wider term regarding sensibles than form (*eidos*).

Nonetheless, Aristotle acknowledges that the case of touch differs from the other senses because, for example, the sets of contrarieties relevant to hearing all pertain to sound, that is, a single underlying kind (τὸ ἓν τὸ ὑποκείμενον), whereas those of the tangibles cannot be clearly reduced to a single underlying genus of tangibles (422b32–33). Despite this disparity in the cases, it is still quite possible that the various sets of contraries among the tangibles are all accessible to a single sense of touch as all the contraries within sound are accessible to the single sense hearing. This is enough loosening (λύσιν, see b28) of the bind of the first *aporia* that Aristotle can turn to the second. He may do so because no one has insisted that there are multiple senses of touch, but he alone appreciates the possibility. Moreover, once he deals with the second *aporia* sufficiently, the first is handled as well. If the flesh is in fact the medium for touch, and this single bodily medium can be acted upon by several sets of tangibles – unlike the other media, which all have but one proper set of sensible objects – nothing remains of the first perplexity (cf. 424b24–29). Whereas the media of the other senses tend to be elemental, that is, air or water, and this limits what can act upon them, flesh blends several elements, and hence it can be acted upon by hot-cold, wet-dry, and so on, pertaining to its various elemental constituents (see 423a12–17). Thus flesh can serve as the single underlying kind for the various tangible contraries. This is a fancy way of arguing that the very same finger by which we feel hot-cold also allows us to feel wet-dry and so on.

It might be observed that existence of multiple sets of contrarieties in the sensible object even of a sense such as hearing connects with the point raised before that the sense perceives the sensible object and its privation, such as the audible and inaudible or the visible and invisible (e.g., 421b3–8 and 422a20–31). The inaudible may mean not merely what is entirely imperceptible, but also what is poorly perceptible, because it is either too loud or too soft. Hence the contrariety of loudness and softness in sound, that is, extremes of the sensible objects, can link with inaudibility. Similarly for the other contrarieties of color, and so on. Imperceptibility of the sensible object may derive as well from the medium: too little or too much light, too much wind, too great or too little distance interferes with perception as does too weak or too strong a sensible object.[7] All such discussions may then support the conclusion that a medium is necessary for sense perception since much imperceptibility seems explicable by problems with the medium. Also, conditions of the sense organ may be determinative of how well the sensible object can act upon the sense.

422b34–423a21 When Aristotle takes up the second *aporia* about whether there is a medium for touch, he also helps resolve the first *aporia* since he establishes that there is but a single medium, and with only one medium there should be but

[7] In *GA* 780b12–781b16 Aristotle discusses the way distance from the sensible object can lead to such dissipation of the action upon the medium that perception becomes poor. He offers that a tube connecting the sense with the object, or setting the sense deeper so that it is as if the animal's body gives some sort of tubing, improves distance perception.

one sense organ and one sense of touch. What may lead to the view that flesh is the sense organ is that the person feels things at the same time that there is contact with them (θιγγανομένων), but this, he says, gives no definite sign (σημεῖον) whether flesh is directly the sense organ for touch or the sense organ lies farther in (422b34–423a2). If a membrane (ὑμένα) were stretched around the flesh – and even more if it would grow together with the flesh (συμφυὲς γένοιτο) so that the perception would go through it faster (θᾶττον ἔτι διικνοῖτ᾽ ἂν ἡ αἴσθησις) – the person would still feel things straightaway as they contacted the membrane, and yet surely the membrane does not have the sense organ within it (423a2–6). We feel *through* the membrane rather than its being itself the organ for touch. This argument seems quite compelling when we consider the way we surround our bodies with clothing and feel things right through the clothing. We would feel even more the tighter fitting the clothing and still more were the garment to become naturally attached to the skin. Through a membrane naturally attached perception would arrive faster still (θᾶττον ἔτι, a5–6) because something loosely adhering, such as clothing, may delay the perception of heat, cold, wet, dry, or a blow, though we may experience a blow to something rigid, such as a bronze shield, simultaneously (cf. b14–17).[8] Once the thought of touching through membranes is raised, there is the question of what serves as such a membrane and medium. Not just external membranes spread around the body, but the skin surrounding the flesh seems a membrane and perhaps even the hair through which we feel things even before they reach the skin. We hardly suppose that the sense organ for touch resides in body hair since it can be shaved without harming sensitivity and hair is too earthy to be a sense organ (see 410a27–b2 and 435a24–b1). Need the skin and outer flesh be the organ for touch, or are they like membranes surrounding what lies farther in? Hence feeling things right when the outer surface of the body is contacted need not mean that the outer parts are the sense organ for touch. At least the possibility for flesh to be medium rather than sense organ is being established.

This reflection upon a membrane-medium's becoming part of the body expands to encompass all the distance senses (423a6–11). Were the surrounding air encircling our body to have grown together with our body, perception of sound, color, and odor would seem to be by the same thing so that vision, hearing, and smell would be a single sense (a6–10). Enclosed by the homogeneous air, the sense organs would be undetectable because we presumably could not shut our eyelids, block our ears, or hold our noses, thus distinguishing which of these is affected. And with the sense organs deep inside and close together, the directionality of what we perceive would not suggest different organs in motion. In this imagined case, should we really say that there are in fact different sense organs and senses? As things are now at present,

[8] This argument may seem to work better for some tangibles than others. We tend to feel pokes right through the membrane, but gloves may offer some protection against other tangibles such as heat and cold. Yet this may only show that some membranes are not good media. That the membrane growing together with the body makes the perception faster supports Aristotle's case by calling to mind the way our flesh is attached, and were there to be some delay in perception even after it grew together, this would further support the flesh as merely medium.

however, we do distinguish that through which the motions arise (τὸ διωρίσθαι δι' οὗ γίνονται αἱ κινήσεις), so it is manifest that what are said to be sense organs (τὰ εἰρημένα αἰσθητήρια) are other than each other (a10–11). By distinguishing that through which the motions arise, Aristotle may mean the different media and the different sense organs. In the case where air attaches to our body so as to become part of it, and we have no way to distinguish the senses, do we then just have a single sense and organ for the various distance sensibles, or nonetheless do we have several senses? If we insist that "what are said to be sense organs" are truly sense organs, this makes a great difference, and we must keep the separate senses distinct. But what if those we usually call sense organs really are further instruments of the genuine sense organ farther within capable of perceiving all sensible objects? The case of touch, then, where the outer flesh is medium with the sense organ farther within that perceives multiple tangibles, may apply also to the rest of the senses: they are all subfaculties of the central sense power fundamental for perceiving all sensible objects.

The situation of touch perhaps resembles the case where the encompassing air becomes part of the body preventing us from determining whether there is one or more senses (423a11–12). One homogeneous body, air (or water), serves for several senses and several different sensibles, so why not multiple senses of touch with their different tangibles operating through the flesh? Thus the first *aporia* about possibly multiple senses of touch for the variety of tangibles reappears (see 422b19–20). But whereas air (or water) serves as several different media, a transparent body for color perception, a compact mass of air for sound perception, and the medium for odor perception, flesh does not similarly serve for different senses. The ensouled animal body is not simply air or water, but flesh (or what is analogous in other animals) must combine earth, air, and water to be solid (423a12–15). This flesh or its analogue, when organized into various parts of the animal body, will be the medium naturally attached to what has the power of touch (τὸ μεταξὺ τοῦ ἁπτικοῦ προσπεφυκός), and through this flesh arise the perceptions of the many tangibles (a15–17). Unlike air (or water), which is homogeneous stuff capable of being multiple media for the different senses, flesh is fashioned into many body parts that are all sensitive to just the same tangibles, even if there are a variety of tangibles. Consequently, flesh or its analogue seems a *single* medium for the true sense organ of touch farther in that perceives all the different tangibles.

Aristotle can make clear that the flesh is the single medium for several tangibles by considering the sensitivity of the tongue (423a17–21). The tongue contributes as much of the rest of the flesh does to perceiving all the usual tangibles, that is, hot-cold, wet-dry, and so on, and the tongue also perceives flavors (a17–18). Since the tongue perceives all the tangibles and flavors, this confirms that flesh can serve as medium for many different kinds of sensible objects by contact. And if the rest of the flesh beyond the tongue were also to perceive flavors, flavors would be additional tangibles, and touch and taste would be the same sense (a19–20). Hence, even more strikingly, nothing in principle prevents the same sense from having a diverse set of sensible objects. As things now stand, however, taste and touch are distinguishable senses since the tongue serves for perceiving tangibles and flavors, whereas the rest

of the flesh cannot perceive flavors (a20–21). Taste and touch do not interchange (μὴ ἀντιστρέφειν) their sensible objects. If different body parts contribute to the perception of the same set of sensibles, then these parts pertain to the same sense. All the tangibles are perceived by way of the various fleshy parts, rather than, say, heat by one and moisture by another, so these all constitute the medium for a single sense of touch.

That most of the outer body parts are sensitive to all the various tangibles makes it likely that the flesh is the medium for touch and that there is a single sense of touch to go with the single medium. Only if the sensible objects can be divvied up to different parts of the body will there be a variety of media and sense organs. We should still seek a clinching argument that flesh must be the medium since the considerations beginning in 422b34 have only shown the possibility that flesh is the medium with the sense organ farther in. To get beyond possibility, Aristotle may depend on his earlier line of argumentation, that is, that objects placed right upon the sense organ are imperceptible (see 419a11–31 and 423b17–26).[9] Such argumentation to make contact sense like the distance senses would force the conclusion that the outer part of the body, the skin and the flesh, has to serve as the medium naturally connecting to a sense organ farther within.[10] Because he recognizes the need for additional argument that flesh is the medium for touch, and he has still not faced a major objection, he proceeds to more argument.

423a21–b26 Aristotle used the possibility of a surrounding membrane or attachment of air to argue that flesh could be the medium rather than the sense organ, but now he seems to oppose a similar line of argument that would make the flesh the sense organ. Someone might raise perplexity that since all bodies have depth (βάθος); that is, the third dimension (τὸ τρίτον μέγεθος), when two bodies have another body between them (ὧν δ' ἐστὶ δύο σωμάτων μεταξὺ σῶμά τι) those bodies cannot touch each other (423a21–24). This contends not that there is always another body between bodies, an assertion that leads to an infinite regress, but merely that where there is a body in between it prevents contact of the bodies. The moist or the moistened (τὸ διερόν) – τὸ διερόν may mean what has water on its surfaces, see *GC* ii 2.330a16–20 – which is necessarily water or includes water, is bodily, so that things touching in water do not have dry edges but necessarily have water on their edges between them (423a24–27). This implies the impossibility that solid bodies touch in water if in fact there is always at least a small layer of water between them. And it should work the same within air, which is again a moist or fluid body on the

[9] Arguments concluding to possibility need not be so weak as we suppose. In *Meteorology* i 7.344a5–7 Aristotle says, "Since concerning things unapparent to sense perception we think that we have sufficiently shown them according to argument (ἱκανῶν ἀποδεδεῖχθαι κατὰ τὸν λόγον) if we have led them up to what is possible." If a theory accounts for *all* the phenomena, where the phenomena are what is perceived and the *endoxa*, then it has a strong claim to be correct. This is why Aristotle is so insistent upon gathering all the phenomena.

[10] As previously observed, Aristotle has another clinching argument that the external flesh cannot be the sense organ. This is found in iii 2.426b12–17, but it introduces considerations that are not pertinent to book 2.

edges of other bodies, though we are less likely to notice, just as water animals fail to notice the moistened (a27–b1). Thus our contact with solid bodies would always be mediated by air or water so that the supposed contact senses never really have contact, and therefore flesh might itself be the sense organ with the surface air or water as medium.

This argumentation that revisits the previous cases of membranes or air becoming attached to the body is dialectical objection. It is untrue that air or water is always between solid bodies. Surely the fluid can be pressed out by firm enough pressure so that solids do have contact. If solid bodies cannot even touch, how can body have any continuity at all since touching is a looser connection than being continuous (see *Physics* v 3)? Strange as the supposition of films of air or water between any solid bodies seems, it may derive from those predecessors proposing perception is through effluences. For atomists perhaps void always surrounds body, and for others if effluences must be off bodies, even touch presupposes some gap for the effluences to cross.

Allowing dialectically that there is a layer of air or water between our body and any other solid body, Aristotle inquires whether sense perception is the same for all of our senses, that is, the reputed contact senses really are distance senses like the others, or the senses differ as now seems the case, taste and touch arise by contacting (τῷ ἅπτεσθαι) and the other senses from afar (ἄποθεν, 423b1–3). For Aristotle's predecessors the present ordinary view naively supposes that we have contact when using taste and touch, whereas in fact we perceive their objects nearer to us than the objects of hearing, sight, and smell, and hence it escapes our notice that we perceive everything through some intermediary (διὰ τοῦ μέσου, b3–8). Distance senses and contact senses hardly differ since there is always something external to our body between it and what we perceive. Our situation, were we always touching through a medium of water or air, would differ little from the earlier postulation of a membrane surrounding the body such that we seem in contact when really kept apart from the tangibles (b8–12). In air and water there would always be only mediated contact.

Even assuming such dubious mediated contact, Aristotle still asserts that what happens in the contact senses differs from the distance senses:

> But the tangible object (τὸ ἁπτόν) differs from visible things (τῶν ὁρατῶν) and things that can sound (τῶν ψοφητικῶν) because in these cases we perceive by the medium producing a certain effect upon us (τῷ τὸ μεταξὺ ποιεῖν τι ἡμᾶς), whereas in the perception of tangibles we are affected not by the medium but simultaneously with the medium (οὐχ ὑπὸ τοῦ μεταξὺ ἀλλ' ἅμα τῷ μεταξύ), just as the man struck through his shield (ὁ δι' ἀσπίδος πληγείς); for it is not the case that the shield being struck passed it on to the man, but both at once happen to have been struck. (423b12–17)

The sensible objects of the distance senses act on the medium that in turn acts upon us, but the tangibles and presumably the tasteables affect us directly. Because the shield is a rigid body, contact with it already seems to be contact with us. Instantaneousness is questionably the key point here, since though sound and odor may take a while to get to the sense, color and light do not travel and should affect the

sense at once. The decisive point must rather be that the media for contact senses are already parts of the animal body so that we are affected right with contact. The effect on the media for the distance senses is transferred to the percipient being, but the action of the sensible objects of the contact senses upon the media is already action upon the percipient being. There is a difference between the way a soldier watches and hears his shield being struck and feels the blow as his shield is struck. He hears and sees at some "distance" from what is occurring, but he is struck along with the shield.[11] This recalls the query about whether the soul might be like a sailor in a ship (406a3–12, 413a8–9). The soldier looks on and hears the blow upon his shield rather as he observes another's shield being hit or as a sailor observing from afar, but he feels the blow upon his shield directly. The shield represents the medium that does not prevent direct touching of tangible objects. The directness of contact in spite of the possible mediation of shield is because the principal medium of touch and taste is the flesh that is part of the body rather than the outside expanses of air or water that serve for media of the distance senses (423b17–20). Aristotle seems to be returning to the point from which he began – note the resemblance of 423b14–15 with 422b34–423a2 – when he started to argue that the fact that the perception of touch arises at the same time as the contact with the sensible object does not eliminate the possibility of a medium. We can feel by touch directly with the contact of flesh since flesh is the medium, and other membranes might be so too were they to grow on the surfaces of animal bodies.

The result of these reflections is that flesh and tongue are generally likely to be as or generally like (ὅλως δ' ἔοικεν) air and water for the distance senses; that is, they are the media for touch and taste rather than the sense organ (423b17–20). Conclusive argument for the case is unavailable. Accepting the previous contention that we cannot perceive sensible objects in contact with the sense organ (see 419a11–31 and esp. a30–31), Aristotle may extend it as well to the contact senses (423b20–21). A white body, that is, something surely visible, placed upon the outer surface of the eye (ἐπὶ τοῦ ὄμματος θείη τὸ ἔσχατον) cannot be seen; that should apply for the sense organ of touch as well (a21–22). This reasoning shows that if it might happen (ἂν συμβαίνοι) with touch consistently with the other cases, the sense organ for touch is inside, because things put upon the sense organ are not perceived but things put upon the flesh are perceived (a22–26). Hence, on the basis of the assumption that all the senses are analogous, flesh plays the role of medium for the power of touch (a26). The previous argumentation about the role of the flesh in touch only establishes the possibility that it might be the medium rather than the organ, and this argument based on analogy with the distance senses can maybe go a little further. The objection has been based on the suspect view that air and water form a membrane around bodies, but Aristotle's argument appeals to perhaps a strong

[11] Lloyd 1996, 133–134 compares this case of the soldier being struck along with the hard shield connected to his flesh with the case of the testacea that have a hard shell on their outside and the fleshier parts within serving as medium for touch, and he explains that Aristotle uses the shield case rather than appeal to testacea or crustacea because we can verify this case by our own sensory experience and he does not "as a general rule deploy lower animals to explain higher ones, but rather quite the reverse."

analogy. Because the distance senses cannot perceive sensible objects when placed right upon the sense organ, whereas we taste when objects are upon the tongue and we feel when objects touch the skin, tongue or flesh should be the medium rather than the sense organ. The principal argument for his whole understanding of sense perception, at least here in book 2, is the experiment of eliminating the medium by placing an object right upon the sense organ (see 419a12–13, a25–28, 421b16–18, 423b20–26). This purports to establish the necessary sequence of action: sensible object moves the medium that moves the sense organ. If another account can be given of this experiment, or if there is a possible disanalogy of contact and distance senses, then Aristotle's case totters.

Aristotle does not here clarify what the sense organ farther inside for touch and taste is since this is not relevant to the present investigation. In the *Parva Naturalia* the organ for touch is specified as the heart (e.g., *De sensu* 439a1–2). The heart then turns out to be the ultimate sense organ for all of the senses (see iii 2; *De somno* 455b34–456a6).[12] By pulling all the sense organs into a central location, Aristotle adheres to the Platonic position, such as *Theaetetus* 184–186, that soul serves as a unifying center of awareness. Therefore, though each of the distance senses seems to have its own sense organ – eye, ear, or nose – the heart is in fact the ultimate sense organ for all the senses. Multiple sense organs need not be problematic so long as sense perception, as an operation of the soul that is in fact ultimately an activity (ἐνέργεια) rather than a motion (κίνησις), is not localized, or to the extent that there is localization, all the senses join together in one central location. Of course the distance senses already seem unproblematically to have multiple sense organs insofar as there are paired eyes, ears, and nostrils. Thus talk of a sense organ for a distance sense is crucial for analysis, but the situation is more complicated than Aristotle often lets on because there is a series of sense organs and each sense is a subfaculty of the unified sense capacity.

After making so much of the distinction of medium and sense organ in the cases of touch and taste, Aristotle can hardly avoid considering the flesh and tongue sense organs. This is so because the tongue is a specific organ and touch usually takes place in one part of the body or another, especially the hands. Even the heart, as the inner sense organ for touch and taste, is, after all, part of the flesh. Also, whereas the media of the distance senses are not parts of our bodies, but only the sense organs are parts of the body, the media for touch and taste are already parts of the body and hence ensouled. As Aristotle has said, we sense along with them, and consequently the distinction of medium and sense organ is hard to sustain in their case. In *Parts of Animals* 653b24–30, where it is not crucial to make the distinction, Aristotle speaks of the flesh as both medium and sense organ and even right below in ii 11.423b29ff. the sense organ for touch seems to include the flesh. Touch and taste might each therefore be taken to have more than one sense organ as does each of the distance senses.

Once Aristotle makes the distinction of medium and sense organ and establishes that the distinction holds analogously throughout all five senses, he can acknowledge

[12] About the way Aristotle connects the particular senses to the heart, see Lloyd 1996, 128.

the difficulty of maintaining sharp distinctions. Another reason besides common ways of speaking that tempts him to less rigorous and scrupulous adherence to his own theory is that medium and sense organ connect closely through having very similar composition. For example, if the medium for vision is the transparent in a certain condition, the eye is a suitable sense organ because it is a continuation of the transparent. Similarly the ear contains air as a continuation of the external medium. Perhaps the heart is especially suitable as the sense organ for touch because the heart is most fleshy and like its medium. In *Parts of Animals* 653b30–36 it is said that the parts of the animal are arranged to preserve its flesh; that especially seems to be the heart, the primary organ for touch and sensation generally as well as the principal location of heat.

423b26–424a10 So far Aristotle has concentrated upon the need for flesh to serve as medium rather than organ for touch in order that touch can be a contact sense. He also raised the issue that multiple types of tangibles perhaps imply multiple senses of touch (422b23–33), but without yet saying much about the tangibles. He must also speak, then, about the sensible objects showing that they fit with the medium and sense organ if his treatment of touch will parallel those of the other senses. The tangibles, he announces, are the differences of body as body, namely, those differences that distinguish the elemental bodies: hot, cold, dry, wet (ἁπτὰ μὲν οὖν εἰσιν αἱ διαφοραὶ τοῦ σώματος ᾗ σῶμα· λέγω δὲ διαφορὰς αἷ τὰ στοιχεῖα διορίζουσι, θερμὸν ψυχρόν, ξηρὸν ὑγρόν, 423b26–28). He refers to *On Generation and Corruption* ii 2–3 where the elemental bodies earth, water, air, fire are distinguished by various pairs of these differences (b28–29).[13] Earth is cold and dry, water cold and wet, air hot and wet, and fire hot and dry. Hot, cold, dry, and wet in certain ratios (*logoi*) are the differences determinative of the elemental bodies as the elemental bodies that they are. Aristotle can focus upon these rather than other tangibles, such as hard and soft, because the others to some extent derive from hot, cold, dry, wet (see *GC* ii 2). And other perceptible qualities, such as color, odor, and flavor, are neither tangibles nor differences of bodies as bodies, if only because some bodies lack color, odor, and flavor, for example, air and water. Since the differences of interest pertain to the simple bodies, they also pertain to bodies composed of them, such as flesh. Crucially applying to food as nutritious for the animal's body, these tangibles are the ones that an animal necessarily has to perceive (see 414b6–16).

Aristotle provides a definition of the *sense organ* of touch: "The sense organ is what is capable of touching these [tangibles, i.e., hot, cold, dry, wet], and in which what is called the sense of touch first inheres, that part that is such in potentiality" (τὸ δὲ αἰσθητήριον αὐτῶν τὸ ἁπτικόν, καὶ ἐν ᾧ ἡ καλουμένη ἁφὴ ὑπάρχει αἴσθησις πρώτῳ, τὸ δυνάμει τοιοῦτόν ἐστι μόριον, 423b29–31). The sense organ is what has the power of perception of the tangibles and is that in which the sense of touch

[13] Hicks 1907, 412 points out that *On Generation and Corruption* approaches matters from the opposite perspective. There Aristotle locates the principles of body as such by determining what is tangible, and here he locates the tangibles by determining the principles of bodies as such.

inheres as first substratum (cf. *Meta.* 1022a29–32), in contrast with the animal body as a whole, which is not the first substratum of touch. The sense organ is potentially such as either the sense or the objects of the sense. As the animal body generally has life in potentiality (see 412a20–21), the sense organ for touch is what has the sense in potentiality. Moreover, any sense organ is what is in potentiality to the action of sensible objects. Since the differences that the sense organ is affected by are "the differences of body as body," the sense organ will itself have to be bodily. Aristotle hardly bothers to distinguish the inner flesh from the outer as the true organ of touch, unless his reference to what is "called the sense of touch" is meant to suggest this; more likely this phrase merely points to the surprising use of "touch" not merely appropriately as he is using it for the sense of touch but also as a term for any contact whatsoever, a most fundamental distinction possibly concealed in the term.[14] The sense organ should be the potentiality for the sense and the sensible object since to sense-perceive is to be affected (τὸ γὰρ αἰσθάνεσθαι πάσχειν τί ἐστιν) and the sensible object causes what is it in potentiality to become what sort of thing it is in actuality (ὥστε τὸ ποιοῦν οἷον αὐτὸ ἐνεργείᾳ, τοιοῦτον ἐκεῖνο ποιεῖ δυνάμει ὄν, 423b31–424a2; cf. ii 5.418a3–6). Again Aristotle is careful to say that the sensible object causes what it acts upon to become something of the same sort as itself (οἷον αὐτό). The action of sensible objects on the sensory apparatus and sense is a most unusual sort of action that does not just generate itself or an imitation of itself, as would be the case in ordinary alteration. It generates something in the sense organ by means of which the sense becomes aware of the sensible object.

The sense organ for touch is defined because Aristotle wants to focus upon its condition. Since the sensible object is taking the sense organ and sense from being the sort it is in potentiality to being the sort it is in actuality, to the extent that the sensory apparatus is initially already like the sensible object, it can hardly be acted upon by the sensible object, but only insofar as the sense organ is unlike the sensible object. Whereas generally the sensory apparatus for vision is colorless, for hearing soundless, for smell odorless, and for taste tasteless (see esp. 418b26–419a1 and 420a7–19), touch has flesh as sensory apparatus, and as a body it will have some definite temperature and perhaps hardness that will prevent it from perceiving what has about the same temperature and hardness. The apparatus for touch cannot completely lack the tangible and tangibility.[15] Thus touch best conveys that sense is the ability to be aware of sensible differences by somehow interfacing with and

[14] Hicks 1907, 412 comments on speaking of touch as what is "called the sense of touch," "it may be that A. speaks thus because he does not regard contact of the object with the flesh (which he is here considering) as truly touch. True touch is the action of the object (through the flesh) upon the internal organ."

[15] The way touch is unable to feel what is the same temperature or hardness has become known in recent literature as the "blind spot." This can be taken as good evidence that physiological change is involved in sense perception (see Sorabji 1995, 214–215 and Caston 2005, 285–288). It should not be supposed that only touch has "blind spots," however, since the other senses are also incapable of perceiving what is imperceptible, such as the colorless or soundless (cf. Bradshaw 1997, 146). What differs with touch is that the blind spots are within the range of the sense rather than at a kind of extreme.

being affected by the differences, and that the sense must be some exceptional form of the body. He says,

> Wherefore the similarly hot and cold or hard and soft we do not perceive, but the things that exceed, because the sense is some sort of mean of the contrariety in the sensible objects. διὸ τοῦ ὁμοίως θερμοῦ καὶ ψυχροῦ ἢ σκληροῦ καὶ μαλακοῦ οὐκ αἰσθανόμεθα, ἀλλὰ τῶν ὑπερβολῶν, ὡς τῆς αἰσθήσεως οἷον μεσότητός τινος οὔσης τῆς ἐν τοῖς αἰσθητοῖς ἐναντιώσεως. (424a2–5)

Here, as perhaps elsewhere (cf. 419b8, 420a4), αἴσθησις and any term for a particular sense can refer to the sense and the sensory apparatus in general, which as something bodily can be hot and cold or hard and soft. Surely here, if not before, he has dropped any clear distinction between the sense organ for touch and the medium, since it seems to be the outer flesh's current temperature or hardness that might interfere with action upon it by the sensible object. It is in relation to touch that it is most apparent that we are unaffected by what is like us, but we only feel what somehow exceeds our condition, by being greater or less, such as hotter or cooler. Having spoken of excesses or extremes of the sensible objects that are perceptible, as in 421b3–8, 422a20–31, and 424a10–15, it seems that Aristotle has the sense somehow between these and a sort of mean of the sensible contraries.[16] Body as body has some definite temperature and hardness that result from a mixture of the extremes, but the sense organ and sense are not just bodies, and calling the sense and sensory apparatus a sort of mean is to suggest that he is not just speaking of having some definite temperature and hardness resulting from a mixture. Being in a sort of mean instead implies readiness to be acted upon by the sensible differences so as to discriminate them and as having some standard by which to assess them. The sensitive mean is not a *quality* but a *relation* like either health or virtue depending upon whether we look toward the sense organ or sense.[17] When flesh, as any other body, happens to have a degree of temperature or hardness like that of another object, it is hardly affected by it; where there is no action, there is no perception. But where there is difference, the flesh is acted upon and perception may occur. The sense is a kind of mean of the sensible differences as ready to be acted upon by sensible objects and

[16] The notion of the mean (μεσότης) has wide application both in Aristotle's thought and in the Greek intellectual tradition. See Stock 1969, 85–86 and Welton and Polansky 1995, 80–93. Aristotle will repeat the suggestion that sense is a kind of mean in 424a24–b3, 426a27–b8, 431a10–12, and a17–20 (on touch as a mean, cf. *Meteor*. 382a17–21). The passage 431a10–12 even indicates some possible connection of the sensitive mean and the development of the moral virtue as lying in a mean. Whatever has to do with pleasure and pain, as the sensitive mean does, will also have to do with virtue and vice (cf. *Physics* vii 3).

[17] In his ethics and here in *De anima* Aristotle uses both "mean" (μεσότης) and "intermediate" (μέσον). The latter seems the wider term for whatever is between things, whereas the former is something between extremes and somehow just right or appropriate; that is, it is in a perfection relation. Therefore Aristotle may restrict μεσότης to firm dispositions, such as health, virtues, and arts, which will be completions and relations as discussed in *Physics* vii 3 (see Welton and Polansky 1995, 90n15). Virtue lies in a mean, but actions in accordance with virtue are those that are intermediate. In iii 13.435a20–b4 that touch is a mean as a relation of all the tangibles allows the proof that the animal body cannot be too elemental but must be a composition of all the elements.

to be perceived by contrast with it. Awareness of difference is key to awareness, and the value of speaking of sensible differences has emerged.

As a mean of the sensible objects, the sense has kinship with them, without being actually one of them, enabling it to be acted upon by them, and to be acted without undergoing ordinary change. A mean is some sort of appropriate relation rather than a quality, so the sense as mean does not have a definite sensible quality that would interfere with its perception. This applies to touch and to the rest of the senses. The sense of touch as "mean of the contrariety in the sensible objects" is an appropriate relation of the various sets of tangibles such that touch is a *single* sense and mean perceptive of any of the tangibles. Being a mean fits with a sense as a disposition, developed potentiality, or first actuality. The mean as an appropriate relation acted upon by sensible differences becomes aware of the differences of sensible objects from each other and from itself. Aristotle has defined the capacity of sense as in potentiality what sort the sensible object is already in actuality (418a3–4) and that having been acted upon it is likened to the sensible object (a4–6). Now it becomes clearer still that this is not simply assimilation to the sensible object, which would be a standard alteration. The sense must remain as a mean if it will be percipient. It is acted upon but without a quality being destroyed, as in alteration. And even if in the case of touch the flesh is heated or cooled or moistened by the sensible object, that is, the flesh undergoes ordinary alteration, it does so only to a limited extent. In quick contact and of merely a small part of the percipient body, as of the tip of a finger, with heat or coolness there is hardly to be supposed a quick alteration to just the same temperature, and being in water moistens the skin's surface but only limitedly makes the flesh moist. Therefore the sensitive mean even for touch is discriminating differences by way of its highly sensitive flesh that has undergone nonstandard alteration beyond its limited standard alteration.[18] The sense can discriminate the differences of the various sensibles that act upon it by comparison of their effects, and it is discriminating by assessing the sensibles in relation to its own mean. Thus the sensible differences are sensible forms different from each other and different from the sensitive mean. Because the sense is a mean, perception is always somehow a comparative assessment, that is, it is critical or discriminative, even when it merely perceives one thing and is somehow registering its difference from itself.

Aristotle sets out the consequences of viewing the sense as a mean:

> And on account of this it discriminates the sensible objects. For the intermediate is discriminative. For it becomes with respect to each of them the other of the extremes; and it ought just as that which intends to perceive white and black to be neither of them in actuality, but in potentiality both (thus also in the case of the others), and in the case of touch neither hot nor

[18] Caston 2005, 290 reports Philoponus's view thus: "He asserts that in every sense except touch, the matter of the organ does *not* come to be *F* in the same sense that the perceptible object is *F*. Even in the case of touch, this only happens with the hot, cold, moist, and dry, and *not* the heavy, light, viscous, crumbly, rough, and smooth (432.33–433.1)." But it should be recognized that even in perception of temperature and moist and dry there is not necessarily full-scale alteration, as indicated, when the animal quickly contacts something hot, cold, wet, or dry.

cold. καὶ διὰ τοῦτο κρίνει τὰ αἰσθητά. τὸ γὰρ μέσον κριτικόν. γίνεται γὰρ πρὸς ἑκάτερον αὐτῶν θάτερον τῶν ἄκρων· καὶ δεῖ ὥσπερ τὸ μέλλον αἰσθήσεσθαι λευκοῦ καὶ μέλανος μηδέτερον αὐτῶν εἶναι ἐνεργείᾳ, δυνάμει δ' ἄμφω (οὕτω δὲ καὶ ἐπὶ τῶν ἄλλων), καὶ ἐπὶ τῆς ἁφῆς μήτε θερμὸν μήτε ψυχρόν. (424a5–10)

Because the sense is a kind of mean of the sensible differences, the sense discriminates the sensible objects (a5–6). It can do this because as mean it is intermediate rather than an extreme, and what is intermediate is capable of discrimination since it can appropriately compare itself to the others. As the wicked are poor judges of what is noble or the sick person with overmoistened tongue unable to judge flavors, the extremes do not allow for good assessments, but what is intermediate and in the mean can be discriminative (a6).[19] What is between the extremes appropriately becomes an extreme to either of the extremes (a6–7; cf. *NE* ii 8). The sense as a mean that is intermediate contrasts itself to whatever is extreme to it, and whatever differs from it is extreme to it, and thus it assesses and measures (see *Meteor.* 382a17–20). The flesh as having a definite temperature will be intermediate rather than a mean, and as indicated it undergoes some action from the sensible object, and even some alteration, but it need hardly be altered to become fully as the sensible object for the sensible object to be perceived as it is by the sense that is a mean and intermediate. For example, the flesh need not become charred to determine that something is extremely hot. Aristotle here provides insight into how any sense, and the sense of touch in particular, works. In the case of touch the sensory apparatus and the sensitive mean provide contrasts with the tangibles that affect touch so that the animal is sensitive to the sensible differences. The sensible objects are different from each other and from the sensory apparatus, and the sense becomes aware of these differences. In the case of the other senses the sense as mean still discriminates differences from itself or the sensory apparatus. The primary task of the senses is to discriminate differences.

Aristotle has waited until the sense of touch to speak of the sense as a kind of mean because it is here most obvious. It is more obvious with touch because of the various ranges of tangibles, such as hot and cold along with wet and dry, and because the outer flesh inevitably partakes of features in these ranges. The sensory apparatus for touch, being bodily, will inevitably have tangibles already within itself while being affected by those from external things. We tend to feel things only when they are unlike the condition of the flesh. For the other senses this account holds as well. Either their sense organs tend in a way to have some sensible qualities of their own – for example light is the color of the transparent eye (418b11) and the ears have some motion of the inner air (420a16–18) – or as composed of air and water they tend to lack most sensible features. The sense is a mean as readiness to be acted upon by sensibles and as standard for discriminating

[19] For example, hardness and softness are discriminated in relation to the quality of the flesh. Those humans or beasts with hard flesh (see 421a23–26) will tend to be less sensitive to things. *GA* v 1 discusses keenness of sense, i.e., the capacity to discern differences or to perceive things at a distance. The ability to discern sensible differences mainly pertains to the good condition of the sense organ (e.g., 781a18–20).

them. The ultimate sense organ for all the senses, the heart or its analogue, as a body, surely has various sensible features. However much the sense organ has or lacks qualities of its own, as Aristotle before emphasized, the sense does not perceive itself but must be moved to perceive external objects because the sense is most fundamentally a mean (see 417a2–6). The sense as a sort of mean cannot perceive itself without first apprehending some sensible object, and in perceiving sense is not undergoing alteration such that its perceptive capability is destroyed.

As a well-proportioned mean, the sense can take on sensible differences without too much endangering itself, much as the healthy body or the soul having good character endures hardship. The sense itself has no sensible qualities at all, being a mean to them; this enables it to become an extreme to any of the sensible extremes so as to judge them (424a6–7). As what is to see white and black must be neither of these in actuality but in potentiality both, similarly for the other senses, including touch, which is neither hot nor cold (a7–10). Clearly the mean is not an instance of that of which it is the mean. The sensitive mean has no quality in actuality at all, but it is capable of relating to all the sensible objects within its range that act upon it. The senses besides touch are a mean between just two sensible extremes. They have a suitably limited range of sensible objects because their media and sense organs are more elemental than flesh. The more blended flesh serving a sense that is a mean of more sensible contraries perceives many sorts of tangibles.

424a10–16 Not only is the sense perceptive of its sensible object but also of its privation. Vision somehow sees the visible and invisible, while the other senses likewise perceive comparable opposites (τῶν ἀντικειμένων); thus touch perceives the tangible and intangible (τοῦ ἁπτοῦ καὶ ἀνάπτου, 424a10–12; cf. 421b3–8 and 422a20–31). Any sense can be cognizant of any sensible object in its range or when it fails to perceive or perceives poorly. He explains, "Intangible is both what among the tangibles has a very small difference, for instance what has happened with air, and the extremes of the tangibles, just as the destructive things" (ἄναπτον δ' ἐστὶ τό τε μικρὰν ἔχον πάμπαν διαφορὰν τῶν ἁπτῶν, οἷον πέπονθεν ὁ ἀήρ, καὶ τῶν ἁπτῶν αἱ ὑπερβολαί, ὥσπερ τὰ φθαρτικά, 424a12–15). What among the tangibles has a small difference could be a tiny difference from other tangibles or from the perceiver. Aristotle illustrates weakly tangible objects with air, presumably he means air of moderate temperature and at rest so that it is indiscernible to us. But of course air has further features, such as transparency, that are completely intangible. Extreme tangibles that are thus intangible include those very opposed to the condition of flesh, such as extreme heat and cold, damaging to flesh and incapacitating it for sensitivity. When the sensible object causes too great an alteration of the flesh, the capacity for sense is undermined. This discussion of the sensible and its privation leads neither to further treatment of the sensory apparatus for touch, since this has been discussed, nor the various tangibles, that were touched on in 423b26–29 and more extensively in *On Generation and Corruption*. It seems to accord with the earlier discussion of the full range of sensitivity and viewing sense as a mean.

The chapter ends with Aristotle's stating that each of the senses has been discussed in outline (τύπῳ, 424a15–16). This refers to this treatment of touch and the

previous four chapters on the other four senses. What he has considered in regard to the senses are their sensible objects and their operations by way of the media and sense organs. The treatment is an outline because only this most basic account of the senses was sought. Perhaps the account of hearing is fullest since the origin of sound, that is, potential sound as well as actual sound, has been investigated, whereas for most of the rest of the senses more ample dealing with their sensible objects awaits the *De sensu*. Fuller consideration of the sense organs belongs to other treatises, such as *Parts of Animals*. Completion of the account of sensibility in general and the faculties and operations accompanying sensibility remains for the succeeding chapters of the *De anima*. Aristotle says that he has given accounts in outline three times in the treatise (413a9–10, 416b30–31, and 424a15–16). Regarding the definition of soul there is just an outline account prior to considering its major faculties. For the nutritive faculty there is but an outline since much remains to be said about the way nourishment takes place and reproduction. With the senses each sense has been discussed with relation to its proper object, but much remains to be said about sense even in this treatise and more elsewhere about sensible objects, media, and so on. Regarding *phantasia*, the intellective, and the locomotive faculties he does not speak of outline accounts (see 427a15–16, 429a8–9, 432a17–19).

12

Definition of Sense and Whether Sensibles Affect Nonperceiving Bodies

424a17–24 Having worked out the outline account of each of the particular senses (καθ' ἑκάστην μὲν οὖν τῶν αἰσθήσεων εἴρηται τύπῳ, 424a15–16), Aristotle is ready to pull together a refined universal account applicable to every sense (καθόλου δὲ περὶ πάσης αἰσθήσεως, 424a17). Such a universal account was begun back in ii 5 where he said that sense power is in potentiality the sort that the sensible object is already in actuality (τὸ δ' αἰσθητικόν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχείᾳ, 418a3–4). Now that his treatment of the particular senses has dealt with sensible objects, media, and sense organs, and he has developed the account of sense as a mean suited for discriminating sensible differences, he can provide a more illuminating definition of sense. He will give an account in terms of receptivity to sensible forms. The question pervading this chapter is, What is this receptivity such that sense perception results? Why are all bodies not similarly capable of being acted upon by sensible forms? Acknowledgment is made that the sense media along with the bodily sense organs receive some action of the sensible objects though differently from the sense.

Aristotle starts with the general account and then offers some explication:

> Universally concerning every sense one ought to grasp that the sense is that which is receptive of the sensible forms without the matter, for instance, the wax receives the seal of the signet ring without the iron and gold, it takes the golden or brazen seal, but not as gold or bronze; and similarly indeed the sense in regard to each thing undergoes that which has color or flavor or sound, but not in which way each of those is spoken about, but as such, and according to *logos*.
>
> καθόλου δὲ περὶ πάσης αἰσθήσεως δεῖ λαβεῖν ὅτι ἡ μὲν αἴσθησίς ἐστι τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης, οἷον ὁ κηρὸς τοῦ δακτυλίου ἄνευ τοῦ σιδήρου καὶ τοῦ χρυσοῦ δέχεται τὸ σημεῖον, λαμβάνει δὲ τὸ χρυσοῦν ἢ τὸ χαλκοῦν σημεῖον, ἀλλ' οὐχ ᾗ χρυσὸς ἢ χαλκός· ὁμοίως δὲ καὶ ἡ αἴσθησις ἑκάστου ὑπὸ τοῦ ἔχοντος χρῶμα ἢ χυμὸν ἢ ψόφον πάσχει, ἀλλ' οὐχ ᾗ ἕκαστον ἐκείνων λέγεται, ἀλλ' ᾗ τοιονδί, καὶ κατὰ τὸν λόγον. (424a17–24).

Sense is declared receptive of the sensible forms without the matter, and what this means is illustrated and explained. That a *definition* for sense is at issue emerges

in the opening declaration that what is said applies universally of sense. Aristotle here defines αἴσθησις in its usual meaning of "sense," that is, the soul's capacity to sense-perceive, rather than the bodily sensory apparatus. This is obvious enough because he goes on to assert that the sense organ (αἰσθητήριον) is what has the capacity (δύναμις) that he has just defined, and that while the sense organ is a bodily magnitude, the capacity is not a magnitude (424a24–28).[1] When ii 5.418a3–6 defined the sense power (τὸ αἰσθητικόν), there was no clear distinction of the soul capacity and the bodily apparatus through which it operates, but now the account deals explicitly just with the soul capacity. The genus of the definition is left out, though mention of δύναμις in 424a25, that is, that sense is a potentiality of the sense organ, shows that the genus is potentiality, and referring to sense as that which is receptive (τὸ δεκτικόν) implies that it is potentiality of some sort. We expect from ii 5, ii 10.422b15–16, and ii 11 that sense is potentiality as developed potentiality, like knowledge, rather than undeveloped potentiality and that this developed potentiality is somehow a mean that is receptive to certain things.

The difference within the definition, that which is receptive of the sensible forms without the matter, should be understood how? Previously Aristotle has spoken of sensible differences (διαφοραί, e.g., 418a14, 420a10–11, a26–27, 422b14, b32, 423b27–28), contrarieties (ἐναντιώσεις, 422b23, b26, b29, 424a5), and forms (εἴδη, 421a17, 422b10). "Sensible forms" captures what is most vital in these other terms, the defining aspects of sensibles as sensibles, perhaps narrowing to the proper sensibles themselves, such as sharp and flat sound rather than smooth and rough or loud and soft sounds (see 422b27–32). Only through the receptivity to the sensible forms themselves, such as sharp and flat sound, will these further sorts of differences emerge. Mention of color, flavor, and sound in 424a22–23 justifies supposing that the sensible forms are the proper sensible objects of the five senses, that is, colors for sight, flavors for taste, and so on. Subsequently in book 3 it becomes clear that common sensibles and accidental sensibles, distinguished in ii 6 along with the proper sensibles, are only perceived by means of the proper sensibles, so the definition can be restricted to proper sensibles.[2] The use of "forms" in "sensible forms" facilitates ready contrast with "matter." Later, in dealing with intellect, Aristotle will refer to "intelligible forms" and analogously to sense (429a13–18, iii 8). Mind is likely also receptive to forms without the matter, and hence the difference in the definition of sense must refer explicitly to *sensible* forms, even at the risk of some circularity. The use of "forms" and

[1] Some commentators suppose that it is the sense organ rather than the sense that is defined by Aristotle (see, e.g., Hamlyn 1993, 113 and Sorabji 1995, 211–212). They may be misled by comparison with 425b23–24, which could appear an echo: "the sense organ is receptive of the sensible object without the matter of each thing."

[2] Lear 1988, 101–102 misleadingly speaks of the sensible form of a tree, i.e., an accidental sensible, as if this is what is primarily considered in Aristotle's account of sense perception. But he helpfully observes, "*one ought to conceive of perceptible forms embodied in physical objects as forces directed toward the awareness of form*. For it is only in the awareness of a perceiver that perceptible form achieves its highest level of actuality" (1988, 109 his emphasis).

especially "sensible forms" is essential and an indication that Aristotle takes pains here with his wording.[3]

The term εἶδος (form or species), Plato's term appropriated from various traditions of thought, is metaphorical, deriving from the verb εἴδω meaning to see. Literally, the *eidos* is what is seen: the look or appearance of the thing. Ultimately, the *intelligible* forms are seen not by ordinary vision but by "the eye of the mind." Because of the connection of the Greek terminology with vision, Thomas Hobbes delights in ridiculing the Aristotelian account of sense perception:

> But the Philosophy-schooles, through all the Universities of Christendome, grounded upon certain Texts of *Aristotle*, teach another doctrine; and say, For the cause of *Vision*, that the thing seen, sendeth forth on every side a *visible species* (in English) a *visible shew*, *apparition*, or *aspect*, or *a being seen*; the receiving whereof into the Eye, is *Seeing*. And for the cause of *Hearing*, that the thing heard, sendeth forth an *Audible species*, that is, an *Audible aspect*, or *Audible being seen*; which entering at the Eare, maketh *Hearing*. Nay for the cause of *Understanding* also, they say the thing Understood sendeth forth *intelligible species*, that is, an *intelligible being seen*; which comming into the Understanding, makes us Understand. I say not this, as disproving the use of Universities: but because I am to speak hereafter of their office in a commonwealth, I must let you see on all occasions by the way, what things would be amended in them; amongst which the frequency of insignificant Speech is one. (*Leviathan* i 1, Macpherson 86–87)

Hobbes has the Aristotelians pretending to explain actual sensing and understanding through visible phantoms being sent into bodily sense organs or the intellect. Seeing is said, insipidly, to involve receiving into the eye the being seen, while all other types of sensing and understanding are even more absurdly accounted for by the audible being seen, the tangible being seen, the intelligible being seen, and so on. Surely Hobbes's speaking of "sendeth forth" goes against Aristotle's conception of media and the rejection of effluences. Moreover, Aristotle does not intend in ii 12 to define actual *sensing* or the moving cause of sensing but instead the capacity for sense perception. "Forms" is used to contrast with matter rather than to refer to vision; since *sensible* forms are under consideration, it is the sensible aspects of things to which Aristotle refers. Sense is the capacity to receive the sensible aspects of things without the matter. How to understand "capacity to receive" and "without the matter" remains to consider, and to confirm that Aristotle writes here with great care.

During the treatment of the five senses Aristotle occasionally mentioned reception (see 418b26–27, 420b14–16, 421a4–6, 422a1–2; for previous uses, see 407b20–23, 414a8–10, 414a24–25, and subsequent uses are 424a17–21, b1–3, 425b23–24, 429a15–18, 434a27–30, 435a21–24). "To be receptive" adds to the wide notion of being acted upon the taking on of something definite. What is taken on is of just

[3] Ross 1961, 265 says regarding this chapter, "The change from iron to bronze in a19–21 is an indication of haste, and the whole passage is less clear than A.'s statements usually are. But in the exposition of so difficult a theory a certain measure of obscurity is not surprising." But we shall locate a purpose in Aristotle's switching of the metals, and rather than haste we find extreme care in his presentation because the topics are so difficult.

the sort to which there is receptivity, as an inn is receptive to guests or sight to visibles (cf. *Meta*. v 23.1023a11–13).[4] What can be taken on could be form, as body is receptive to soul (see 407b20–23), or a composite being can be taken on, as animals with respiration are receptive to air (see 421a4–6 and 422a1–2). In the treatment of the five senses, Aristotle has spoken of the colorless as receptive to color and of respiring animals as receptive to air. What is colorless is the transparent, and any transparent body seems somehow receptive to color. Reception, therefore, just as such is hardly the same as and restricted to sense-perceiving, even when the receptivity is to something sensible.

A body might undergo alteration when acted upon by sensible qualities, as bronze or flesh may be cooled or heated; distinctive of sense is that it is that which is receptive to sensible forms *without the matter*. What does "without the matter" mean for the definition of sense? There seem three basic possibilities: (1) the sense takes on the sensible forms but not the matter that the sensible forms are originally in, that is without taking on something else's matter; (2) the sense is acted upon only by the sensible form rather than by the sensible form along with its substratum; and (3) the sense receives the sensible forms but without enmattering them again in any matter whatsoever, that is, any matter provided by the sense. Aristotle can mean all of these since each is true, but the second and third are more fundamental for his definition of sense because these are peculiar to the sense.

The illustration of wax and a signet ring that Aristotle offers for clarification of receptive of sensible forms without the matter requires close consideration.[5] Soul and its faculties are forms unifying bodies rather than bodies, but the illustration employs a body, wax, to represent the sense and the signet ring to represent the sensible object. In antiquity seals and signet rings could help maintain the security of documents and much else, as figures on coins guarantee genuineness.[6] A slab of wax on a document, perhaps enclosing it and sealing it, was impressed by the ring. Of course the wax gains the impression of the ring without itself becoming metal as the ring is. The illustration at first assumes an iron or gold ring. Iron is harder, cheaper

[4] Sorabji 1995, 211 is hazy on the distinction of being acted upon and being receptive. He says "In several places, instead of talking of reception (*dechesthai*, *dektikon*), Aristotle talks of being affected (*paschein*) by form, as if that were a more general description of the same thing" (cf. also p. 217).

[5] The use of wax imagery to illustrate cognition goes back at least to Plato's *Theaetetus* 191c–e (see Caston 2001, 36, who takes it back further to Democritus, Gorgias, Aeschylus, and Pindar). It is a source of talk of "impressions" in connection with cognition. An attraction of this imagery is that it makes cognition a passive affection receiving things "realistically" just as they are rather than itself constituting its objects as its own constructions, especially in connection with the detail of a signet ring impressed into wax. Also the imagery proves useful in accounting for memory. Wax (κηρός) also appears in 412b7 and 435a2 and a9.

[6] Boardman 2001, 13 says, "The basic purpose of sealing is to secure and identify property . . . either the signet or its device may acquire a special significance as the identification of the owner, and by a gift of a signet authority may be delegated to a steward, messenger or subordinate officer." Boardman further comments, "Nowadays, when seal use is slight, when signets are rarely cut and even more rarely used, it is not easy to appreciate the importance attached to them in antiquity." Yet he also notes, "Herodotus remarks that every Persian carried one [a seal], so perhaps every Greek did not, and from Aristophanes it appears that many seals and rings distinguished the fops and the pompous" (237).

material that permits just crude engraving. Such rings were relatively inexpensive, while gold rings permitting finer, more detailed engraving would be for wealthier persons.[7] The different metals used in rings thus has significance, but Aristotle's talk of iron and of gold suggests the irrelevance of the particular material composing the ring for his purposes. When he shifts to speaking of the signet as gold or bronze this even more accentuates the irrelevance of the material to the illustration. The switch from iron to bronze in 424a19–21 that may seem careless is deliberately contrived to make the point about the matter's irrelevance. Neither iron nor gold nor bronze from the signet becomes part of the wax when the wax takes the impression from the ring. Thus the figure or form from the signet ring, which previously was just in the iron, golden, or brazen material of the ring, now is marked out in the wax. Yet the wax receives an impression from the engraved ring that is now rendered in relief. The signet is engraved into the metal such that it produces a raised impression in the wax. The deepest parts of the engraving in the metal make the highest part of the impression in the wax, and the shallower parts of the engraving the lower parts of the wax impression.[8]

With some allowance for the inevitable clumsiness of a bodily model, the illustration permits the expected triple construal of "reception of forms" in the wax "without the matter": (1) the wax gets the signet's impression without the sort of metal material it is in in the ring; (2) since it is inconsequential which metal is used, it is as if only the signet acts upon the wax rather than the signet along with the metal; and (3) the impression is not enmattered in the usual way, since the original engraved form is displayed inversely by the raised figure in the wax.

Regarding (1), quite obviously the metal is not taken on by the wax when it is impressed into the wax. In changes such as growth, however, the matter of the mover, such as food, is taken into what is moved, and for atomists an atomic film or effluence would be taken in by the sense. And some alterations, such as painting and perfuming, join their matter with what they act on. But often what is acted upon so as to undergo alteration or locomotion does not receive into itself the matter of what acts upon it. For example, a hot log placed close to something heats it without introducing wood into what is heated. Commonly, then, what is acted upon only receives the form into itself.[9] Not just the sense but indeed many ordinary bodies,

[7] Boardman and Vollenweider 1978, 29 say, "it was probably the bronze rings which were more used for the practical business of sealing." Boardman 2001, 215 states, "The normal materials for fine rings in the Classical period are gold and silver. . . . There are bronze versions of all the main types, but they are less elaborately finished." In the classical period there were most commonly all-metal rings with intaglio devices but also metal rings with a design engraved on a gemstone with the stone set in the ring.

[8] In the metal of the ring there is an intaglio engraving, i.e., a recessed design, that gives rise when pressed in the wax to a raised, en cameo design. Caston 2005, 301n110 denies that this reversal of the depressions and projections is important for the comparison, but it will be argued to be vital.

[9] Aquinas *In de an*. §§551–555 and Owens 1980 insist upon this to reject this interpretation as distinctive of sense power. Caston 1998, 268 says, however, "to receive the form 'without the matter' is just to receive a certain *transformation* of the form, where the key aspects of that form are preserved. As with the signet ring, these aspects will always be instantiated in matter, but since they will in general be instantiated in a different type of matter, only certain abstract characteristics, such as structures or proportions, will be preserved through the transformation. The reception of form without the matter – literally,

and in particular sense media (see, e.g., 418b26–29), are receptive to perceptible qualities such that they take them on without the substratum in which they inhere. So this is hardly restricted to the sense and thus sufficient to define it. Yet surely for alteration of the nonstandard sort as Aristotle is conceiving it regarding sense – and in 424a23 Aristotle speaks of πάσχει most relevant to alteration – matter of the mover is not taken into the sense. Hence (1) does have some point in discussing sense perception.

What acts upon the wax as moving cause generating the imprint is obviously the signet as enmattered in iron, gold, or bronze, but according to (2) the wax should be acted upon exclusively by the signet to represent the sense receptive solely to sensible forms. Moving causes generally can be either simply forms, as the art in the soul of the artisan is the form of the product that generates the product (see, e.g., *Meta*. vii 7), or moving causes can be composites of form and matter rather than the form alone. For example, a knife cuts rather than merely its sharpness, and fire burns something rather than merely its heat.[10] In general bodies, even sense media and organs, will be acted upon by sensible forms along with their substrata. The ring impacts upon the wax as an engraved *body* even if it is irrelevant whether the ring is made of iron, gold, or bronze. Inasmuch as the bodily wax represents the nonbodily sense, Aristotle tries to have the irrelevance of the sort of metal involved in the ring suggest that sense need not be acted upon by a composite being as such. In speaking of the receptivity toward sensible forms without the matter, he would then be saying that the sense as a psychical faculty is acted upon or affected exclusively by a sensible form rather than a sensible form along with its matter. Since it is the sense that is being acted upon just by the sensible form, this must be the sensible object already in actuality in the way sense perceives the sensible object in actuality. Thus the account of sense here in ii 12, on this construal, links to the previous definition of sense power in ii 5.418a3–6 that emphasized being acted upon by the sensible object *already in actuality*.

In case the bodily illustration makes it difficult to arrive at (2), that is, that the sense is acted upon merely by sensible forms without the substratum or matter in which the forms inhere, Aristotle goes on to assert, "the sense in regard to each thing undergoes that which has color or flavor or sound, but not in which way each of those is spoken about, but as such, and according to *logos*" (ἡ αἴσθησις ἑκάστου ὑπὸ τοῦ ἔχοντος χρῶμα ἢ χυμὸν ἢ ψόφον πάσχει, ἀλλ᾽ οὐχ ᾗ ἕκαστον ἐκείνων λέγεται, ἀλλ᾽ ᾗ τοιονδί, καὶ κατὰ τὸν λόγον, 424a22–24). This means the sense is acted upon by a red *thing* or sweet smelling *thing*, such as a rose, yet not as a rose but as

a process of 'in-formation' – will not consist in an exact replication of a form, but rather the *transduction* of certain key aspects of it" (and cf. Silverman 1989, 279; Ward 1988; Bradshaw 1997). For more on this sort of interpretation, see n. 11 and n. 14 this chapter. It might well be questioned, however, that Aristotle really speaks here of the way the sense *organ* is acted upon.

[10] These examples are from Themistius *In de an*. 78,2–3. Generally in locomotion, alteration, growth, and substantial change, the moved mover will include form and matter. Such alterations as applying paint or perfume obviously show that the mover includes form and matter. The ring illustration falls down, of course, because the wax is affected by the metal ring rather than just the figure on the signet, but Aristotle might insist that the wax is not affected by the bronze or gold *as bronze* or *as gold*.

red, sweet smelling, and so on. Only the sensible forms, a color and an odor, just as such sensibles (ᾗ τοιονδί) move the sense, rather than as each of those things is spoken about (οὐχ ᾗ ἕκαστον ἐκείνων λέγεται), such as spoken of as a rose.[11] The accidental sensible, the rose, only moves the sense accidentally by means of these other sensibles. Aristotle here uses "as such" (ᾗ τοιονδί) in an unusual way. Rather than contrasting universal and particular, he contrasts sensible forms with their substrata.[12] If "as such" included red *thing* and not just red, then accidental sensibles would not be perceived accidentally but they could be perceived in virtue of themselves.

Aristotle specifies what he means by "as such" through the phrase "and according to *logos*" (καὶ κατὰ τὸν λόγον, 424a24). "According to *logos*" – in contrast to "in which way each of those is spoken about" (λέγεται) – emphasizes that it is the formal aspect to which sense is receptive. Λόγος is used not infrequently by Aristotle as form or what is formal (see, e.g., 412b9–20 and *Phys*. 194b26–29). "According to *logos*" may here be usefully ambiguous. If the καί is explanatory (epexegetical), as indicated, then Aristotle refers directly to the sensible forms as *logoi*. His point is that the sense is receptive to and moved by sensible forms only as unenmattered forms. The sensible forms are forms, and forms even as ratios of sensible differences since many sensible intermediates are ratios of the extremes, that is, white-black, sharp-flat, sweet-bitter, and so on. But the καί might also be a conjunction, and then Aristotle is explaining that the sense is receptive to the sensible forms in virtue of the sense's own sort of being as a *logos*. The sense is a *logos* as a mean of the sensible extremes; thus it can receive sensible forms as such. If this interpretation is not yet obvious, it opens up right below in 424a27–28 where the sense is called some sort of *logos*.[13]

[11] Caston 2005, 305–307 does not interpret the passage this way, that the sense is affected by the proper sensible rather than its substratum, but instead that the sense is not affected by the proper sensible as such, "that is, not in so far as the object is said to be crimson, or spicy, or shrill – 'but rather in so far as it is *this sort of thing* and in accordance with its *logos*' . . . in so far as it has a more general feature by which it is crimson – the *proportion*." Caston is defending the view that the sense does not take on the sensible object literally but it receives something analogous to it. The particular detailed position that he defends seems especially problematic, however, because it requires that the opening of *DA* ii 12 not be a definition of sense, but only a necessary condition that could extend well beyond perception, as it extends to the wax example and sense medium (307n121). If this is not a definition of sense, however, does Aristotle anywhere provide such a definition at all?

[12] Hicks 1907, 416 refers to *Post. An*. 87b28–31, but the point being made differs. Aristotle there says, "Neither is knowing through sense perception. For if indeed sense perception is of the such and not of a this, still to be sure it is necessary to perceive a this and here and now. But the universal and what is upon all is impossible to perceive; for it is not this nor now" (οὐδὲ δὶ αἰσθήσεως ἔστιν ἐπίστασθαι. εἰ γὰρ καὶ ἔστιν ἡ αἴσθησις τοῦ τοιοῦδε καὶ μὴ τοῦδέ τινος, ἀλλ' αἰσθάνεσθαί γε ἀναγκαῖον τόδε τι καὶ ποὺ καὶ νῦν. τὸ δὲ καθόλου καὶ ἐπὶ πᾶσιν ἀδύνατον αἰσθάνεσθαι· οὐ γὰρ τόδε οὐδὲ νῦν). What Aristotle means is that the particular "this" that sense in fact perceives here and now, e.g., this oak tree, is also an instance of a kind or universal, a "such," that is not directly perceived but is the true object of knowledge, i.e., the oak species.

[13] Above in discussing touch (ii 11.424a4), the sense was called a "mean," and here for the first time *logos* is used of sense (but see 414a4–14). Modrak 1987, 56–62 explains the use of *logos* as following from Aristotle's "actuality principle": i.e., since the cognitive faculty must be potentially what its object

That the sense is a faculty of soul and a sort of *logos*, pertains to (3), the most crucial point, that sense is receptive to sensible forms such that it is acted upon by them without the form's being enmattered at all in any matter supplied to them by the sense. When a bodily magnitude is acted upon, it takes a new form right into itself, that is, it gets the form into its own matter. For example, a body warmed by a fiery log takes the form heat into itself (see 424b1–3). In contrast to the way a body takes the form somehow into its own matter, the sense, being itself a form rather than a magnitude, has no matter in which the sensible forms acting upon it could be enmattered. Therefore the sense must receive the forms "immaterially," that is, without getting them into any matter at all.[14] Sensible forms remain unenmattered forms in the sense. This most peculiar sort of reception of form accounts for cognition. The bodily illustration for the soul faculty, that is, the wax impressed by the signet ring, inappropriately has the figure enmattered in the wax. But the illustration tries to indicate presence of form and absence of matter in the reception because the raised impression in the wax is the reverse of the engraving in the ring.

Insofar as the sense is acted upon exclusively by sensible forms and without getting the forms at all enmattered, the sense does not undergo change in sense perception because change is to be understood as matter taking on a new form. This conforms to the argumentation of book 1 that the soul, not being bodily, never suffers motion. Sense perception is a capacity for being acted upon in such a way that the sense enters into activity (ἐνέργεια) complete at every moment rather than motion (κίνησις) of the ordinary sort. This is what it means to take on a form without enmattering it. Aristotle's very careful use both here in 424a18–19 and again in 434a29–30 of the plural and singular in "receptive of *forms* without the *matter*" supports the interpretation offered (and cf. 424b1–3). Multiple sensible forms may belong to the same matter (i.e., the sensible, composite thing, such as a rose) or to different matters, and multiple sensible forms may be taken on at once by the sense. The sense can surely be receptive to many sensible forms because it is not being

is actually, if proper sensible objects are *logoi* or ratios of sensible opposites (e.g., white-black, high-low pitch, sweet-bitter, hot-cold, etc.), then the sense must also be a *logos*. Modrak makes "the *logos* doctrine" fundamental for Aristotle's whole account of sense perception. A reason for some caution is that not all sensible forms need be ratios if the extremes or opposites themselves are sensible forms.

[14] This understanding of "without the matter" is emphasized in Owens 1980, and see Aquinas *In de an*. §§551–555. This interpretation has contributed to "spiritualist" readings of Aristotle's account of perception, but it hardly justifies dispensing with concurrent nonstandard alterations of the medium and sense organ. Themistius *In de an*. 78,4–10 also states this possibility: "Specifically, what is affected in a strict sense becomes the matter for what produces the affection, just as something that is being burnt, compressed, or cut [becomes the matter] for what causes the burning, compression, or cutting. The senses, by contrast, do not become types of matter for the objects of perception. For perception is not turned white or black, or pitched low or high, but as we have often said and will go on to say, it receives only the form and the ratio." For an attack on this interpretation, see Caston 1998, esp. 256 and 268. On p. 278 Caston says, "Phantasia and thought have 'the power of objects' (τὴν τῶν πραγμάτων δύναμιν), because they have the ability to affect us the way the objects would if perceived. *This*, I would suggest, *is precisely what it means to have the form of the objects 'without the matter'*: the forms involved in cognition are 'similar' to the objects represented because such cognition has *similar causal powers* and so can produce effects such as fear and trembling." Were Caston correct, the definition of sense in ii 12 would no longer single out sense.

acted upon by the composite being but by the sensible forms alone and since it does not enmatter these forms within itself, as it would in a typical process of change, it can be receptive to many at once.[15] In contrast to this, in 425b23–24 where he speaks of the sense *organ*, Aristotle uses the singular of "sensible object without the matter" (τοῦ αἰσθητοῦ ἄνευ τῆς ὕλης) to mean that in this case the organ does not take on the matter of the mover but may possibly be acted upon by it and may get the sensible into its own matter. Were Aristotle merely wishing to emphasize in ii 12 that the sense gets the sensible forms apart from the matters containing the sensible forms, he would have used the plural for matters or simply kept form in the singular. By speaking of reception of sensible forms (plural) without the matter (singular), he has "matter" as the substratum that might have several sensibles inhering in it, as a rose may be red and white and sweet smelling, so that reception of sensible forms (plural) without the matter (singular) means that the sense(s) is(are) acted upon only by the sensible forms rather than that in which they inhere. More crucially still, this way of speaking indicates that the "matter" of the *sense* is especially in question. The sense receives sensible forms without taking them into its own matter since it has none at all.

The sense is receptive to the sensible form without enmattering it in any way; that is, the sense gains only "information." The sensible object is received such that it gives rise to cognition and cognition of the world as it is perceived. When a human perceives a red, fragrant rose, for example, there are color and odor that the senses take on, and also perception of magnitude and figure. By way of perception of these sensibles in virtue of themselves there is also sense perception of the rose, the accidental sensible. The sensible object *already in actuality* (see 418a4) acts upon the sense, and because the sensible form is not enmattered at all in its reception by the sense, the sense is in activity while perceiving.

The sensory apparatus, that is, medium and sense organ, are acted upon differently than are the sense and other bodies. Transitions from potentiality to actuality in the case of medium and sense organ are analogous to those from developed potentiality to its exercise, that is, in this way as in the sense (see ii 5) making the alterations of the media and sense organs nonstandard. Ordinary bodies alter such that the previous quality is destroyed, but the exercises of developed potentialities are not destructions of the old quality by the new but the *saving* of the potentiality (see 417b2–5). The sense media and sense organs are thus actualized by sensible objects, and though in regard to touch the flesh seems heated, cooled, and moistened, even in these cases this is not merely standard alteration because

[15] If sense can receive multiple sensible forms at once, Aristotle has already prepared for the view he develops at length in iii 2 that by sense we can discriminate the sensible objects of the same sense, e.g., white and black, or different senses, e.g., white and sweet (see also *De sensu* 7). It might well be wondered whether the sense medium and sense organ, which, unlike the sense, are acted upon materially, allow for being moved simultaneously by multiple sensible objects to cause perception of multiple sensible objects. They can because they are magnitudes offering different parts of themselves to be acted upon or from different directions, as when one hand perceives something hot and the other something cold. The need to have receptivity to multiple sensible objects at once adds a further reason for viewing what the medium and organ undergo as nonstandard alterations.

the temperature change is usually minor in relation to the perception and the moistening is just of the surface of the skin (see 422a35–b10 and discussion of 424a2–5). Previously in 418b26–419a1 and 420a7–19 Aristotle spoke of the colorless and soundless as receptive, respectively, of color and sound. This seems to apply to such media as air and water. What is without a determinate quality, as the media air and water are colorless, soundless, odorless, and flavorless, can be receptive to color, sound, odor, and flavor without undergoing standard alteration since the initial condition is not destroyed. Unlike the sense, however, the medium and organ as bodies are acted upon by the enmattered sensible object, as is most obviously the case for the contact senses (see esp. 422a8–11). And in some way the medium and sense organ, in contrast to the sense, enmatter the sensible form since they take the sensible form into their own matter. But as indicated this taking on of the form is nonstandard because it does not in the standard way substitute a new form for another that is destroyed. When color appears through the transparent the color is somehow taken into the transparent, obviously in a very nonstandard way, inasmuch as the color cannot be seen looked at perpendicularly, that is, when we look not at the colored object from the eye's direction but at the medium from the side. And though in regard to touch the flesh seems heated, cooled, moistened, and hardened, even in these cases this is not merely standard alteration because the temperature change is usually minor in relation to the perception, the moistening is just of the surface of the skin, and the hardening merely some compression.

Aristotle's definition excludes matter from the sense but allows that the medium and sense organ undergo nonstandard alterations such that they are impacted by the sensible object along with its substratum. Some such affection of the sense apparatus seems a necessary and even sufficient condition for sense perception to occur. Yet Aristotle also has repeatedly suggested that many sensible objects are perceived poorly (see, e.g., 421b3–8, 422a20–31, and 424a10–15). These passages also allow for the possibility that when many things are perceived at once, all of them having affected the medium and sense organ, not all of them are well perceived and receive much discriminative attention. Hence Aristotle may have "changes" in the media and sense organs give rise to sense perception, but what goes on in the matter is not fully and exclusively determinative of what the animal especially attends to and discriminates (cf. book 2, ch. 6, n. 9).

The definition of sense might now be comprehended. Aristotle defines sense as in genus a potentiality. Many potentialities might be acted upon by forms, but sensitive capacity is receptive to sensible forms without the matter. The sense is acted upon by sensible objects *already in actuality*, that is, just by the sensible forms rather than enmattered forms. And the sense does not at all enmatter the sensible forms received. Hence its potentiality is saved and realized as it perceives the sensible object. Thus the sense is some kind of psychical capacity rather than a bodily capacity because it is acted upon just by forms, takes on just the forms, and gets the forms unenmattered. Intellect may also be a capacity to receive forms without the matter, and therefore he has added that sense is receptive to *sensible* forms without the matter. The sense is receptive and thus passive and in potentiality rather than active and in actuality. The sense is receptive to sensible forms, and in operation in

activity discriminating differences. We perceive not only the sensible objects, but also the things having these forms, such as a red thing or a rose. Hence, back in 417b22 Aristotle asserted that perception according to actuality is of the individual things (τῶν καθ' ἕκαστον ἡ κατ' ἐνέργειαν αἴσθησις). Hobbes misleads when he states that "the receiving whereof [of the sensible form] into the eye, is *seeing*." Aristotle defines sense capacity rather than sense-perceiving in actuality. The comparison to wax and signet ring is useful for the impression in wax leads us not simply to itself, the impression, but to the *authentic* signet and ring giving rise to it, much as through the sensible forms we perceive the very sensible objects, both those perceived in virtue of themselves and accidentally, such as the red, fragrant rose. Of course the bodily illustration inaptly has us looking at the impression made in the wax to determine the authenticity of the absent ring that has made it.

Since the sense is receptive to the sensible forms immaterially, the object in one way is "in" the sense but in another way not. The sensible form (or intelligible form) involved in psychical activity is unenmattered and hence not strictly localized. By means of the sensible form received by the sense, the animal perceives the sensible object in its own substratum. We are not sense-perceiving representations in our consciousness but the sensible objects themselves as they are in reality.[16] Unenmattered forms in the sense cause the animal to perceive things in the world. As the action of the mover is in what is moved (see *Physics* iii 3), the sensible object actually perceived is somehow in the sense – the sense can be said to be in activity – yet since the sense receives only sensible forms by means of which the sensible object is perceived, and mover and moved must be together and in contact (see *Physics* vii 2), perception is out in the world with what is being perceived. Through sensible form and sense medium, Aristotle manages to have the sensible object act upon the sense in such a way that the sense is out with the things perceived; that the sensible form is not enmattered in the animal's sense also allows many perceivers to perceive one and the same perceptible object (cf. *De sensu* 446b18–26). Though sense perception is of particular things, since it takes place through reception of sensible forms "without the matter" and "according to *logos*," sense perception prepares for intellection in those animals with a higher capacity of soul, that is, mind.

Some clarification of the account here offered of Aristotle's view of sense may derive from comparisons with various lines of contemporary interpretation. The more straightforwardly materialist or physicalist interpreters suggest that in perception the sense, in seeing red, for example, literally goes red.[17] Most opposed to such views is the interpretation that sense is quite exclusively a coming to awareness, a "spiritual change" in the sense, and almost nothing happens in the sense organs.[18] This sort of possibility of sense minimally involving physiological change has made Aristotle's view of soul seem no longer at all credible. To avoid saying

[16] Aquinas *In de an*. §718 says, "as with sight the *species* in the eye is not what is seen, but what gives rise to the act of sight (for what is seen is color which exists in an exterior body)" and "so also what the intellect understands is the essence existing in things; it is not its own intelligible idea (*species*)."

[17] See Slakey 1961, Sorabji 1974 and 1995, and Everson 1997, 10. This has come to be called the "literalist" interpretation of Aristotle's view of sense. This name is bestowed by Burnyeat 1995a.

[18] See, e.g., Burnyeat 1995a, 21 and 1995b, Broadie 1993, and Johansen 1997 for this "spiritualist" interpretation.

either that the sense organ literally goes red or that almost nothing happens in the organ while awareness occurs in the sense, some interpreters have suggested that the sense organ is acted upon in an analogical or structural way. If the sensible object is some ratio (*logos*) of the extremes in its range, such as white and black, then the sense organ might be acted upon by the ratio, that is, the essence or structure of the color, rather than literally becoming colored.[19] The interpretation of this commentary accepts that the medium and sense organ undergo quasi-alterations in sense perception as suggested by these interpreters. Hence sense perception for Aristotle does involve physiological change in the sense organ along the lines of those who speak of the action of "abstract" ratios or "transduction" of the structure of the sensible object, and his view can in this way maintain some credibility for us. But this capacity for peculiar physiological change, and it should be clear that it is nonstandard alteration of the sensory apparatus, is hardly the complete account of sense for Aristotle. He also wishes to speak of sensory awareness and discrimination as due to receptivity to sensible forms without enmattering them in any way. The full account of sense for Aristotle, then, requires sense to be a capacity for receiving sensible forms without enmattering them at all, in causal connection with the way the sense medium and sense organ can materially undergo unusual changes from sensible objects. Aristotle ignores neither aspect of sense perception, the psychical or physiological aspect. Hence aspects of the "spiritualist" and the "structuralist" approaches must be combined for any adequate understanding of Aristotle's account of sense perception. The sense in perceiving undergoes "alteration of a sort," that is, it is in fact in activity complete at every moment and continual, while the sense organ has accompanying nonstandard alteration in a different way. There is nonstandard motion in the sensory apparatus with the sense gaining by its own activity discriminative awareness of its objects. Thus justice is done to Aristotle's contention in *De anima* i 1 that suitable definitions of the *pathe* of the soul, since they are not separate from matter, should be given accounts that deal with form and matter, and justice is done to what he says here in ii 12 and throughout ii 7–11.[20]

424a24–b18 Because the definition of sense is quite difficult, much needs to be said about it to clarify what sense is and how it relates to the bodies that compose the

[19] Miller 1999, 191 says, "The eye could thus replicate the formal structure of the colored object without itself having to exhibit color literally." Those tending to such "structuralist" interpretations include Turnbull 1978, 22; Ward 1988; Silverman 1989; Shields 1995; Price 1996; Bradshaw 1997; Caston 1998 and 2005. The names given for the different lines of interpretation of the way the sense undergoes an alteration of a sort are thus "literalist," "spiritualist," and "structuralist" interpretations. A vigorous effort to spell out the positions in detail is to be found in Caston 2005.

[20] To the extent that Aristotle thinks two sorts of definitions are needed not just for emotions, as he illustrates in *DA* i 1, but also for sense perception, he should resist that contemporary effort to construe him as a functionalist or supervenience theorist of one sort or another. For functionalism, see Nussbaum and Putnum 1995, and for discussion relating Aristotle to supervenience theories, see Miller 1999. The psychical does not merely, for Aristotle, supervene on its physiological basis. He several times supports the top-down approach, that soul is utilizing the body and its instrumental parts for enabling the soul to live certain kinds of lives. Lear 1988, ch. 4 also argues for combining the spiritualist and structuralist interpretations of Aristotle's account of sense perception, as does Caston 2005.

sensory apparatus and to other bodies. Aristotle has been defining sense (αἴσθησις), that is, a faculty of soul or a kind of soul. The sense organ (αἰσθητήριον), that is, a part of the body, is the first substratum in which this power of sense inheres (αἰσθητήριον δὲ πρῶτον ἐν ᾧ ἡ τοιαύτη δύναμις, 424a24–25; cf. 423b29–31). Of course sense is "in" the animal body generally, because an animal as such is sentient, but the sense is not in the animal body "first." The sense organ is that body part to which sense belongs first, or in virtue of itself (see, e.g., *Meta.* v 18.1022a29–32).[21] Sense is the animating form of the sense organ, that which empowers it to do what it can do as sense organ, and hence there is a unity of sense and sense organ. Sense and sense organ are the same, Aristotle says, though they differ in being or definition (ἔστι μὲν οὖν ταὐτόν, τὸ δ' εἶναι ἕτερον, 424a25–26; cf. 412b17–22).[22] Sense and its organ are the same insofar as any formal principle is the same as what it informs, but they differ in being, whether the sense organ is taken as matter or composite of matter and form, because the sense organ is a magnitude or bodily part whereas the sense is not a magnitude but its form, that empowers what has magnitude to sense-perceive. Aristotle states, "for what perceives is some magnitude; but the very being of the sense power and the sense is not a magnitude, but some sort of *logos* and capacity of that" (μέγεθος μὲν γὰρ ἄν τι εἴη τὸ αἰσθανόμενον· οὐ μὴν τό γε αἰσθητικῷ εἶναι οὐδ' ἡ αἴσθησις μέγεθός ἐστιν, ἀλλὰ λόγος τις καὶ δύναμις ἐκείνου, 424a26–28). The sense organ can be said to be that which is perceiving (τὸ αἰσθανόμενον) when it is an ensouled sense organ that is under consideration, and strictly there is only a sense organ when a body part is so ensouled that it can perform its special function, but the being of the sense power, that is, the sense as it is formally, is a *logos* and capacity of the sense organ (cf. 414a4–14). Aristotle most likely uses the surprising "being of the sense power" (τό γε αἰσθητικῷ εἶναι) to make clear that he refers to the sense merely as the form rather than either as the sense organ or the enmattered sense (cf. 418a3). The terms line up this way: αἰσθητήριον (424a24, sense organ), τὸ αἰσθανόμενον (a26, that which perceives, i.e., the animate sense organ), τό γε αἰσθητικῷ εἶναι (a26–27, the being of the sensitive power = sense, as what animates τὸ αἰσθανόμενον), and αἴσθησις (a27, sense). *Logos* in regard to sense means form or organizing principle enabling the sense organ to be in play in sense perception. Above in a23–24 it is said that the sense is acted upon by what has color, flavor, or sound, but not as the thing having such but as such and "according to the *logos*." Thus a sensible form is some sort of *logos* that the sense is ready to perceive since it is some sort of *logos*.[23] The sense as that which is receptive to sensible forms without the matter is the *logos* of the sense organ bestowing potentiality to perceive upon the sense

[21] Ross 1961, 265 says "The meaning of αἰσθητήριον πρῶτον in l. 24 is elucidated by 422b22–23, where the πρῶτον αἰσθητήριον of touch is 'something within', as distinct from the flesh through which the tangible object affects the sense." The sense organ of touch is perhaps ultimately the heart, or what is analogous, that in fact serves as the central organ for all sense. But Aristotle has yet to make this clear since it awaits book 3. So what he means here is just that the sense organ, whatever it is, is the first substratum for the sense power that works through it.

[22] For a fuller discussion of the thought behind "they are the same, but their being is different" (424a25–26), see the commentary on 425b25–27.

[23] Aristotle spoke of the soul as *logos* in ii 1–4 (see, e.g., 412b16, 414a9, a13, a27, and 416a18), but in ii 7–ii 11 he did not speak of the sense as a *logos*.

organ, where potentiality means "developed potentiality" since an animal is ready to perceive without learning to do so. As the first substratum of sense, the sense organ is potentiality for the sense, while sense bestows potentiality for perceiving upon the sense organ.

Since the sense organ is a bodily magnitude, Aristotle can explain its vulnerability to too intense objects,

> It is manifest (φανερόν) from these then on account of what the extremes of sensible objects destroy the sense organs (φθείρουσι τὰ αἰσθητήρια); for if the motion is stronger than the sense organ the *logos* is loosened (λύεται ὁ λόγος) – this is the sense – just as the concord and tone from the chords being struck violently. (424a28–32)

The sense *organ* is what is destroyed or disrupted by too intense sensible objects. Souls as such cannot be damaged – recall from book I that soul is incapable of motion (see esp. 408b19–22) – but the bodies in which they inhere can undergo change, and hence the composite of soul and bodily organ may have its functionality disrupted. The destruction here in question pertains to the sense organ as capable of sensitivity. The sense organ may be said to be receptive to the sensible object either with or without the matter. In 425b23–24 the sense organ is called receptive without matter because the substratum of the sensible object is not taken into the organ. Yet the sense organ by way of the sense medium is acted upon by the enmattered sensible object and the sensible form is taken into the very matter of the sense organ. Therefore a too intense sensible object interferes with the ability of the sense organ to function as it must for sense to perceive rightly.[24] Hence Aristotle says that the sensitive *logos* is *loosened* (λύεται) by excessive motion in the organ, as if soul somehow withdraws from its incapacitated instrument. For example, too loud sounds seem to deafen us so that we barely hear. This sort of language reminds us of Plato's *Phaedo* 67a, 81d and *Timaeus* 85e, where the soul escapes the body – and so for Plato the liberated soul may function without bodily interference – but for Aristotle this loosening must mean just that functionality of the sense organ is disrupted while the soul maintains its readiness to function if the organ can return to a suitable condition. A functional sense organ is in some sort of relation, as health is a relation (cf. *Physics* vii 3), and overintense relata cause change in the relation. Talk of loosening also fits the immediate context that refers to overly hard striking of a musical instrument's strings (see 424a31–32).

Though Aristotle attacked the harmony theory of soul in i 4, he here allows that the vulnerability of the sense organ to extreme sensible objects can be illustrated by the damage caused a musical instrument through playing it too hard.[25] Soul as such is invulnerable to bodily changes, but the sense organ is a magnitude with

[24] That too intense sensible objects incapacitate the sense organ for perceiving is used by Lear 1988, esp. 114–115, and Sisko 1996, 144–147 to argue that sense generally involves material alteration. They might rather argue that ordinary perception involves nonstandard alteration of the sense organ while a too intense object causes what more resembles standard alteration, and hence disrupts perception.

[25] Hamlyn 1993, 114 argues that "it is the consonance and pitch of a single string which is destroyed when it is so struck too violently" and not "the harmony of different strings." But when a string does not "sound properly at the right pitch and with the proper timbre" the attunement of the instrument is destroyed.

arrangement or *logos*. This *logos* is untroubled by the usual sensible objects, as bodily health is maintained through ordinary episodes of bodily change. Extreme sensible objects so disturb the sense organ, however, that the *logos* loses its grip, as extreme bodily events undermine health. The bodily organ, despite resistance to having its organization disrupted, rather than having its power "saved" by routine sensible objects and merely undergoing nonstandard alterations (see 422b3–5), when impacted by too intense sensible objects can undergo rather more standard alterations of the sort that destroy it as it was.[26] At least the organ (medium) of the sense of touch is vulnerable to standard alteration, while sense organs generally as relations become a new disfunctional relation as the relata suffer undue change.

That too intense sensible objects incapacitate the sense organs at least temporarily as instruments for sense perception supports the view that sense organs undergo nonstandard alterations in routine sense perception. Such nonstandard alterations enable the sense organ to be serviceable for perceiving a variety of things at once and in succession, while an excessive object disables the organ by changing its relation. When the sense organ is moved too hard, the organ ceases to cooperate with the sense to bring about accurate discriminations in sense perception.

Continuing to pursue this line of reflection on the effects of sensible objects on bodies, Aristotle can explain why bodies other than sense organs do not sense-perceive (424a32–b1). Sense clearly involves body, as just suggested by the consequences of too intense sensible objects, but then why might not plants, being ensouled and affected by tangibles such as heat and cold, also sense-perceive? Why are not all ensouled bodies organs for sense, so that the definition offered for sense applies to all mortal living beings? Aristotle answers why plants cannot perceive: "The reason is that they have no mean, nor such a principle capable of receiving the forms of sensible objects, but they are affected with their matter" (αἴτιον γὰρ τὸ μὴ ἔχειν μεσότητα, μηδὲ τοιαύτην ἀρχὴν οἵαν τὰ εἴδη δέχεσθαι τῶν αἰσθητῶν, ἀλλὰ πάσχειν μετὰ τῆς ὕλης, 424b1–3). Talk of the "mean" supplements reference to being a *logos* and derives from the previous chapter (424a2–10), where the discriminative power of sense was explained as the ability to discern differences due to being a sort of mean. The plant clearly has nutritive capacity, but this does not amount to the mean introduced by sensitive soul. The animal becomes aware of differences, both differences among the sensible objects perceived and differences of these from the sense itself inasmuch as the mean allows for contrasts with and among sensible objects. Plants become aware of no differences. The turning of plants to the sunlight, the growth of roots toward sources of water, the attachment of vines to other objects, and so on, must all take place without sense perception. Having the sensitive mean pertains to how what possesses it is affected by sensible objects. Aristotle denies that plants are receptive to the forms of sensible objects but they

[26] This discussion receives some amplification in 426a27–b8. Subsequently, in iii 4.429a29–b5, the invulnerability of intellect to intense intelligible objects supports the view that mind requires no bodily organ. Aristotle's argument restricts itself to intense cognitive objects rather than to other factors such as fatigue, passion, disease, and drunkenness that might impact upon cognition, whether sense perception or thought.

are acted upon with the matter. Nothing but a sense is receptive to the sensible object already in actuality so that it perceives it. A plant, much as other sublunary bodies, is acted upon by sensible objects such that the plant body serves as matter for whatever alterations it undergoes. The plant reenmatters the form of what acts on it. Of course when a plant takes in nutrients it also gets new matter along with its features, but when it is heated by a hot stick it does not take the stick or matter from the sensible object into itself any more than does animal flesh, but it gets the heat into its own matter, thus undergoing a standard alteration. The sense of an animal, however, is acted upon by the sensible form and does not reenmatter the sensible form, and hence unlike the plant is not "affected with the matter." If not so far appreciated what receiving sensible forms without the matter means, it should now be clear that it especially means taking on the sensible form without enmattering it again in any way.[27] Only animals have a soul that can be acted upon by cognizable forms in this way, that is, immaterially, and thereby they discriminate the forms and cognize the beings having those forms. Because the plant lacks the sensitive mean, that is, the power of sense, it also lacks the requisite sense organs.

Consideration of plants' inability to perceive and the way sense involves bodily magnitude may raise perplexity about whether and how bodies incapable of sense-perceiving can be affected at all by sensible objects (424b3–5). Since some of these bodies possibly affected are sense media and sense organs, this is a most critical inquiry. Taking odor and color as examples for the rest: can that which cannot smell be affected by odor or that which does not see by color? If by "affected" (πάθοι ἄν, b3) is meant made to sense-perceive, that is, affected by a sensible object as a sensible object, then nothing that cannot perceive by one or more of the five senses will be affected by sensible objects. So if the object of smell is odor (εἰ δὲ τὸ ὀσφραντὸν ὀσμή), and if odor engages in some action (εἰ τι ποιεῖ), odor gives rise to smelling (τὴν ὄσφρησιν ἡ ὀσμὴ ποιεῖ); therefore what cannot perceive by smell (τῶν ἀδυνάτων ὀσφρανθῆναι) cannot be affected by odor (b5–8). The same should apply for the other senses and their sensible objects, that is, where a sense is lacking the sensible objects can have no impact since what they can bring about is perception in a sentient being capable of perceiving them (b8). Consequently, even animals capable of sense perception (τῶν δυνατῶν) will only be affected by sensible objects in the way in which the animal has the sense power for the sort of sensible objects (b8–9). Because the simplest animals have merely contact senses, they are unaffected by the sensible objects of the distance senses. Sensible objects seem

[27] Bradshaw 1997, 148 states, "It is well-known that the closing statement, that plants are affected 'together with matter,' is ambiguous. Does it refer to the matter of the plants, the point being that the plants are affected in their matter as a substrate? Or does it refer to the matter of the objects affecting them, the point being that plants undergo change by incorporating matter?" And in a note he attributes the view that plants are affected in their own matter to Philoponus, Burnyeat 1995a, Scaltsas 1994, and Ward 1988, while those supposing plants take in the matter of what affects them are Hicks 1907, Ross 1949, Hamlyn 1993, Sorabji 1974, and Silverman 1989. Both groups can be correct, as can the idea that the plant is acted upon by an enmattered sensible form, but the first group emphasizing that the plant takes in what affects it into its own matter has the more important point.

to affect only the sense involved in perceiving them. This accords with supposing that the sensible object *already in actuality* can only be acting upon a presently perceiving sense (see 418a3–4 and 425b25–426a9).

That only senses are affected by sensible objects, he says, has further confirmation (424b9). The sensible objects of the distance senses do not seem to affect bodies, "For neither light and darkness, nor sound nor odor affects any bodies (οὐδὲν ποιεῖ τὰ σώματα), but that in which they are, for instance, the air with the thunder shatters the wood" (424b10–12; cf. 435b7–13 and *Meteor.* 371b11–14). The sensibles of the distance senses, light, darkness, sound, odor, just as such sensibles do not affect bodies, but the sensible form with its substratum evidently impacts upon bodies: the air carrying the sound of thunder wreaks havoc upon trees. Aristotle picks an extreme example to make the general case that enmattered sensible objects impact upon bodies. More ordinary cases of enmattered sensible forms of the distance senses affecting bodies are sunlight causing tanning, loud sound vibrating walls, paint coloring a surface, and perfume causing odor. Sensible objects could only *contact* bodies to affect them when the sensible objects are enmattered. The way that the sensible objects of the contact senses obviously impact upon bodies through enmattered contact suggests that the sensibles of the distance senses might do so as well through being enmattered.[28]

Surely the sensibles of the contact senses, tangibles and flavors, affect bodies (ποιοῦσιν) since otherwise what could affect bodies and alter them (424b12–13; cf. 424a34–b1 and *Phys*. vii 3)? Heating and cooling of bodies seem to Aristotle and his predecessors perhaps the most crucial ways to change bodies. Even soulless bodies (ἄψυχα) undergo these. The sensible objects of the contact senses along with their substrata affect bodies; the substratum also is involved because contact presupposes magnitudes in close approach. Through the contact the sensible form gets taken into the body acted upon, as when a hot body causes heat in another body. This is standard alteration when the previous condition is destroyed through being replaced by the heat or cold. Flavors also affect bodies, as when spices are added in cooking. Such cases show the sensible objects of the contact senses impacting upon bodies even beyond being sense-perceived.

Only the senses can be affected by sensibles as sensibles. But other bodies can be affected by enmattered sensible forms, or Aristotle's definition of sense at the start of the chapter is unnecessarily lengthy. "Receptive of sensible forms" would suffice, and "without the matter" becomes otiose if senses alone are affected in any way by sensible objects. Of course many bodies take on colors, odors, flavors, and tangible features, and most importantly sense media and sense organs must be

[28] Ross 1961, 266–267 interprets quite differently. He says regarding 424b3–18, "What the whole passage amounts to is the drawing of a distinction between the two contact senses, touch and taste, whose objects produce an effect on the body, as well as a sensation, and the three distance-senses, sight, hearing, and smell, whose objects produce only sensation." This has to be faulty for sound that impacts upon air, and for the other distance senses. Differences between the sensibles of the contact senses and those of the distance senses in terms of affecting bodies are that some of the sensibles of the contact senses – hot, cold, wet, dry – fundamentally pertain to all sublunary bodies and that flesh rather than air and water is the medium.

acted upon by sensible objects to cause perceiving. This Aristotle treats in the rest of the chapter.

If the sensibles of the contact senses affect bodies, will not the rest of the sensible objects do so as well:

> Is it not the case, then, also that those [other sensible objects besides those of the contact senses] produce effects or is not every body capable of being affected by odor and sound; indeed the bodies affected are ill-defined, and do not remain, for instance, air; for it becomes odorous just as undergoing something. ἆρ᾽ οὖν κἀκεῖνα ἐμποιεῖ ἢ οὐ πᾶν σῶμα παθητικὸν ὑπ᾽ ὀσμῆς καὶ ψόφου· καὶ τὰ πάσχοντα ἀόριστα, καὶ οὐ μένει, οἷον ἀήρ· ὄζει γὰρ ὥσπερ παθών τι. (424b14–15)

In general, we expect, most bodies are little affected by odor and sound though Aristotle himself pointed to thunder's impact (see b11–12). Still there are special bodies that are ill defined (ἀόριστα) and that do not remain (οὐ μένει) in a fixed place or do not long maintain their affection, such as air, which odor and sound surely affect decisively. Air obviously becomes odorous as undergoing action by odor. Other bodies are also affected by odor and sound, since we hear through walls and put perfumes on our bodies, but Aristotle exhibits air as acted upon by odor to give evidence that sensible objects can at least affect those indefinite bodies that serve as media, especially air and water. That the sense media are somehow affected is of course vital to sustain his whole account of sense perception. The media for the distance senses have positional analogy with the bodies affected by the contact sensible objects.

From the example of the way odor is imparted to air, he proceeds to ask, "What is smelling besides undergoing something? Or on the one hand is smelling indeed to perceive, but on the other hand air quickly being affected becomes perceptible?" (τί οὖν ἐστι τὸ ὀσμᾶσθαι παρὰ τὸ πάσχειν τι; ἢ τὸ μὲν ὀσμᾶσθαι καὶ αἰσθάνεσθαι, ὁ δ᾽ ἀὴρ παθὼν ταχέως αἰσθητὸς γίνεται; 424b16–18).[29] As in other languages, the Greek for "to smell" (ὀσμᾶσθαι) might mean either to perceive odor or to be odorous, especially to give forth a bad odor. So when we say something "smells," we mean that it undergoes something (τὸ πάσχειν τι), and what it undergoes is either the perceiving of odor or the affect of odor such that it becomes odorous. Thus "to be affected" (τὸ πάσχειν) by sensible objects extends beyond caused to sense-perceive to caused to be sense-perceptible. At least this is the case with sensible objects along with their substrata. An animal affected by odor smells the odor, while air affected by odor becomes scented or smelly. Bodies, and especially media such as air and water, can be affected by sensible objects so as to become perceptible. That the indefinite bodies, air and water, serving as media for the distance senses can be *quickly* affected by these sensibles, and so as quickly affected by still other such sensibles, indicates how suitable they are as media, and that the affection is nonstandard alteration.

[29] Burnyeat 1995a, 25 follows Kosman 1975 in rejecting καί in 424b17. Burnyeat supposes that leaving out καί takes away any support for the view that some sort of physiological change occurs in the sense organ along with sense perception. The interpretation developed here, however, does not at all require the καί in order to arrive at the interpretation that Burnyeat rejects. Similar interpretations can result from retaining or eliminating the καί (cf. Lear 1988, 115n56).

Air and water, being colorless, soundless, odorless, tasteless, and indeterminate or ill defined in these ways, can hardly have a preexisting affective quality destroyed as in a standard alteration, but they are acted upon so as in turn to move the sense organ that is so like the medium that it too can be so affected nonstandardly by sensible objects (yet see 425b23–25 about the way the sense organ may retain the nonstandard alterations in *phantasiai*). This rapid glance at nonstandard alteration suffices for establishing what Aristotle needs in the context of defining sense: bodies can be affected by the various sensible objects without themselves having sense perception. Their being affected by sensible objects readies them in turn to affect the senses of animals so that they will be sense-perceived. The imperceptive bodies are affected by sensible objects but not by being receptive to sensible forms without the matter.

This remarkably tight chapter has distinguished the way sense is receptive to sensible forms without the matter from the way imperceptive body is affected by sensible objects. The affection of the imperceptive bodies is some kind of alteration, standard or nonstandard. The affection differs for the various sorts of sensibles and for bodies that are media or not media. Bodies that are not media undergo alteration from sensibles of the contact senses, and to some extent by sensibles of the distance senses. Bodies that serve as media undergo nonstandard alteration from sensibles of the distance and contact senses. For instance, illumined air does not become colored when it serves as medium for vision of color, but there is color at its limit and this so affects the medium that color is visible throughout it from certain directions (see *De sensu* 439b11–12). Air becomes odorous when affected by something smelly and sonant when affected by the striking of bodies within it. The capacity of imperceptive bodies for affection by sensible objects differs fundamentally from the capacity of a sense, for the sense is raised to sense perception. Flesh is, of course, a perceptive body, affected both ways, that is, standardly and nonstandardly, by sensible objects.

The account offered by Aristotle of sense as receptivity to sensible forms without the matter, along with the suggestion of nonstandard alteration of the sense organ and sense media entering into sense perception, escapes easy rejection as simply incredible. By allowing for some role of physiological mechanism in sense perception while also having an information theoretic account of sense, Aristotle avoids oversimplifying his treatment of soul. Contemporary interpreters seek what modern terms we might use without too much succumbing to anachronism to characterize his "philosophy of mind." It clearly cannot be "dualist" in any traditional way inasmuch as soul and body are not separate substances. Yet much as Aristotle contended that we can give a passion such as anger a formal, dialectical account as desire for revenge and a material account as seething of the blood and heat around the heart (see 403a30–b1), sense gets the formal account as receptive of sensible forms without the matter and physiologically there is quasi-alteration of the sense organ. Thus distinguishable types of things enter into sense perception, that is, things that are one and same but other in being, and since Aristotle does not aspire to explain the formal account exclusively in physiological terms, the most reductive sorts of

materialism do not apply to his view.[30] He accords with some sort of "property or type dualism" rather than "substance dualism," and the question then becomes how to situate Aristotle in relation to the positions of "supervenience," "emergentism," and "functionalism." If supervenience is the view that the two types, form and matter and what occurs in each, vary in relation to each other, then Aristotle seems to allow for supervenience. For example, as the seething around the heart becomes more intense we become angrier, or as we become angrier there is more seething. But those favoring a materialist interpretation of Aristotle do not typically wish the variations to go in either direction; they wish the physiological side to determine the mental side. Even were this one-directional or nonsymmetric covariation to hold for something such as sense perception, as is quite doubtful (see book 2, ch. 6, n. 9), Aristotle clearly wishes soul to rule the body when it comes to voluntary translational motions of animals. Consequently, those favoring supervenience of soul upon body may also accept "emergentism": that is, at some level of complexity of the organization of the body the supervenient capacity is capable of causing and directing some changes in the body. Thus emergentism seems preferable to epiphenomenalism that simply denies to the soul any causal power of its own even at higher levels of organization of the body. Now since for Aristotle the human soul can only be in the human body, "functionalism" is quite problematic; yet because the capacity for sense perception belongs to many different types of animal bodies, he perhaps to this limited extent gives some opening to functionalism.

It looks difficult to pin down in our terms precisely how to characterize Aristotle's "philosophy of mind." A key reason for this is that he deals with several different types of capacity of soul, such as nutritive, sensitive, and intellective, whereas modern philosophy of mind tends to consider only cognition, that is, sense and mind, and to treat these together. It is unclear that as wide an account of soul as Aristotle attempts conforms readily to a single, general characterization in contemporary terms. Our philosophy of mind tends to reduce Aristotle's analogical relationships

[30] Cf. Sorabji 1995, 208, which helpfully objects to supposing "that Aristotle's account of perception and anger as each composed of a material and formal aspect really boils down to a polite form of materialism, in which there is nothing more than a physiological process," but much less helpfully suggests that most of Aristotle's technical phrases regarding perception pertain just to this material and physiological aspect of it. Lloyd 1996, 129 discusses why the heating of flesh is hardly identifiable with feeling heat but at most a necessary condition. Caston 1999, 216 says regarding the passion of anger as illustrative of sense generally that there are "two distinct types under which a single event falls and so constitute differences in the way things *are*, not merely in the way we speak or think about them. Such a commitment – call it 'type dualism' – *precludes reductive materialism*, which holds that there is only one such type in reality, even though it can be described in diverse ways." And Caston proceeds to say that "Aristotle is a materialist in the sense that he is a substance monist," though because a "type dualist" he rejects reductive materialism. But we may surely ask why a "substance monist," i.e., someone who sees form and matter as combining to compose a single substance, must be viewed as a *materialist*. On the issue of what kind of "philosophy of mind" is found in Aristotle, Caston 1999 and Miller 1999, along with the sources to which they refer, may be consulted. Caston 2005, 254–255 and 282–283 defends the view that sense perception is to be included in the *pathe* of the soul that require material and formal accounts.

of soul to body, sense to sense organ, sense to nutrition, and sense to mind too facilely to uniformity. And with materialist or physicalist aspirations, contemporaries may try to keep the supervenience relation one-sided – that is, soul and its operations supervene on body and its changes – but Aristotle seems inclined to reverse the relationship to view the body as instrument of, supervenient on, and dependent upon the soul. The resemblance to but conflict with our views keeps Aristotle's conceptions persistently challenging.

BOOK 3

I

In the World As It Is There Can Be but the Five Senses

Though the divisions of Aristotle's treatises into chapters cannot be attributed to Aristotle himself, and even division into books may derive from editors, the present division of books 2 and 3 of the *De anima*, in spite of the fact that the subject is still sense perception, seems appropriate.[1] Book 2 carries out completely the project of a general account of sense perception applying to the five particular senses (see 416b32–33 and 424a17–19). Chapters 5 and 6 suggest that this general account must concentrate upon sense in terms of the proper sensibles (see 418a24–25), and subsequent chapters elaborate upon perception of the proper sensibles through media and sense organs. Thus book 2 demarcates the formal and material components of sense perception of each of the five senses. Book 3 introduces a new line of reflection upon sense perception, turning to the interconnection of the five senses and their relation with other faculties of soul. The opening two chapters deepen the general understanding of sense perception as well as prepare for the coming discussion of intellect and progressive motion. Book 2 could seem quite narrow in its limitation of perception to distinct ranges of sensible objects such as white or sweet; the reflection upon the interrelation of the senses in book 3 enters somewhat more into the lived experience of percipient beings that includes perception of common sensibles, accidental sensibles, and the whole field of perceptible things. Book 3 does not revise the general definition of sense, but it discloses that the five senses are in fact subfaculties of an embracing faculty of sense. This unification of sense makes animal life possible.[2] Further evidence of the unity of inquiry of book 3 is that its opening themes return in the final two chapters of the book.[3]

[1] Hicks 1907, 422 and Ross 1961, 268 accept Zabarella's view that book 3 should preferably begin with either chapter 3 or chapter 4.

[2] If this is correct, then Annas 1992, 9 questionably says, "His long account of perception focuses on the causal mechanisms of perceiving rather than on its phenomenology or content. The Hellenistic theories, on the other hand, while thinking of the soul as the principle of life, do not primarily focus on this; they are more interested in what we call the mind or mental phenomena."

[3] Nussbaum 1995, 6, after attacking the case for the chronological reading of Aristotle's various treatments of soul, says regarding *DA* iii, "it is still perfectly clear that book 3 is internally a mess, and that the current sequence of topics may not represent Aristotle's own finished work and/or arrangement – either

Aristotle in book 2 has been providing a general account of sense perception and demarcating its main components. But what if there are more senses than the five that he has considered? Were there additional senses sufficiently unlike these, his general account and accounts of the components would be inadequate. Moreover, proving that there are but five proper senses has implications beyond sense perception itself. If there could be more senses than five, then intellect and other faculties of soul might just be senses rather than distinct faculties of soul. Therefore the argument that only five proper senses are possible not only secures the treatment of sense perception already concluded, but also permits discrimination of the other faculties of the soul from the senses.[4]

Among the Presocratics, at least Democritus is reported to suppose that there are more than five senses (Aëtius 4.10 [Stobaeus *Ecl.* i 51], DK 67A116). And some beasts, humans, or gods might have extraordinary powers of sense. Aristotle has previously said that Democritus considers soul and mind the same (404a28, 405a9), and hence intellect might for him be some type of sense. Without clear limit to powers of sense, no stable demarcation of powers of soul emerges. And were humans lacking some possible senses, leaving us unfamiliar with much that exists, our intellects would miss access to parts of reality. Aristotle must contend that there are but five possible senses giving access to all that is possibly sensible. The relationship of intellect with sense and the function of intellect to secure comprehensive understanding depend upon restricting sense to the very senses and the types of sensible objects with which we are familiar.[5]

424b22–425a13 Can it be argued that there is no other sense than the five already examined such that someone might put trust in the argumentation (πιστεύσειεν ἄν τις, 424b22–24)? Perhaps the choice of a form of πιστεύω for what the argument achieves may play off and contrast with the way the "divided line" in Plato's *Republic* vi has sense perception result in πίστις. Why not leave the five senses merely as a matter of experience?[6] Aristotle is not, however, trying to prove a matter of fact, the number of senses we have, but instead to prove that it is only possible for us to have these five senses, and why just these five alone are possible. He proceeds

because the work remains incompletely finished or because of some subsequent damage." The commentary should call such judgments into question.

[4] Cf. Aquinas *In de an.* §564. Later in 432a22ff. Aristotle raises the issue of the number of parts soul has, and he indicates that it might have indefinitely many parts (432a24). This could be the case because the power of vision may divide into the power of seeing unlimitedly many shades of color (power of seeing red, power of seeing green, etc.), the power of seeing from near, the power of seeing from far, the power of seeing distinctly, and so on. Yet Aristotle wishes to contend that the general faculty of sense initially divides merely into five great subfaculties.

[5] In *De sensu* 444b15–28 Aristotle acknowledges that animals that do not respire cannot smell by means of breathing, yet he insists that insofar as they are aware of odor they must have a sense of smell. The way smell is a single sense is explained in *De anima* ii 9.

[6] Hamlyn 1993, 115 complains, "The argument presented at the beginning of this chapter is both obscure in itself and obscurely set out. This is perhaps inevitable in any argument which seeks to prove something that seems to be a matter of empirical fact – the number of the senses that animals and human beings have."

according to his order of method of *Posterior Analytics* ii 1 from the observed fact *that there are* five senses – his order of listing the senses in 424b23 is that of book 2 as if this provides arguments *that* there are these five – to establish reasons *why* there can only be these five. It seems that the project is hardly a hopeless one. He is neither attempting to prove a fact of experience, nor considering what might be the case were the world quite different from that which we know. In another sort of world, say, one in which there are more than four sublunary elements – not that he is seriously allowing for such possibilities – there might well be very different senses. Aristotle is rather considering whether there might be more senses than we know of in the world such as we find it. Grounds exist for saying no and that there can only be the five we know.[7] What are these grounds?

Though Aristotle's arguments apply to the whole realm of animal life, he perhaps speaks particularly of humans – often referring to "we" or "us" (e.g., 424b25, b27, b28, b29, 425a15, a17, a22, a23, a24, a25, a27, a29, b4) – because humans have all five senses and the critical issue is whether humans, who might also have mind, could have more senses than the five so far treated. The first part of the argument, developed in a remarkably complex sentence (424b24–425a13), concerns perceiving immediately (contact senses) and perceiving through intermediaries (distance senses) the respective proper sensibles. Aristotle aims to show that we have a complete set of senses and sense organs for all the available sensible objects. Starting with the proper sensibles, the chapter will go on to argue that no further senses are needed for common sensibles (425a14–30) or for accidental sensibles (425a30–b3).[8] Though humans are the crucial case, it seems that almost any higher animal might do because all animals must have both the contact senses, and where an animal has any of the distance senses it nearly always will have all three of them; that is, it will have all five senses. Thus the senses seem to be in animals in two packets, either merely the contact senses or all the five senses. Those animals merely having contact sense are called "incomplete" (τῶν ἀτελῶν) in 433b31. An embryo or newborn may lack some of the five senses that the complete animal naturally has – as a young puppy lacks vision (e.g., *GA* iv 6) – but this does not interfere with the basic point that a complete, mature animal that has any distance sense will have all five senses

[7] Some of those who discuss perception distinguish representational sorts of perception, e.g., the perceiving of a tree, from those sorts not thus representational, such as the perception of a pain within the body or the tickling of a feather. Aristotle evidently concludes that all of the latter sort of awareness is explicable in terms of the five senses and ordinary perception without requiring any additional sort of perception.

[8] Perhaps the writing style elaborating the whole argument in a single sentence parallels the aim to show completeness of the set of five senses and their unity as subfaculties of the unified sense faculty. Maudlin 1986 offers an alternative to the view that Aristotle argues in 424b22–425a13 that only five senses are possible. Maudlin contends that the passage is dialectical, i.e., offers arguments that Aristotle's materialist predecessors might accept rather than Aristotle himself. The point, Maudlin suggests, is that the common sense is a sixth sense beyond the five. But this interpretation reads the arguments of 424b22–425a13 too flatly as materialistic, and it overlooks the way 425a14–30 and 425a30–b3 go on to support the case in 424b22–425a13 by arguing that common sensibles and accidental sensibles do not require additional senses. The common sense is not for Aristotle a further sense but the faculty operative through its various subfaculties, i.e., the five senses.

(the possible exception is the mole, see 425a10–11). There is therefore arrangement of the senses, and the list of five in 424b23 fits the treatment of the senses in book 2 in which the sense of smell is considered something of a mean connecting distance and contact senses (see *De sensu* 445a4–16). Aristotle will be availing himself of the possession of the senses in these two packets, but here to argue for but five senses he must reverse the order from book 2 and begin with the contact senses.

The contact senses, touch and taste, provide perception by direct contact. Contact senses depend upon media, as argued in ii 11, but their media, unlike the media of the distance senses, are parts of the animal's own body; hence such perception is by contact. The use of ἁφή is usefully ambiguous in Greek between touch and contact.[9] What he says pertains to contact perception generally though to touch primarily. His argument is this:

> For if of everything of which there is contact perception even now we have perception (for all the affections of the tangible *qua* tangible are perceptible for us by contact); and it is necessary if absence of a sense involves absence of our sense-organ; and so many objects as we perceive by ourselves contacting them are perceptibles by contact sense, which sense we actually possess εἰ γὰρ παντὸς, οὗ ἐστὶν αἴσθησις ἁφή, καὶ νῦν αἴσθησιν ἔχομεν (πάντα γὰρ τὰ τοῦ ἁπτοῦ ᾗ ἁπτὸν πάθη τῇ ἁφῇ ἡμῖν αἰσθητά ἐστιν), ἀνάγκη τ', εἴπερ ἐκλείπει τις αἴσθησις, καὶ αἰσθητήριόν τι ἡμῖν ἐκλείπειν· καὶ ὅσων μὲν αὐτοὶ ἁπτόμενοι αἰσθανόμεθα, τῇ ἁφῇ αἰσθητά ἐστιν, ἣν τυγχάνομεν ἔχοντες. (424b24–29)

Aristotle bases the claim that we have all the contact senses upon the view that we are capable of perceiving all the tangibles or contactibles (b24–26). The affections (*pathe*) of the tangible as tangible must refer to all the tangible features of bodies. He can assume that the accounts in the *On Generation and Corruption* regarding the tangible features of simple, elemental bodies imply the completeness of the set of tangibles; that is, the four simple bodies involve hot, cold, wet, dry, and the rest of the tangibles derive from these (cf. 423b27–29 and *GC* ii 2–3). Since the tangibles are perceptible by touch and we have touch, we perceive the tangibles. He argues that we necessarily have the contact senses because if a sense is lacking the requisite sense organ is lacking (424b26–27). But since during our whole life we are embodied beings and therefore do not lack the sense organ or sensory apparatus for contact sense, we cannot lack such sense.[10] This amounts to a modus tollendo tollens argument for the necessity of contact sense: if we lack a sense (of some sort), then we lack the sense organ (of the appropriate sort), but we do not lack the sense organ (for contact sense); necessarily therefore we do not lack contact sense.

[9] In 421a18–19 Aristotle says that taste is some form of touch or contact (ἀκριβεστέραν ἔχομεν τὴν γεῦσιν διὰ τὸ εἶναι αὐτὴν ἁφήν τινα).

[10] Since the soul is whole and complete according to the natures of the various living beings, absence of a power natural to the kind must be due to problems with the bodily organ rather than any shortcoming of the soul itself. Hence Aristotle previously observed that could the unsighted or aged receive a new, young eye, they would see excellently (408b21–22). The premise that where a sense is lacking a sense organ must be lacking is fundamental to the whole argument, i.e., concerning both contact and distance senses.

The last stage of the argument, 424b27–29, seems to be that having contact sense and a body that serves as sense organ (and medium) for contact sense, we must perceive all tangibles by contact since our body has a full set of tangibles more or less like those of the bodies that it sense-perceives by contact. The sense organ gives access to all the proper sensibles that come within its range, and a complex body composed of all four elemental bodies should give access to all the tangible features of bodies. Hence in a world composed of four sorts of bodies, the completeness of the set of tangibles, of the kinds of contact sense organs, and of the kinds of contact senses joins together. Aristotle holds all along that the senses have proper objects, and consequently that the objects specially perceptible by contact are proper to the contact senses. Tangibles should not be expected to be perceived by noncontact senses but only by the contact senses and their suitable sense organs, which we already have. Since objects of taste are also tangibles, Aristotle's argumentation covers them as well, and if he is correct that humans have the best sense of touch and taste (see 421a16–26), we hardly expect other animals to have superior contact senses or organs.

The full argumentation for the completeness of our contact senses and perception of all the tangibles thus seems built upon intertwined arguments such as these:

> The affections of the tangible as tangible are things perceptible by contact perception.
> We have contact senses for the affections of the tangible as tangible.
> Therefore, we have contact senses for things perceptible by contact perception. (424b24–26)

This argues that contact sensibles are proper sensibles to contact sense that we have. The argument that we lack none of the contact senses is this:

> If we lack a sense, then we also lack the sense organ for it.
> But we do not lack the sense organ for contact sense.
> Therefore, we do not lack contact sense.

We can hardly lack the sense organ for touch if that is what is in contact with what we sense by touch. The argument that we miss none of the contact sensibles is basically this:

> If we have a sense organ and sense, then these give access to all the proper sensibles.
> We have sense organ and sense for contact sense.
> Therefore, we have access to all the proper sensibles for contact sense.

This will be supported by an argument such as this:

> The sense organ for touch combines the four simple bodies.
> What combines the simple bodies readies for all the tangibles.
> Therefore, the sense organ for touch is ready for all the tangibles.

An implied argument pervading the whole section is this:

Sense is a capacity ready for operation.
In waking life of any duration available senses will operate.
We are aware of operating senses.
Therefore, we are aware of all the senses that we can have.

The argumentation for the distance senses will be similar except that media and sense organs in their case tend to be simple, that is, primarily air or water, rather than a composition of all four simple bodies.

Having dealt with the contact senses, he can proceed to the distance senses. Where we do not perceive directly by contact with our complex bodies, as is the case for touch and taste, but we perceive at a distance through media (διὰ τῶν μεταξύ), we perceive by simple bodies (τοῖς ἁπλοῖς) specified by Aristotle as air and water (424b29–30). It might seem that he merely says that the simple bodies air and water can serve as *media*, but in fact he urges that the sense *organs* for the distance senses are primarily simple airy or watery bodies. That he speaks of the sense organs as well as the media is indicated by his saying "*by* simple bodies" rather than *through* them, and the next argument. Now we have distance senses in such a way that if more than one genus of sensible objects other than each other (ἕτερα ἀλλήλων ὄντα τῷ γένει) can be perceived through one of these simple bodies as medium, as color and sound are perceived through air, then when we have a sense organ composed of such a simple body, we must be capable of perceiving both genera of sensible objects (b31–34). If air is a medium for color vision and the hearing of sound, then if we have a sense organ composed of air we should be sentient of both color and sound. What he wishes to be claiming is that since a sense organ composed of the material is not lacking, the senses capable of perceiving all the sensibles perceptible through that matter as medium will not be missing. This was also a key argument regarding the contact senses (see b26–27); that is, since we do not lack the appropriate sense organ we must have contact sense, and so perceive all the sensible objects perceptible to contact sense. Having a complex body, that is, a body based on the four simple bodies such that it can be sensitive to all the tangibles, secures contact senses for the animal, while having either air or water in the composition of a sense organ for the distance senses guarantees possession of all three distance senses. Aristotle need only present the argument for two kinds of senses that work through sense organs made from the same material, since perhaps only two of the three distance senses will have sense organs made from the same matter, such as in humans ear and nose are primarily air.

What justifies the claim that composition of the sense organ by a simple body guarantees that the animal perceives all genera of sensibles that may appear through this simple body? The assumptions needed are two. One is that medium and sense organ are very closely linked – this applies readily to hearing and smell, and it also holds for vision since air of the medium and water of the eyeball are both transparent. Why media and sense organs for the distance senses link so closely is because they are not strictly air or water but some conditions of them, such as the illumined transparent for vision and unified mass of air or water for hearing.

Consequently, the sensible objects acting upon the medium are also suited to specific sorts of sense organs. The other assumption concerns the fullness and capacity of the nature of living beings. Nature leaves nothing out that is possible to it. If the animal's nature, that is, its soul, has employed a certain type of material as bodily sense organ, it will have managed to develop all the possible sorts of sense organs that might utilize this type of material, and hence all the senses for the various genera of sensible objects perceptible through this sort of medium will belong to that kind of animal. Where these assumptions hold, it should be clear that the senses, sense organs, and sensible objects will be in two packets pertaining to contact and distance senses. Clearly Aristotle is in the midst of an argument for the completeness of the genera of sensible objects, sense organs, and senses.

But not only can more than one kind of distance sense organ be made of the same material, but also different materials may compose the same type of sense organ. So the other argument needed regarding the distance senses is that if more than one simple body can be employed in perceiving the same sort of sensible thing, for example, color is perceived through air and water, since both are transparent, the animal having a sense organ made of either one of these alone will perceive what is perceptible through both (424b34–425a3). This means that having an eye made primarily of water we nonetheless see color perceptible both through water and air; having an ear primarily of air we hear sound perceptible through both air and water; having a sense organ for smell either of air or of water, depending on whether it is a land or water animal, the animal will still smell odor perceptible through both air and water.[11] Hence, having a suitable sense organ gives access to all its proper sensibles, because it cannot be the case that color, sound, or odor differs depending upon whether it is in air or water. And were it the case that our eyes were made of air, so that all our sense organs were air, we could nevertheless still be sure of perceiving all the distance sensibles. This argument combined with the previous argument guarantees that if the distance senses are or are not all made of the same matter, air and/or water, an animal having such sense organs can perceive all the sensible objects perceptible through either or both of the sorts of matter. Why this argument works, as with the previous argument, is that air and water are quite closely related with respect to the features permitting them to serve as media or sense organs, such as transparency, so that the sensible objects of the distance senses act upon either.

A vital assumption is that the sense organs and media are rather elemental, as discussed in *Parts of Animals* ii 1.647a2ff. Aristotle observes that sense organs differ from the nonuniform organs of animals. The rest of the organs of animals are nonuniform (ἀνομοιομερές), such as leg or stomach, so that they can be involved

[11] This is as close as Aristotle can be to the modern functionalist view regarding sense perception that the specific sort of matter is irrelevant so long as it supports some type of psychical function. Aristotle tends to keep matter and form quite closely associated since the former is the potentiality for the latter. Yet he has to allow that though the body of a natural kind of living being is quite determined for it, nonetheless nature in view of all the kinds of living things achieves the various sorts of psychical functions through various kinds of organic bodies.

in actions and functions, but the sense organs must be uniform (ὁμοιομερές) and simple (ἁπλά) and elemental because each sense has a single genus of sensibles that requires that the sense organ be adapted to receive these. What is potentiality to something must be the same in genus as what has the actuality. Therefore in the case of the sense of touch, which has several genera of sensible objects, the sense organ or medium, the flesh, will be uniform but less simple and elemental.

The distance senses use but two simple bodies, air and water, for the sense organs (425a3–4). Water serves for the eye, air for the ear, while the nose might be either water or air depending perhaps upon whether it is the nose of a respiring animal or a fish (a4–5). Since rather than saying eye, what Aristotle states is that "the *kore* is of water" (ἡ μὲν γὰρ κόρη ὕδατος, 425a4), it seems likely that he means by *kore* the interior part of the eyeball that is composed of water rather than merely the pupil of the eye (cf. 413a3, 420a14, 431a17–18). If it is true that the sense organs for distance senses can only be based on air and water, the conclusion follows that all sensible objects, sense organs, and senses connected with these simple bodies must be available to animals, because of the previous arguments that possession of a sense organ of either air or water guarantees perception of all that can be perceived by means of it and sense organs of air or water can perceive at a distance through air or water. Since humans have sense organs of air and water, they must sense-perceive all that can be perceived by means of or through either or both of these simple bodies.

That just the two simple bodies, air and water, serve primarily for sense organs for distance senses can be argued by Aristotle by disqualifying for sense organs the two other simple bodies, fire and earth. Fire either is no sense organ at all or belongs in common to all of them inasmuch as animals need heat (425a5–6). Were further argument needed, Aristotle could insist that fire is an active rather than a passive body therefore employed as the organ for the nutritive capacity of soul (416a9–18, b25–29). Fire is no intermediate body with the indeterminateness necessary for being acted upon by sensibles (τὰ πάσχοντα ἀόριστα, 424b15). It has no special relation to sensitivity, and in excessive or deficient amounts it causes the death of the living being. Earth is either no sense organ at all or especially mixed into the sense organ for contact senses (425a6–7). That purely earthy bodily parts, such as hair and bone, cannot be perceptive has already been mentioned in 410a30–b1 (cf. 435a24–b1). Earth as such is perhaps too determinate and inert to serve as medium or sense organ. Earthy matter suitably mixed constitutes the sense organs for the contact senses because these senses are directed toward the most intimate features of bodies. Considerations such as these eliminate earth and fire as possible sense organs for distance senses, leaving only air and water (but see iii 13 for the sensitive body as complex).

If air and water alone can be sense organs for the distance senses, and as previously stated where an animal has a sense organ of a certain material it has senses that sense-perceive all the genera of sensible objects that pertain to that material, and what is perceptible through both air and water must be perceptible through either, then animals having sense organs of air and/or water, which animals clearly have, sense-perceive all the possible genera of sensible objects perceived at a distance

and have all the possible types of sense organs and senses (425a7–10). Only those animals that are incomplete (ἀτελῶν) or maimed (πεπηρωμένων) will lack sense organs and therefore lack senses (a10; cf. 415a27). Incompleteness is due to immaturity and being maimed due to a condition preventing coming to completeness. Those animals having any of the distance senses should when mature naturally have all of these senses. Aristotle observes that it is evident (φαίνεται) that even the mole, a burrowing animal, has eyes under its skin (425a10–11). Elsewhere Aristotle admits that the eyes of the mole are nonfunctional (see *HA* iv 8.532b29–533a15). If there is only this single exception, here not treated as an exception, then the conclusion that all the distance senses come together in the higher animals seems compelling.

What might call Aristotle's argumentation into question is the possibility of more than four simple sublunary bodies and sensible features different from those with which we are familiar. His case depends upon just the four simple bodies to serve as sense organs. Thus he points to this central assumption of the world as it is when he concludes, "so that, if there is not some other body and affection which belongs to none of the bodies here [in the world surrounding us], then no sense would be lacking" (425a11–13). He hardly means to question four elemental bodies, for which he argues elsewhere, but only to acknowledge that his case for only five possible senses has assumptions and would not hold for any possible world. Aristotle states the reservation carefully in order that the mere existence of another sort of body, such as the aether of the heavens, need not weaken his case so long as it introduces no perceptible features not possessed by the four sublunary elements. Barring additional peculiar perceptible features (πάθη), and aether has none, Aristotle's argument stands. On the basis of his assumptions, he has shown that we have all sense organs and senses requisite for sense-perceiving all the types of sensible objects. The five senses and their proper sensibles are, of course, factually the case, but Aristotle has argued for their completeness and explained why there can be but these five. Nature is satisfied when, given the four simple bodies, it has a set of senses and sense organs that secure perception of what it is possible to perceive.

425a14–30 Since ii 6, where he distinguished proper, common, and accidental sensibles, Aristotle has concentrated on perception by the five senses of their proper sensibles. Only now in the context of restricting perception to the five senses does he clarify the way in which perception of common sensibles arises in order to ensure that no further sense is required. Having argued that perceiving the proper sensibles requires no additional sense, he now raises the question whether there is a special sense organ to perceive the common sensibles, either all of them or any of them (425a13–16). Subsequently, in 425a30–b4 he argues that no further senses are needed for accidental sensibles. The argument regarding common sensibles, which in its details causes difficulty for ancient and modern interpreters, has two connected thrusts. First it denies any sense beyond the five familiar senses for sense-perceiving the common sensibles, and second denies that any of the five proper senses specially perceives any or all of the common sensibles. The second point

confirms that the common sensibles are truly *common* rather than proper sensibles. Elsewhere Aristotle complains that his predecessors treat the common sensibles as proper sensibles (see *De sensu* 442b4–5). And the second point reinforces the first: if common sensibles cannot be proper to any of the five senses, then there should hardly be a sixth sense to which they are proper.

The passage commences this way:

> But yet neither of the common things which by each sense we perceive according to accident, for instance, motion, rest, figure, magnitude, number, unity, is there able to be some proper sense organ; for all these we perceive by motion (for instance magnitude by motion; so that also figure, for figure is some sort of magnitude; resting by its not being in motion; number by the negation of continuity), and by the proper things, for each sense perceives one. So that it is clear that it is impossible for any proper sense to be of these, for instance of motion; for thus it will be just as now by vision we perceive the sweet. This is because we happen to have both senses, in which way whenever we encounter them together we recognize them. ἀλλὰ μὴν οὐδὲ τῶν κοινῶν οἷόν τ' εἶναι αἰσθητήριόν τι ἴδιον, ὧν ἑκάστῃ αἰσθήσει αἰσθανόμεθα κατὰ συμβεβηκός, οἷον κινήσεως, στάσεως, σχήματος, μεγέθους, ἀριθμοῦ, ἑνός · ταῦτα γὰρ πάντα κινήσει αἰσθανόμεθα, οἷον μέγεθος κινήσει · ὥστε καὶ τὸ σχῆμα · μέγεθος γάρ τι καὶ τὸ σχῆμα· τὸ δ' ἠρεμοῦν τῷ μὴ κινεῖσθαι, ὁ δ' ἀριθμὸς τῇ ἀποφάσει τοῦ συνεχοῦς, καὶ τοῖς ἰδίοις· ἑκάστη γὰρ ἓν αἰσθάνεται αἴσθησις. ὥστε δῆλον ὅτι ἀδύνατον ὁτουοῦν ἰδίαν αἴσθησιν εἶναι τούτων, οἷον κινήσεως · οὕτω γὰρ ἔσται ὥσπερ νῦν τῇ ὄψει τὸ γλυκὺ αἰσθανόμεθα. τοῦτο δ' ὅτι ἀμφοῖν ἔχοντες τυγχάνομεν αἴσθησιν, ᾗ ὅταν συμπέσωσιν ἀναγνωρίζομεν. (425a13–24)

The possible difficulties start right away. While announcing the topic of his argument, Aristotle comments that the common things (τῶν κοινῶν) are those that each of the five senses perceives by accident (κατὰ συμβεβηκός): motion, rest, figure, magnitude, number, unity (a15–16).[12] That the common things are perceived "by accident" might conflict with ii 6.418a8–11, where he indicates that the proper and common sensibles, in contrast to the accidental sensibles, are perceived in virtue of themselves (λέγεται δὲ τὸ αἰσθητὸν τριχῶς, ὧν δύο μὲν καθ' αὑτά φαμεν αἰσθάνεσθαι, τὸ δὲ ἓν κατὰ συμβεβηκός).[13] Surely, however, "by accident" is equivocal, and Aristotle

[12] This list of the common sensibles adds unity, at least in most of the manuscripts (though not in Ross 1961), whereas that in ii 6.418a17–18 merely included number (cf. *De sensu* 437a9). Generally in Greek mathematics, since a number of things tends to mean more than one, one is not included among the numbers (see *Meta.* 1088a6, 1021a12; Klein 1968). Aristotle therefore may add unity to the list of things perceived by more than one sense though he usually has no need to do so. It seems important in this context because the perception of anything may also include the perception of unity, so that any sense perception possibly includes at least one common sensible and consequently each sense can be involved in perceiving the common sensibles. Also, by now setting out at least six common sensibles, rather than the usual list of five, he makes it unlikely that each of the five senses could concentrate upon one common sensible, and it is similarly unattractive to have the common sense as a sixth sense.

[13] A way to eliminate the conflict is to suppose that a negation (οὐ) has dropped out of the text, as an old Latin text and in modern times Torstrik suggest. Then Aristotle, consistently with ii 6, denies that we perceive the common sensibles by accident. Another way out is to suppose that Aristotle only tells us the consequences contrary to fact were the common sensibles perceived properly by some sense: i.e., they would then be perceived accidentally by the others (see Themistius *In de an.* 81,18–35; Simplicius *In de an.* 182.38–183.4; Philoponus *In de an.* 454,5–13). Both of these solutions are unnecessary, besides

proceeds to explicate how he uses it here. All the common sensibles are perceived by motion and along with the proper sensibles, that is, accidentally, he declares, "for all these we perceive by motion . . . and by the proper things" (ταῦτα γὰρ πάντα κινήσει αἰσθανόμεθα . . . καὶ τοῖς ἰδίοις, 425a16–19).[14] But this explanation obviously requires clarification. "Motion" may refer to several different things, and just how do the common sensibles come along with the proper sensibles or the proper senses?

"Motion" has these possibilities: (1) motion caused by any sensible object as sensible, that is, the alteration (ἀλλοίωσις) or modification (πάθος) produced within the sense organ; (2) motion that is one of the six common sensibles, that is, the locomotion or change in size of some body external to the sense; (3) motion of the perceiving animal, such as local motion of the eye or hand; (4) motion broadly covering both (2) and (3). The ancient commentators advocate (1), supposing that Aristotle argues that the common sensibles act directly upon the sense organs causing motions within them by which the common sensibles are perceived and thus eliminating the prospect that they are perceived merely accidentally.[15] This interpretation is possible, but it fits clumsily with the account of motion's role in 425a17–19. The statement that "resting [is perceived] by its not being in motion" (a18–19) suits this interpretation especially poorly.[16] Some modern commentators therefore reluctantly embrace (2) but acknowledge strangeness in saying either that the common sensible motion is perceived by motion or that all the other common sensibles depend upon the perception of motion.[17] With regard to (3),

being dull, because Aristotle himself immediately afterward distinguishes different senses of accidental and appeals explicitly to the consequences were there to be a special sense for the common senses (which would be rather redundant). Since what he says in 425a17–19 explains the way the common sensibles are somehow perceived accidentally, it is far better to take his comment in a15 positively (cf. Hamlyn 1993, 117).

[14] Ross 1961 brackets κινήσει in 425a17 without any support from the manuscripts. The translation follows Simplicius *In de an.* 184.5–9 in joining καὶ τοῖς ἰδίοις in 425a19 with πάντα κινήσει αἰσθανόμεθα in a17. Hicks 1907, 429 believes the parenthesis is too large and that these words should merely be confined to the case with number so that it might mean, e.g., that we get *two* when we *both* see and hear. On this reading the line 425a20 (ἑκάστη γὰρ ἓν αἰσθάνεται αἴσθησις) accordingly makes the point that each of the senses perceives one sort of sensible object to explain the way the proper senses contribute to perceiving number. Thus restricting these words will not much change Aristotle's main argument. He will be arguing that since each of the five senses perceives the common sensibles, there is no special sense for them. We should observe that Hicks gives a strange meaning to "common things." Generally the common sensibles are those perceived by more than one sense, but on Hicks's interpretation we may perceive *two* by seeing a color and hearing a tone so that there is no common object perceived by both senses but a collectivity formed by sensibles from each sense. Perhaps, then, Hicks's interpretation should be modified so that καὶ τοῖς ἰδίοις and ἑκάστη γὰρ ἓν αἰσθάνεται αἴσθησις just mean that any sense may count the number of its proper objects, e.g., five colors or three sounds.

[15] See Simplicius *In de an.* 183,3–4 and Philoponus *In de an.* 457,26–29; cf. Aquinas *In de an.* §§577–578.

[16] In 418a17–18 the common sensible rest is ἠρεμία, whereas in 425a15 it is στάσεως. But then in 425a18 he reverts to τὸ ἠρεμοῦν. Might the shifting in names used for rest point us toward the third way of taking motion since we here have "motion" of the person naming things somehow clarifying rest?

[17] See, e.g., Hicks 1907, 428. Ross 1961 tries, as indicated, to prevent the problem through emendation of the text by deleting κινήσει in 425a17.

locomotion of the sense organs, it has been objected that this reads the ideas of modern psychology into Aristotle.[18] Nonetheless, what Aristotle says about how motion enters into perception of the common sensibles works well with the view that they are perceived through motion or lack of motion of the sense organs, as when we run our eyes or hands along an object to perceive its shape and magnitude (and motion of our hand may enter even into perception of such proper sensibles as hard and soft; see book 2, ch. 11, n. 4). Moreover, in *Physics* 211a12–14 we find Aristotle saying that we should not be aware of place were there not to be motion in place. Because place connects with several of the common sensibles inasmuch as place has dimensions, it seems plausible that our awareness of common sensibles derives either from the motions of external bodies or our own motions.[19] Thus, since view (2) has some success – motion's usual place as first in the list of common sensibles accords with it – and view (3) holds quite well, view (4), which encompasses both, is perhaps best: awareness of common sensibles derives from the motion of bodies outside the percipient animal and the motions of its own body.

The passage 425a17–19 accords nicely with view (4). Aristotle tersely states, "magnitude by motion" (οἷον μέγεθος κινήσει, 425a17), perhaps hoping that the reader appreciates how we assess the size of bodies by running our eyes or fingers along them. Here motion of the sense organs or percipient body contributes to perceiving magnitude. Yet the motion of the magnitude itself can also lead to its perception, as smaller objects pass more quickly and larger ones take longer. And if, as *Metaphysics* x 1.1052a19–29 indicates, the unity of a body connects with its being in motion all together, then motion evidently links with unity and magnitude. Thus both (2) and (3) work nicely, and therefore amount to (4). Figure, Aristotle further asserts, being a type of magnitude, will also appear through motion (425a17–18). We readily understand that we gather the shapes of bodies much as we assess their size by motion of the eye and hand. And inasmuch as the magnitude of a body has to do with its being in motion together, its figure does so as well. We also, for example, expect a round shape to roll smoothly. Rest, Aristotle tells us, is perceived by lack of motion (a18). We recognize that things are at rest either when our sense organs do not have to be in motion to perceive them or no motion is discerned in what is perceived. Number, he declares, is perceived by breaks in the continuity (ὁ δ' ἀριθμὸς τῇ ἀποφάσει τοῦ συνεχοῦς, a19). Running our hands or eyes along a body indicates where it stops, and observing where a body ceases to be in motion together indicates a break in continuity. Either sort of break of continuity reveals where one item ends and another begins, so that a number of items is perceived. Whether we embrace interpretation (2) so that all the common sensibles connect with the common sensible motion, or interpretation (3), which implies that all the common sensibles become perceptible by the locomotion of sense organs (or combine them

[18] See Hicks 1907, 428; but see Hamlyn 1993, 118 for an opposing view.

[19] Cf. *Physics* 218b21–219a10, where Aristotle has our awareness of time depend upon awareness of change in our condition of awareness. Were we to sleep without being aware of it, for example, we should have no awareness of the passing of time. If we observe our own body or external bodies in motion, we should have awareness of change in our souls.

through [4]), Aristotle's argument unites the common sensibles as perceptible by the five proper senses, so that the common sensibles will not be proper to any one sense. As perceived in relation to local motion of the five senses or to motion of the sensible objects, the common sensibles are cognitively accidents of such motion.

The motions, lacks of motion, or breaks in the motion in either the external bodies or the sense organs contributing to perception of the common sensibles are perceived by way of the proper sense organs (καὶ τοῖς ἰδίοις, 425a19). But Aristotle has deliberately worded this – καὶ τοῖς ἰδίοις – so that he can be referring to the proper sense organs or to the proper sensibles. Not only is perception of common sensibles in conjunction with local motion of the sense organs or the sensible objects and by means of the proper senses, but also perception of the common sensibles is always conjoined with perception of proper sensibles. This interpretation, that perception of common sensibles only goes along with perception of proper sensibles, is plausible because common sensibles *are essentially* connected with proper sensibles. Plato has Socrates pertinently illustrate this in *Meno* 75b: figure is the only thing that always accompanies color (cf. 425b5–9 and 428b22–24; but see *Meteor*. 342b11–13). Motion, rest, magnitude, figure, number, unity are perceived along with the proper sensibles since the proper sensibles, through inhering in substrata, can be at rest, be in motion, have size or figure, and so on. Thus the common sensibles follow along with the proper sensibles and in this way are perceived "accidentally." Nonetheless, the common sensibles are perceived directly and in virtue of themselves rather than accidentally as are the accidental sensibles. Accidents are equivocal since some are essentially conjoined, for example, as the property of having its angles sum to two rights is conjoined with triangle, rather than merely sometimes conjoined, as, bronze is triangular. That the son of Diares is perceived as a pale thing is accidental in a different way from that in which a perceived patch of color must have magnitude and figure. Common sensibles can be accidents of the proper sensibles while being essentially connected with them and perceived in virtue of themselves.

The last premise before his conclusion receives such brief statement that it is ambiguous. Aristotle says, "for each sense perceives one" (ἑκάστη γὰρ ἓν αἰσθάνεται αἴσθησις, 425a19–20), where the "one" might be one genus of sensible objects, one sensible object of whatever sort, one as a common sensible, or one of the common sensibles.[20] There then seem to be several ways to construe the argument. Each of the senses perceives but one class of proper sensible objects, while by some relation to local motion of the sense organ or to the motion of sensible objects it also perceives the common sensibles, with the result that it is impossible that there be a proper sense for any or all of the common sensibles such as motion (a20–21). Alternatively, he might be saying that each sense perceives some individual sensible object, such as a colored thing, that will also have common sensibles conjoined with it, such as unity, figure, motion, and therefore there could be no proper sense for the common sensibles since they clearly are already sense-perceived by each of the

[20] And if there could here be an accusative of respect, then the line says that each sense perceives with respect to one sense organ, thus reinforcing the point that the common sensibles are perceived by means of the proper sense organs.

proper senses. Or, he might be arguing that since each of the five distinct proper senses perceives unity as a common sensible, there cannot be any special sense for the common sensibles. Or finally, he may be saying that since each of the senses perceives one common sensible or another, and that all the common sensibles come along with the perception of motion, there could be no single sense to which the common sensibles are proper. Any of these arguments suffices to prove that none of the five senses could be a proper sense for the common sensibles singly or together, and they could as well be used as arguments that there is no sixth sense serving as a proper sense for the common sensibles.

Aristotle's conclusion, "So that it is clear that it is impossible for any proper sense to be of these, for instance of motion" (ὥστε δῆλον ὅτι ἀδύνατον ὁτουοῦν ἰδίαν αἴσθησιν εἶναι τούτων, οἷον κινήσεως, 425a20–21), gives particular emphasis to denying the possibility of some proper sense for the common sensibles taken individually. This fits with the points that the common sensibles are all perceived accidentally with motion and in conjunction with the proper sensibles. So long as the common sensibles are each and all perceived as they are by the proper senses, it cannot be the case that there is a proper sense for any of the common sensibles.

Further support for this conclusion derives from considering counterfactually the consequences of its falsity (425a21–27). Were there some proper sense for any of the common sensibles, whether a new sixth sense or one of the standard five, the other senses would only perceive the common sensibles accidentally. And not accidentally in the essential way that common sensibles are perceived in conjunction with motion or the proper sensibles, but perhaps as one proper sense happens to perceive the objects of another (a21–24). For instance vision accidentally perceives the sweet inasmuch as the colored object it perceives is also sweet, and we may be perceiving both color and sweetness simultaneously. Or were the accidental perception of common sensibles not of this sort, it might be like the accidental perception of accidental sensibles, such as the son of Cleon (a24–27). It happens that the pale thing we see is Cleon's son, and similarly it might happen that the colored object that we see has some common sensible. Perhaps the accidental conjunction of the pale with Cleon's son, since it is a conjunction of things on different levels of being, seems even more accidental than the conjunction of color and sweetness.[21] The inappropriateness of viewing the sense perception of common sensibles as thus accidental, since we should know, for example, that figure generally accompanies color, is meant to convince us that there could be no proper sense for any or all of the common sensibles.

An implication of this argument warrants reflection. Aristotle has denied that any sense could be proper for any of the common sensibles or else the other senses would only perceive the common sensible accidentally. It follows, then, that all five senses must perceive the common sensibles. Though Aristotle stated that the common sensibles are those perceived by *all* the senses (ii 6.418a18–19), he also said

[21] Back in ii 6.418a20–23 Aristotle used the son of Diares as illustration of an accidental sensible along with perceiving the pale thing, whereas he has now switched to the son of Cleon's being perceived along with the pale thing. Might this switch suggest how accidental some accidental perception is?

that motion is perceptible by sight and touch (418a19–20). Might only these two senses perceive motion and the other common sensibles? Were motion perceptible solely by sight and touch, the other senses would perceive it merely accidentally, but Aristotle's present argument tells against this result. Aristotle wishes to hold that *all* the proper senses perceive *all* the common sensibles. Not merely vision and touch deal with localized objects, which can be in locomotion, but audible, olfactory, and gustatory objects are localized as well. Sight and touch have more authority and precision in the perception of motion and the other common sensibles, but the rest of the senses can also be in play. Aristotle's present comments and the previous observations about how common sensibles are perceived accidentally in connection with motion and proper sensibles reinforce the view that all the common sensibles are perceptible by all five proper senses.

In 425a27–30 Aristotle reaffirms his conclusion that there is no proper sense for the common sensibles. He states,

> But in the case of the common sensibles we already have common sense not according to accident (τῶν δὲ κοινῶν ἔχομεν ἤδη αἴσθησιν κοινήν, οὐ κατὰ συμβεβηκός); there is therefore no special sense required for their perception: if there were, our perception of them would have been just as has been said like our seeing the son of Cleon. (425a27–30)

The phrase αἴσθησις κοινή (common sense) here appears for the first time in the *De anima* and referring to perception of common sensibles. Is he speaking of some special faculty beyond the five senses, in which case he would have located a further sense contrary to his aim, or is he just indicating that it is common to the five senses to perceive the common sensibles so that the common sensibles are proper to none of them? It is easiest to take him merely to be insisting that each of the proper senses perceives any of the common sensibles, and hence perception of them is something in common for each of the senses. Surely it will become clear right below in this chapter that the particular senses are unified in their function so that there is a further meaning for "common sense" (*sensus communis*), that is, the unified faculty engaged in whatever sense perception that has each of the five senses as one of its subfaculties. Aristotle's use of αἴσθησις κοινή in regard to perceiving common sensibles prepares for the view that all the senses join in a central or common sensibility, perception of the common sensibles constituting merely one task of the unified sense power. If each of the five senses perceives the common sensibles nonaccidentally, this is to be understood differently from the earlier discussion (see 425a15) of how the common sensibles are perceived accidentally inasmuch as they are perceived in conjunction with motion or with the proper sensibles or the particular sense organs. Despite the way the common sensibles accompany these other things, in this way being accidental, the common sensibles are perceived directly by the five senses inasmuch as they act upon the senses through media and sense organs.[22] Any of the common sensibles may act

[22] The contrast is not between accidental perception by the proper senses and perception per se by the common sense, as Modrak 1987, 64 suggests – "as long as the perception of a *koinon* is through a single sense, it remains *kata sumbebekos* because the *koinon* is by itself causally efficacious only with respect

directly upon any of the five senses, thus being perceived in virtue of itself, though also in conjunction with motion and proper sensibles. Since all the senses perceive the common sensibles, there can be no proper sense for the common sensibles, or the senses besides that proper sense could not perceive them directly but merely accidentally in the way that we see the son of Cleon.

425a30–b3 Aristotle has been arguing in 424b22–425a13 that there cannot be proper senses beyond the five and in 425a13–30 that perceiving the common sensibles requires no further sense; now he argues that accidental perception and accidental sensibles require no further sense (425a30–b3). The five senses perceive each other's proper sensible objects merely accidentally. Aristotle comments that they perceive each other's objects not in the way the senses are each themselves, but as being together as one (οὐχ ᾗ αὐταί, ἀλλ' ᾗ μία, 425a30–31). A sense does not perceive the proper objects of another sense as it does its own proper sensibles, and were the five senses completely distinct rather than unified as subfaculties of a common sense faculty, there would be no way at all to perceive the objects of other senses. Each sense could perceive exclusively its own proper objects. Yet because the senses are connected as subfaculties of the common sense faculty, and because several sorts of proper sensibles inhere in one substratum, the senses can perceive the objects of the other senses accidentally. This is the first striking appearance of the view that the senses are unified in a single sensibility. We may perceive something, such as bile, as bitter and yellow, requiring no further faculty beyond sense to give unity since the five senses are united in the central sensorium (a31–425b2).[23] If no further sense is required to perceive the unity of bitter and yellow in bile, this indicates that the senses must join together to allow for such perception and that the senses accidentally perceive each others' objects. The unity of sense fits well

to the power constituted by the joint activity of several senses" (cf. 68: "the *kath' hauta* perception of the *koina* is assigned to the common sense because the same *koinon* is perceived through several senses at once") – but the contrast is between a way in which the proper senses perceive the common sensibles accidentally and a way in which the proper senses perceive them per se. Modrak suggests some contrast between perceiving the common sensibles by one sense and by the common sense, or by one sense and multiple senses, but the text does not support such a reading. She says, "The common sense is not a separate sense; it just is the capacity for the joint exercise of several senses" (65), but this misleadingly indicates that the common sense is some peculiar capacity in play in certain circumstances rather than in *all* sense perception. Commentators who count up the supposed functions of the common sense are in fact specifying those functions that initially justify its introduction, but they may overlook the way once the central faculty is posited it takes over *all* sense perception as the faculty always in operation in sense perception (cf. Lloyd 1996, 126 and 131).

[23] Aristotle here captures the point in Plato's *Theaetetus* 184c–d that the senses are not in us separate as the men in the Trojan horse, but they all join in the soul. Aristotle is not supposing that thought has to intervene for multiple senses to be in play, even if he speaks in 425b2 of sense as "saying" (τὸ εἰπεῖν) things are one and in b3 refers to believing (οἴεται). This may be contrasted to *Theaetetus* 185a–b, where thought rather than sense perception determines that things are one. Aristotle is just speaking of sense perception as we often do as making judgments, as we may say that lower animals "judge" things. For example, the cat that misperceives the height of some object and hits its head might be said to "judge" wrongly. After all, Aristotle has yet to distinguish sense and thought, as he will in iii 3.

into the context of arguing that there are but five senses. No additional sense is needed for the accidental perception of proper sensibles of other senses or for perceiving the typical accidental sensibles, such as the son of Cleon, as both sorts of accidental perception are involved in the example of perceiving bitter, yellow bile (b2–3). Since the senses are united in a central faculty, when we perceive bile at once as yellow and bitter, by seeing and tasting the bile, it is as if both sight and taste perceive the accidental sensible bile, and sight is accidentally seeing the bitter while taste is accidentally tasting the yellow. Unification of the senses – and of sensible objects – permits both sorts of accidental perception.

Unification of sense also allows for deception, and the fact of such deception supports the claim, if there is still any doubt, that each sense accidentally perceives the sensible objects of other senses. Seeing something yellow, sense may mistakenly determine that it perceives (bitter) bile (425b3–4). Presumably such error suggests not just that we link yellow with bile but also that we see the yellow and in addition accidentally see bitter. Because the objects of other senses are accidentally rather than directly perceived by the proper senses, and accidental sensibles are accidentally perceived – along with the fact that objects contain congeries of sensible features and we have *phantasia* – we may make perceptual errors (cf. 418a15–16 and iii 3).[24] We can misperceive something as bile when we just see yellow or just taste bitter. When we both see yellow and taste bitter, the misidentification has to do less with each of the two senses' accidentally perceiving the object of the other sense than with our accidentally misperceiving accidental sensibles. The beasts can also have such misperceptions, again indicating that this need not be a matter of thought. Perhaps Aristotle adds the possibility of misperception regarding accidental perception to reinforce the points that the senses do perceive each others' objects accidentally and that neither perception nor misperception requires any additional sense beyond the five and their unification.

425b4–11 The inquiry into whether there are more than five senses has led to recognition that these five senses are really somehow united in a single sensibility. Unification of diverse subfaculties of sense allows for awareness of objects of different senses and for misperception. Were we just to have a single sense, all the sensibles that it could perceive would be proper sensibles, and deception should be practically nonexistent. Now if having five senses that are unified allows for error, for what purpose then, someone may well inquire, do we have more senses than one (ζητήσειε δ' ἄν τις τίνος ἕνεκα πλείονας ἔχομεν αἰσθήσεις, ἀλλ' οὐ μίαν μόνην, 425b4–5)? Nature might have unified sense even more to remove the possibility of misperception and reduced the variety of the world to one genus of sensible objects. As the conclusion of his argumentation to show that there can be but five senses, and that

[24] It is sometimes pointed out that Aristotle observes the "association of ideas" in his discussion of recollection (see *De memoria* 451b10–22). Clearly he touches upon such association here as well due to *phantasia*. From experiencing yellow and bitter together in bile, we expect a yellow thing will also be bitter and bile.

these five senses are suitable for the existing sensible objects, Aristotle raises the question of the purpose for more than one sense. He will thus have considered why there should be many senses and why just so many as there are.

We have several senses, Aristotle suggests, in order that we do not fail to notice the common sensibles that accompany the proper sensibles (ἢ ὅπως μὴ λανθάνῃ τὰ ἀκολουθοῦντα καὶ κοινά, 425b5–6). He perhaps puts this rather indefinitely here since the reasoning is so counterfactual and because it deals with the purpose of sense that is generally being reserved for treatment in iii 12–13. Were there merely one sense, such as sight that properly perceives color, we could hardly distinguish white color from what accompanies it, such as magnitude, since these sensible objects would always be together (b6–9). Notice the emphasis upon common sensibles as accompanying proper sensibles; that is, perception of proper sensibles entails perceiving common sensibles as well. If we had just one sense, the common sensibles linked with proper sensibles would also seem to be proper sensibles. But since animals have several senses, they perceive the common sensibles joined with the proper sensibles of different senses, so that they can make appropriate distinctions of proper and common sensibles (b9–11). An animal with sight alone could distinguish hardly anything but colors. A striped zebra, for instance, would have no unity but appear to be many different objects to the animal distinguishing only colors. Without several senses and the clear discrimination of common sensibles, we would lack experience of bodily objects. Aristotle uses vision for his example perhaps because it is the sense that best perceives the common sensibles (see *De sensu* 442b10–13), but even it would likely fail to make the distinction without assistance from other senses. Having many senses thus enrichens cognitive life – while opening up the possibility for error – by allowing for many distinctions. Not merely the common sensibles are disclosed through several senses but also the accidental sensibles as bodily beings with magnitude, figure, rest, and motion.[25] Too much unity of sense diminishes perceptive power.

Higher animals have vision along with other senses, but the lowest animals merely touch and taste. For such animals discrimination of the common sensibles is likely quite poor, and having both contact senses rather than one a modest cognitive enhancement. A different reason for having more than one sense might be offered in their case that concentrates upon survival through protection of the body and nutrition. Aristotle instead looks appropriately to the higher animals and more complete set of senses to account for nature's end, the discrimination of more differences.

This chapter begins arguing that there cannot be more than five senses and ends arguing that there must be more than one sense. Both sorts of arguments are ultimately teleological inasmuch as they contend that several senses, and five

[25] George Berkeley attacks the distinction of "primary" and "secondary qualities." For him "primary qualities," i.e., Aristotle's common sensibles perceptible by the various senses, e.g., visual magnitude and tangible magnitude or visual figure and tangible figure, are quite different ideas, as different as color and temperature. This contributes to Berkeley's denial of the existence of body or matter, but he has ruined the notion of *common* sensibles.

to be exact, are needed to perceive completely what it is possible to perceive. To discriminate the various sensibles, there must be several senses, and all the possible senses, assuming our world of four simple bodies with their various sensible features, are the five senses that we know. The five senses suffice for the proper, common, and accidental sensibles. These five senses do not stand isolated from each other, as do the men in the Trojan horse (see Plato's *Theaetetus* 184d), but they join to form a common sense. Yet the senses cannot be united far without losing the advantage of several senses. The full discriminative power of sense requires five senses as subfaculties of a central sense power.

2

What Allows for Perceiving That We Perceive; Sense Joins in a Common Power so That the Five Senses Are Subfaculties of a Central Sense Faculty

The opening question of this chapter, whether another sense is needed to explain the way we perceive that we perceive or the sense itself perceives its own perceiving, connects with the previous chapter's argument against more than the five senses. If self-awareness of the senses requires a further sense, there would be more than five. The previous chapter asked whether there is some proper sense for perceiving the common sensibles; Aristotle seems to be asking here whether there is some additional proper sense for perceiving proper perceiving. The previous chapter started to show unification of the senses in some common sense; this unification here receives important verification. If the senses are all united in and working through a central sense, we may say either that a sense perceives itself or that the central sense is aware of sensing, without supposing any senses beyond the five. Unification of the sense power also accounts for perception that goes beyond the proper sensibles to the perception of common and accidental sensibles, and the discrimination of the various proper sensible objects. The chapter's order of treatment is well conceived because the perception of perception with which it begins is presupposed by the discrimination of the sensible objects of different senses with which the chapter ends. The order supports viewing five senses as subfaculties of a common, united sense power, and that sense is thus unified is vital to any adequate understanding of sense.

The chapter shows how ordinary distinctions may be accepted without entailing insurmountable duplications or dichotomies. Both perception and awareness of perceiving belong to perceptual experience without being quite the same or too different from each other. For Aristotle consciousness and self-consciousness are intimately joined, in contrast with Plato in *Timaeus* 77a–c, where plants seem to have consciousness without self-consciousness. Perception connects so closely with self-awareness because, though sense perception differs from the sensible object, they are also somehow the same; that is, the perceiving sense becomes what it actually perceives. Hence for Aristotle perceiving always involves perceiving of perceiving, and there is no unbridgeable gulf, as some thinkers suppose, between a representation or appearance in the soul and what there is in reality. Sense-perceiving for Aristotle is not effected through effluences, appearances, or representations, but

the very form of the object enables the perception of the sensible object itself and thereby as well its own sensing. While allowing for our ordinary distinctions, he locates deep unities that avoid unbridgeable bifurcations. Beginning especially with our human experience, since for us it is obvious that we are aware of our perceiving, the chapter pertains to animals generally, so that it explores the higher reaches and limits of sense experience of any sentient being.

425b12–25 Aristotle observes that we perceive that we see and we hear (αἰσθανόμεθα ὅτι ὁρῶμεν καὶ ἀκούομεν); awareness of sense-perceiving is so obvious for humans that he can take it for granted (425b12). Whether we read or hear this formulation, we seemingly become immediately aware of the truth of the present claim in relation to its own case and generally. Perceiving of perceiving is further what is enabling him to give his accounts of the senses. Convinced *that* there is such self-awareness of perceiving, he can go on to give some account of *what* it can be. His noting that *we* perceive *both* that we see *and* we hear suggests (a) that not only is there such awareness of perceiving but that there is possibly perceiving of *all* perceiving, and (b) that there may be a *unified* awareness of all perceiving insofar as *we* are perceiving our perceiving.[1]

Initially Aristotle inquires whether it is by the sense itself that we have such awareness, for instance, by vision it is perceived that one sees, or there is need of a further sense to explain it (425b12–13).[2] If the sense does not perceive its own perceiving, perhaps there is an additional sense to be aware of any sensing. What could support an additional sense for perceiving perceiving is that perceiving our seeing of a colored object, for example, requires perceiving things that might seem quite different: perceiving the *seeing* of color and perceiving the underlying *color* (τοῦ ὑποκειμένου χρώματος, 425b13–14; cf. 422b31–34 and 426b8–12). Perhaps the

[1] Caston 2002, 786–787 discusses the way the perceiving of perceiving is something that occurs along with the primary perceiving of things in the world: "We are not aware of the act itself in the same way that we are aware of its primary object. Thus, while we can be said to *perceive* that we see, it will *not* be *exactly like* perceiving an object. For in perceiving an object, our gaze is always primarily directed at the world and so passes itself by. In ordinary experience, we glimpse our perceiving only peripherally, as it were." But Caston misses that Aristotle is arguing that *all* perception occurs by a central sense faculty and so this also accounts for perceiving of perceiving. For Aristotle there is no real contrast of "external" and "inner" sense. Caston supposes that advocates of an inner sense must hold that the external sense perceives things in the world while the inner sense is directed primarily at such external perceiving. But he objects, "The awareness that accompanies all perception is *not* the primary function of a second sense [i.e., inner sense], according to Aristotle, but a secondary function of the primary ones [i.e., external senses]" (787). This objection is correct against the faulty view he attacks, but it has no force against the interpretation that for Aristotle the animal perceives primarily by the central sense faculty.

[2] Caston 2002, 760–775 stresses that terms such as *aisthesis* and *opsis* are ambiguous between the faculty and its operation. He suggests that most commentators have had trouble with the argumentation of iii 2 since they have tended to read these terms as referring to the faculty rather than more pertinently to its operation. The translations offered in this commentary show that perfectly good sense can be obtained by reading the terms as referring to the faculty. But this is the same interpretation that develops from reading the terms as referring to the operation of the faculty. Aristotle is concerned with perceiving of perceiving and the faculty needed to account for perceiving of perceiving.

color is "underlying" since color underlies vision and so it underlies the perceiving of seeing of color.[3] Now if the same perceiver must perceive both the seeing of color and the color, this perceiver is either an additional sense beyond sight or sight itself. Yet, were there a further sense for such awareness of sight, this sense would also perceive color, because in being aware of seeing color it also has to perceive color, so that two senses have color for their object, and color would not be the proper sensible merely of sight, and we seem to have more than the five senses. Rather than introducing an additional sense also to perceive what vision sees, it seems preferable to have sight aware of its own sense-perceiving (425b14–15). Moreover, were a further sense necessary for the awareness of vision, an infinite regress of senses begins – perceiving vision needs its own sense, and perceiving that we perceive vision necessitates another, and so on – unless some sense is aware of itself, but then why allow the regress to begin at all rather than have the original sense perceiving itself (b15–17).

So far, having the sense aware of its own sense-perceiving seems irresistible, the alternative posing insurmountable difficulties. Yet, a perplexity confronts this solution (ἔχει δ' ἀπορίαν, 425b17). If to perceive by vision is seeing, and color or what has color is what is seen, then when someone sees the seeing thing (τὸ ὁρῶν) this seeing thing that is seen must itself be colored (b17–20; cf. Plato *Charmides* 167c–d).[4] This perplexity points to the resolution of the whole question through two lines of reflection. First, since sight encompasses more than merely seeing a color or something colored, perhaps the seeing thing need not be colored (425b20). When we do not see, that is, there is some failure of seeing – as when our eyes are closed, there is darkness, or there is too intense light – we nonetheless assess (κρίνομεν) by sight both light and darkness, though in different manners, thus showing that

[3] Hicks 1907, 435 says in regard to τοῦ ὑποκειμένου χρώματος, "the colour which is the subject or subject-matter of vision," that "this is one way of expressing the relation between psychical processes or operations (ἔργα καὶ πράξεις) and what are called 402b15 ἀντικείμενα, corresponding or correlative objects. The application of the terms 'subject' and 'object' . . . is, of course, un-Aristotelian and in fact quite modern. The antithesis itself is familiar enough to A. and is expressed in various ways, e.g. by τὸ αἰσθητικὸν and τὸ αἰσθητόν, τὸ νοητικὸν and τὸ νοητόν. Here τὸ αἰσθητὸν is described, relatively to the sense-faculty which apprehends it, as τὸ ὑποκείμενον, that which falls under its ken, that which is its province, 'its subject' (*subiectum*). The same αἰσθητόν, regarded as 'set over against,' logically contrasted with, the percipient faculty or operation, is called ἀντικείμενον (*obiectum*)." Hamlyn 1993, 121–122 (cf. Hicks 1907, 435) calls into question Aristotle's apparent assumption, "that if I peceive by sense Y that I see X, I must therefore perceive X by Y." For Hamlyn "one can clearly be aware that one is seeing without being aware of what one is seeing." But this applies more readily to accidental sensibles rather than to proper sensibles since in being aware of seeing one can hardly fail to be aware of seeing color. Also, later in 425b20–22, Aristotle is aware that we can be aware of failure in seeing, as when there is darkness or too bright sensible objects.

[4] Ross 1961, 275 says that "τὸ ὁρῶν might mean either the faculty of sight or the organ of sight." He suggests in 425b17–20 it means the faculty and in b22–25 the organ because the organ of sight can be colored. But the color of the eye's iris would be irrelevant to Aristotle's point and it is doubtful that the eye jelly is colored even during perception or that this is what we are aware of. We do not see the eye when we are aware of seeing, unless we look in a mirror. We are aware of the sense and its activity that belong to the sense organ or animal rather than, as Ross suggests, aware of the sense organ. For many possibilities of explaining τὸ ὁρῶν πρῶτον in 425b19–20, see Rodier 1900, ii 367.

there is more to sight than seeing color (b20–22).[5] Since sight can discern darkness and light without seeing color, and perhaps Aristotle is really suggesting that it is by vision that we are aware of *not seeing* when there is too much darkness or light for us to see ordinary colored things, sight might surely be aware of its own *seeing* without that seeing being itself something colored. Thus perceiving by sight can have various meanings, and perceiving that we see could be a sort of seeing without seeing something colored. Second, there may well be a way after all in which that which sees (τὸ ὁρῶν) is something colored, and so awareness of sight is due to something's being colored (b22–23). That which sees (τὸ ὁρῶν) in 425b19 and b22 may refer to the act of seeing, the sense of sight, or the sense organ of the seeing animal. Which of these is somehow colored?

Back in ii 12 a sense was stated to be that which is receptive of the sensible forms without the matter (τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης, 424a17–19), and the sense organ declared to be that which has such a power of sense (424a24–25). This means (a) the sense does not take on any of the matter of the sensible object, (b) the sense is acted upon solely by the sensible form and not also its substratum, and (c) the sense does not reenmatter the sensible form in any matter provided by the sense. But now in iii 2 Aristotle says that the sense *organ* is receptive of the sensible object without the matter (τὸ γὰρ αἰσθητήριον δεκτικὸν τοῦ αἰσθητοῦ ἄνευ τῆς ὕλης ἕκαστον, 425b23–24). Surely this is meant to recall the earlier passage. Whereas before, however, Aristotle spoke of the sense and the sensible form*s* (that is, in the plural), now he speaks of the sense organ and the sensible object (and in the singular). The singular emphasizes that the sense organ undergoes action by the sensible object such that the sense organ does not take on any matter of the sensible object, that is, the equivalent to point (a). Each sense organ is receptive just to a special range of sensible objects. Yet the sense organ is acted upon by the sensible object as enmattered rather than exclusively as sensible form; hence "sensible object" rather than "sensible form" is used. As receptive to the sensible object without the matter, and generally lacking any initial affective quality of its

[5] Hicks 1907, 436 suggests that Aristotle may be thinking of twilight when color cannot be determined but darkness and light discriminated. Ross 1961, 275 suggests that ἀλλ' οὐχ ὡσαύτως in 425b22 refers not to different ways in which darkness and light appear to sight but to different ways either of these is discerned from the way ordinary colored things are seen. Themistius *In de an.* 83,22–26 seems to think the contrast is between the way light and color are ordinarily seen and the way darkness is seen when we cannot see in the usual way. Aristotle clearly aims to show that there are several sorts of perception by sight, and he may mean a variety of things. Most directly he indicates that it is by sight that we determine that there is darkness when we cannot see because it is dark or our eyes are closed. Also, because of too intense light we may be unable to see, and yet then we are aware of light without much seeing colors. Thus vision may be involved in discrimination even beyond seeing color. An expansion of the point is that animals are often aware not just of seeing but of how well they are seeing. The extreme is when they are aware of not seeing at all or hardly seeing, as in Aristotle's examples of not seeing color. But even when an animal sees color it may be aware of some obscurity in what it sees. So it may squint or try to get closer. Thus we recognize that awareness of perceiving plays a crucial role in animal behavior. Aristotle's very reflection upon the various meanings of vision supports its own claim since we must have awareness of the different sorts of vision to make the distinctions, and the kinds of vision of interest are those little involving color, so that perception of such vision is unlikely to involve color.

own that is replaced, the sense organ undergoes a nonstandard alteration. The sense organ is affected by the sensible object, as shown by the fact that even when the sensible object ceases to be present or to be perceived, the motions or quasi-motions set up in the sense organ may continue as perceptions (αἱ αἰσθήσεις), or probably more fittingly as *phantasiai* (b24–25). Speaking of the sense organ, a *body*, rather than the sense better allows for such residual motions. The bodily sense organ undergoes more of a physiological change than the sense. Having yet to treat *phantasia*, Aristotle likely uses αἰσθήσεις (rather than αἰσθήματα [see *De insomn.* 2.460b2]) and φαντασίαι as interchangeable.[6] That the sense organ is receptive to the sensible object without the matter allows that the sense organ involved in seeing takes on color in a peculiar way, and analogously for the other senses; that is, there are physiological changes of a sort in the sense organs.

The two lines of response together – that perceiving by sight can be of various sorts that may not so much involve color as when we perceive darkness and that the sense organ itself must somehow be colored through reception of the sensible object – make plausible sense's perceiving itself. Perceiving seeing differs from ordinary seeing of colored things or perceiving darkness, but since the seeing of a colored thing is somehow itself colored or seeing under faulty conditions takes on this very privation, the perceiving of seeing is not too different from the primary seeing. Because Aristotle's concern is whether an additional sense is needed to account for perception of perception, he merely intimates his own account of such perception of perception without elaborating upon it. That account is basically that the sense (sense organ) is receptive to the form of what it perceives or in faulty conditions some sort of privation of the form; when it perceives its object it somehow becomes what it perceives, and so through perceiving its object it thereby also becomes aware of itself inasmuch as it now somehow just is what it perceives. The sensible form in the case of vision need not be too restricted to color, since we are also aware of extreme light, darkness, phosphorescence, and not seeing. If the sense as such is only potentially the sensible object, but when the sense is actually perceiving it is assimilated to its object, then it actually perceives both its object and itself. Primarily it perceives its object, but secondarily, and by virtue of the same act, it also perceives itself, that is, its perceiving the object.[7] Because the animal

[6] Perhaps Aristotle can account for a phenomenon pointed to by Philoponus *In de an.* 466,30–35 that when we are deep in thought we fail to notice in perception what confronts us and only when we stop thinking so intently may we recall having perceived what we earlier missed. Action upon the sense organ could explain this, but we could only become aware of perceiving when we are actually perceiving. This is discussed in Bernard 1987, 159–160.

[7] Hicks 1907, 435 observes regarding the sense's perceiving itself, "I may remark parenthetically that it is of course not in the same way that we should interpret such passages as 417a2–4, *Metaph.* 1010b35–37, where A. denies that αἴσθησις can be of itself or have no external thing, but simply itself, for its object." In lectures in 1974 on the phenomenological movement, Hans-Georg Gadamer claimed that this Aristotelian account of self-awareness, rather than the Cartesian account, is at the foundation of phenomenology. The crucial insight is that there is not an additional act of consciousness along with the first so that infinite regresses can develop. Rather, when the sense perceives its object it also becomes aware of itself as now its object (cf. Caston 2002, 776–778 and 782–785, but 791n85 calls into question

must first perceive in order to perceive that it perceives, and this very perceiving allows simultaneously the animal's perceiving of its perceiving, there should not be a distinct and independent faculty for perceiving of perceiving.

Self-perceiving is not a further act of consciousness but a concomitant of sense-perceiving and possibly all sense-perceiving.[8] Aristotle does not assert or argue that perceiving of perceiving pertains to all perceiving, but his account of its occurrence makes this likely. We may allow, surely, that awareness of perceiving can be more or less, in some usual general relation to our perceiving better and worse. For example, what is at the periphery of our vision we perceive poorly and probably are only limitedly aware of perceiving. Or when looking attentively at something we may barely notice something else touching us. We may, however, become aware of perceiving poorly (see 421b3–8, 422a20–31, 424a10–12, 425b20–22) and shift our attention to what we poorly or hardly perceive, thus indicating that all along we have at least some awareness of all of our perceiving. There is perhaps a plausible usage of "perceive" in which we only perceive what we attend to and notice. But we also perceive what we hardly notice or perceive poorly, and in similarly limited ways are aware of perceiving these (see book 2, ch. 11, n. 4).

Without such self-awareness accompanying sense-perceiving an animal's sense perception would differ little for it from another animal's perceiving the same thing. The animal discriminating things but being unaware of doing so would hardly gain from sense perception. Because perception of perception can apply to all cases of perception, even for the beasts, it should hardly depend upon thought or opinion.[9] Since perceiving perceiving first requires perceiving, the animal's attention to what it perceives seems to go along with its perceiving. The animal first has to perceive, but in virtue of this its awareness of perceiving secures its attention to what it perceives. Without perceiving of perceiving the animal could hardly be expected to sustain its attention to any sensible object since its perceiving something at one

too strongly contrasting Descartes and Aristotle on consciousness). It should be clear, however, that this explanation of perceiving of perceiving is hardly the proof that such self-awareness is the case, since Aristotle takes it as obvious from the beginning that there is such perceiving of perceiving (see 425b12). We need hardly agree with Caston 2002, 788 that "Aristotle's answers [as to how perceiving of perceiving takes place] are only stabs at a solution, not an exposition of settled views."

[8] Caston 2002, 786–787 usefully observes that Aristotle does not reject introspection, i.e., a mental act "primarily directed at another mental state," but perceiving of perceiving is not such introspection.

[9] Bernard 1987 traces Philoponus's argument that ultimately reason is aware of sensing. Philoponus does not accept a special faculty of reason, an "attentive part of the rational soul" (τοῦ προσεκτικοῦ μέρους), as did some contemporaries of his who sound to us like proto-Cartesians (see *In de an.* 464,30–465,17) since self-awareness is dependent upon awareness, and neither does he allow the common sense to be aware of perceiving since the common sense perceives sensibles in bodies and the act of sense is not in a body and so not as such sensible. What reflects on itself must be separate from body, as is the case for reason rather than sense. In addition all cognitive discrimination is supposed to be due to reason, reason either employed in the domain of sense or in its own domain. Bernard accepts Philoponus's interpretation of Aristotle, but this chapter hardly introduces reason to account for self-awareness of sense-perceiving, and this runs into conflict with the beasts' being aware of their perceiving (cf. Caston 2002, 788n76).

moment would have no significance for it the next moment as it might flit from one sensible object to another. Its awareness of perceiving allows for sustained interest and seems one of the bases of animal desire.

Aristotle has managed to provide the ingredients for a basic account of self-awareness of sense that avoids introducing any further sense than the five, or any further faculty. Reception of sensible form explains both perception and self-perception, and privative or nonstandard modes of receiving the form, as too intense light, darkness, phosphorescence, and nonseeing, can account for these less standard cases. Since his further argumentation prepares for the conclusion that *all* sense perception involves a central sense, that is, that the five senses are subfaculties of a common sense power, therefore all self-awareness of sense also involves this central sense. There is no conflict between saying the sense perceives itself and saying the common sense is aware of all sensing because all perceiving of perceiving presupposes perceiving, and perceiving and perceiving of perceiving are due to the common sense power.

425b25–426a27 In support of the account of self-awareness, Aristotle asserts, "The actuality of the sensible object and of the sense is the same and one, but the being for them is not the same" (ἡ δὲ τοῦ αἰσθητοῦ ἐνέργεια καὶ τῆς αἰσθήσεως ἡ αὐτὴ μέν ἐστι καὶ μία, τὸ δ'εἶναι αὐταῖς οὐ τὸ αὐτό, 425b25–27). If sensing and its object are the same and one, then, for example, seeing is somehow something colored, so the sense just becomes what it perceives through perceiving it, and hence the sense perceives itself as it perceives its object. That things are the same but their being is not the same is a typical Aristotelian formulation disclosing important unity while acknowledging that ordinary distinctions are based on difference in essence (cf. 424a25–26, 426a15–17, and *Phys*. 202a20). A crucial application is for mover and moved where different potentialities have their actualities together, though these actualities will be the actualities of different things. Passive potentiality needs some mover to raise it up to actuality, and when thus in actuality its actuality is the same as that of what raises it to actuality, though the actualities differ in being inasmuch as they are the actualities of different things (see *Meta*. 1046a19–29). Sense is the potentiality to be acted upon by the sensible object: the actualities of the passive and active factors unite causally and consequently temporally and in place.

Aristotle says that what he speaks of are such things as "sound according to actuality" (ὁ ψόφος ὁ κατ'ἐνέργειαν) and "hearing according to actuality" (ἡ ἀκοὴ ἡ κατ'ἐνέργειαν, 425b27–28). But what these are still has much ambiguity because of the distinctions in actuality and potentiality made back in ii 5. He therefore adds that there is "having hearing and not to hear," as when we sleep, and "that thing having sound does not always sound" (τὸ ἔχον ψόφον οὐκ ἀεὶ ψοφεῖ, 425b28–29). This recalls ii 8.419b4–11, where there was a distinction of that which has sound and when it sounds according to actuality. Clearly things capable of sound do not always give rise to sound; they have to be struck to do so. And even the sound according to actuality need not be heard if no animal is around to hear it. When what is capable of hearing does hear, something capable of giving rise to sound must sound, so that hearing according to actuality and sound according to actuality have

joined (425b29–426a1). Aristotle words the claim carefully to have present hearing imply present sounding. Just as things capable of sound do not always sound, even when they give rise to sound, they are not always heard. Sound does not have to be generating hearing, but when an animal is engaged in hearing, there must also be sounding. For this convergence someone might speak of the one, Aristotle says, as hearing (ἄκουσιν) and the other as sounding (ψόφησιν, 426a1–2). This is not merely a point about nomenclature, though it does deal with the ambiguity of "to hear" and "to sound" according to actuality (κατ' ἐνέργειαν), but recognition of the distinction of generated sound that may be unheard, that is, noise set up through the striking of bodies in air or water, and sound impacting on a sentient being and so truly sounding to some hearing. "Sounding" (ψόφησις) only appears in this current discussion (426a1–2, a7, and a12).

When hearing and sounding emerge together, just where are they? *Physics* iii 3 argues that the motion of the mover is in that which is moved. Hence, "motion" (κίνησις), "action" (ποίησις), and "undergoing" (πάθος), the latter two terms applying better in the context of sense since they relate more strictly to changes in quality (see *GC* 323a17–20), should be in that which is being acted upon (ποιουμένῳ, 426a2–3). If the sensible object acts and the sense undergoes the action, then all this should occur in the sense. Sound and hearing according to actuality will be in that which is according to potentiality to them, that is, the sense (a3–5). Part of the value of speaking of motion, action, or undergoing in regard to perception is to utilize the point that motion occurs in what is moved. The actuality of the mover as mover must be in what undergoes its action rather than in the mover, or, since all motion requires a mover, all movers would be moved movers (a4–6; cf. *Phys*. 202a28–31). There can be unmoved as well as moved movers because the motion generated by the mover need only be in what is moved. What this all means for the case of the sensible object and sense requires some additional clarification.

In ii 5 two sorts of actuality were distinguished, the actuality that is a developed potentiality and the actuality that is currently operating. Possession of a sense even when it is not in use will then be actuality and also when it is operating, and this distinction within actuality may be in play in dealing with sensible objects:

> Now the actuality of that capable of sound is sound or sounding, and the actuality of that able to hear is the sense of hearing or hearing, for hearing is of two sorts and sound is of two sorts. ἡ μὲν οὖν τοῦ ψοφητικοῦ ἐνέργεια ψόφος ἢ ψόφησίς ἐστιν, ἡ δὲ τοῦ ἀκουστικοῦ ἀκοὴ ἢ ἄκουσις· διττὸν γὰρ ἡ ἀκοή, καὶ διττὸν ὁ ψόφος. (426a6–8)

An object capable of sound may not sound at all, but when it actually sounds, it may just give rise to motion in air that is still only the potentiality to be heard by an animal, or it is sounding and actually heard. The comment that sound is of two sorts, as is hearing, indicates that this distinction of sound according to actuality is in play. Analogously, the actuality regarding that which can hear is either the possession of the sense of hearing or hearing in operation. An animal asleep or awake but not hearing has hearing according to actuality, as does the animal presently hearing, but in a different way. The same kind of account should work for the rest of the senses and their objects (a8–9). For color, the color according to potentiality would be in

an unillumined surface, and according to actuality either an illumined surface or color being seen. Since actuality in the cases of the sense and sensible object have been distinguished into two sorts, the claim that action (ποίησις) and undergoing (πάθησις) are in what undergoes rather than what acts can be made specific for sense and sensible object (a9–11). It is the actuality of the sensible object in the way sounding is actuality that is in the sense when the sense is itself in actuality in operation through undergoing the action of the sensible object in actuality.

Clearly for the fullest actuality of the sense faculty, there are available names, such as "seeing" (ὅρασις), "hearing" (ἄκουσις), and "tasting" (γεῦσις), but while there is a name for the operation of the sensible object of hearing upon the sense, "sounding" (ψόφησις), there are no such names for the operation of color and flavor (426a12–15). Perhaps the reason sounding has its own name is the peculiar status of sound as requiring striking of one thing against another before there is the sensible object at all. Sound involves interaction of things, it does not precede such interaction, and the cause giving rise to the sound is often obvious. Hence sound appears to inhere in things less than the other sensibles and to exist merely in that which senses it. But Aristotle wishes to insist that for all sensible objects, their actuality when they are moving the sense to perceive them is in that which is perceiving them, as all motion is in what is being moved. The unity of sensible object and sense is crucial for his understanding of sense.

For ensuring unity of sensible object and sense, it is helpful to view the sensible object as acting upon the sense as a moving cause. Then the actuality of the mover and moved are together in what is moved, that is, the sense. Since the context provided by 425b23–25 is that of the sense organ being acted upon, it is especially plausible to speak of mover and moved and their unity in what is moved. Sense perception as receptivity toward sensible forms without the matter (see ii 12) allows perceiving to be *in the sense*, while what is being perceived, the perception's content, is beyond the sense. The sensible object both is and is not in the sense. The sense is what can take on the action of the sensible object and not merely be moved by it but thus become aware of the sensible object as it is in its own place.

Aristotle echoes in 426a15–17 the statement in 425b25–27 about the actuality of sense and sensible object being one while other in being, though the "same" is missing from the restatement perhaps because it is not quite the same, and the order of sensible object and sense is reversed, since the greater interest is now the role of sense. He uses the restatement to justify the further claim that the *actuality* of the sensible object and the sense necessarily perish and are saved (σώζεσθαι) together, though this need not be the case for the *potentiality* of the sensible object and sense (426a17–19). "Potentiality" in a19 really means developed potentiality or dispositional actuality, and this is why he refers to "the things being said according to potentiality" (τὰ δὲ κατὰ δύναμιν λεγόμενα) as right above he referred to "the thus being called hearing and sound" (τὴν οὕτω λεγομένην ἀκοὴν καὶ ψόφον, a17–18), in both cases being called this in line with the distinction in ii 5. (More evidence for this meaning of "potentiality", i.e., dispositional actuality, appears later in a23–27.) Even the actual possession of a sense, that is, the developed potentiality, and the actual presence of a perceptible object hardly guarantees that perceiving occurs.

The potentiality for the sensible object of hearing can be audible motion in air, which is only sounding when actually heard, and for the other senses there are analogous potentially sensible objects. Thus only such actuality as sounding and operative hearing necessarily perish and are saved simultaneously. There can only be hearing in actuality with sounding in actuality. The conjunction of "to perish and to be saved simultaneously" (ἅμα φθείρεσθαι καὶ σώζεσθαι) links with ii 5.417b2–16, which has the transition from developed potentiality to its fullest actuality as a preservation or saving rather than a destruction. Certainly actual perceiving is a preserving of the capacity rather than its destruction, as some sort of change would be. Talk of saving (σώζεσθαι) rather than coming into being (γίγνεσθαι), the usual opposite of perishing (φθείρεσθαι), shows Aristotle's cautious maneuvering around motion and activity.

Failing to make adequate distinctions, Aristotle's predecessors, the φυσιολόγοι or discoursers about nature, that is, mainly the Ionians among the Presocratics, supposed that sensible objects could not be at all apart from the sensing of them (426a20–22). We might expect early thinkers to tend toward naïve realism, that is, perceptible features are as we perceive them even apart from our perceiving them, but instead they seem genuine *physiologoi* because they have the sensibles generated by our perceiving them. The predecessors referred to as *physiologoi* should not be Pythagoreans, Eleatics, or Platonists, who concentrate more on formal causes than causes of motion or coming into being. Most especially meant are Empedocles and Democritus, who employ effluences to discuss sense perception. For them, perceptibles only arise when effluences of a certain magnitude, figure, and motion generate them in the sense (see DK 31A92 and DK 68A135). Nothing is white or black without its being seen, or flavored without being tasted. No color or other proper sensible is ever really in things outside the sense, but these sensibles just have existence when actually perceived and only in the sense. Thus these thinkers have some subjectivist rather than realist understanding of sensible objects. Since the sensible objects are only *in actuality* when actually perceived, and there is no potentiality outside this actuality, they also seem to be actualists rather like the Megarians discussed in *Metaphysics* ix 3. Aristotle accepts that the actuality of the sensible object, the actuality as causing actual perceiving, is in the sense inasmuch as the actuality of every mover is in what is passive to it, but this actuality, for example, sounding, still is due to the other sort of actuality of sound, the motion in air that can produce actual hearing (cf. *Meta.* 1010b30–1011a2).

Aristotle can agree with the predecessors in one way, that the sensible object according to actuality causing perceiving occurs together with the perceiving of it, but these predecessors fail to distinguish being according to potentiality from actuality (426a22–27). The sensible object according to potentiality and sense need not perish and be saved simultaneously. For example, there are sounds that animals could hear that they do not, and animals live long after some sensible sounds cease.[10]

[10] Aristotle does not talk about whether there would be sensible objects according to potentiality if there were no sentient beings at all to perceive them, since this would be potentiality without any possibility of actuality. He has rejected such possibility that can never be in actuality in *Metaphysics* ix 4.

Being according to potentiality and actuality, Aristotle affirms, cannot be spoken of simply (cf. the way "simply" [ἁπλῶς] is used in 426a26–27 and in 417a22 and [ἁπλοῦ] in 417b30). The being according to potentiality of the sense is the sense possessed but not being used and of the perceptible object the object not presently being perceived, that is, potentiality that is already in a way actuality. Because there is such being according to potentiality of the sense and sensible object, sense-perceiving gets to the sensible things as they are, rather than simply perceiving something that has no further being beyond being perceived.

While defending the realist view that sense is acted upon by something beyond itself, Aristotle avoids naïve realism. He does not hold that the sensible objects have their perceived features in actuality whether any sentient being perceives them or not. He has said that the sensible object and sense according to actuality when sensing occurs are one and the same and simultaneous (425b25–426a2 and 426a15–19). Though the actuality of the sensible object is *in* the sense, still this is the actuality *of the sensible object*. This is realism because he affirms that the sense perceiving its proper object perceives what is there to be perceived, but it escapes being naïve because sensible features are only there according to potentiality until perceived. Since for Aristotle causes are usually only actually such when bringing about their effect, rather than the cause's preceding the effect in time, sensing is simultaneous with the sensible object according to actuality.[11] Some motion in air has the potentiality to be heard and may precede hearing, but when actually heard it is sounding to the animal.

Since the sensing and sensible object according to actuality are one and together, Aristotle avoids problems of cognitive duplication of the world, independence of "inside" and "outside," and getting subjective representations to correspond to reality. There can be illusions and mistakes, based upon what goes along with proper perception, but sense cannot generally be misrepresenting reality since the actuality of sensible object is in the sense and is one and the same with the sensing. Nonetheless, because while one and the same the being of sense and sensible object are not the same, the animal perceives a sensible object rather than merely its own representation of it. Receptivity to the sensible forms *without the matter* opens to cognition of reality. In the sense *unenmattered*, a sensible form is not there as in a place and constituting some distinct reality. Having the actuality of the sensible object in the sense, but as unembodied and not localized, enables sense to perceive sensibles as they are in reality and where they are. We may speak of the sensible form instrumentally as that *by which* the sensible object is perceived in reality. The analogy of mover and moved to sensible object and sense can be misleading because generally what is moved takes on the new form materially, or into its

[11] Sometimes his way of formulating things does suggest that the sensible object as cause precedes sensing: "The sense power is in potentiality the sort of thing the sensible object is already in actuality, just as has been said. Now it is acted upon not being like, but having been acted upon it is likened and is the sort of thing that is" (τὸ δ' αἰσθητικὸν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχείᾳ, καθάπερ εἴρηται. πάσχει μὲν οὖν οὐχ ὅμοιον ὄν, πεπονθὸς δ' ὡμοίωται καὶ ἔστιν οἷον ἐκεῖνο, 418a3–6). This makes it look as if the sensible object already is what the sense will become by being likened to it. But see *Metaphysics* 1010b35–1011a2.

own matter, whereas the sense only takes on the form cognitively, thereby gaining awareness of what moves it.

426a27–b8 Having insisted that sense and sensible object in actuality are the same and one, Aristotle can utilize the point to contend that sense is some kind of *logos* and to trace the implications (426a27–b8). Thus he expands upon the consideration of the unity of sense and sensible object. Back in 424a24–32 he called the sense the *logos* and potentiality of the sense organ and likened sense to a musical concord (συμφωνία) that can be disrupted by too intense motion. There the emphasis is upon sense as form or *logos* of the extended magnitude sense organ. The present passage parallels that passage but modified as a result of the emphasis here upon the *actuality* of sense and sensible object. Here it is the sense in actuality, that is, in operation, that seems to be a *logos*. Thus sense is a *logos* both when not employed and when in operation.[12] Besides various other interesting aspects of this passage, it perhaps fits nicely right after the discussion of predecessors who have only sensible objects in actuality. If it is permissible to view a sensible object as some sort of ratio, this works against the atomistic position of Democritus and the effluence theory of Empedocles. Yet commentators find many difficulties in establishing the correct text and developing a good interpretation.[13] It seems that one has either a valid argument based on dubious premises or an invalid argument with viable premises. But perhaps the text's validity and soundness can be maintained.

A valid sorites possibly in the text is the following: voice according to actuality is concord; hearing and the voice according to actuality are one (though they are not just the same); concord is a *logos*; therefore, necessarily hearing is a *logos* (426a27–30). And if all the senses work analogously, they are all *logoi*, insofar as all sensible objects are *logoi*. Initially surprising is that Aristotle speaks of voice (φωνή) rather than sound. Voice more narrowly applies to meaningful sound made by an animal with some *phantasia* accompanying it (see ii 8.420b29–33). Such sound can be produced directly by the mouth or by playing a musical instrument. Probably Aristotle speaks of voice because this is the most important sound and it is most obviously a concord. If this is a concord, and hearing in operation is one with its sensible object, then the hearing of such voice must be a concord. Given the prominence of voice, and what concord is, it becomes likely that all sounding and hearing are concords. But what is meant by a concord? It might mean (a) a single note is a blending of notes to produce a single resultant sound, as a musical chord; (b) something due to an agreement or harmony of opposites, as the notes intermediate between the extremes of high and low; (c) a series of harmonious sounds; (d) a relationship of sound with hearing. Probably each of these is relevant, though (a) is least relevant. Were what is voiced merely a single note, still it might be called a concord because it agrees with other notes, because it can be viewed as on a continuum between contraries, or because sense is discriminative and relates the sensible object to sense itself. If what is voiced is a series of sounds, to be meaningful they must be somehow

[12] Does calling sense a *logos* make more striking that sense does not have to say (*legein*) to do its work?
[13] See Hicks 1907, 440–442 and Ross 1961, 277–278 for possible difficulties in understanding the passage.

concordant, and to be heard meaningfully hearing must relate appropriately to them. In these ways Aristotle's argument is valid and plausible.

The remaining difficulty is with the text of 426a27. The manuscripts perhaps read, εἰ δὴ συμφωνία φωνή τις ἐστιν, which translates as "If, then, some voice is a concord," the voice that would be pertinent is voice according to actuality.[14] Though Aristotle is not explicit that this is the sort of voice he has in mind, when he goes on to say that voice and hearing are as one (a27–28), it must be voice in actuality and hearing in actuality that are one (in accord with 425b25–426a2). Thus the text supports the proposed construal of the argument.[15]

The conclusion of the argument is that hearing or any sense generally, like the sensible object, is a *logos*, where *logos* should mean some kind of ratio or form. This works if sensible objects like concordant voice are plausibly ratios of contraries. Now any color is some ratio of white and black (see *De sensu* 439b25–440a6), and the same seems assumed to apply for the other sensibles as well when they are not too extreme. Sense, then, is a *logos* either as the form and potentiality of the sense organ or when actually perceiving and taking on the ratio of the sensible object. Here Aristotle must be dealing with the actuality of sensing, that is, when it takes on the form of the sensible object. If sense in operation is thus a *logos*, a sensible object that is not suitably concordant will destroy its perceiving (426a30–b3). A note that is too high or too low interferes with its hearing, a visible object that is too bright or too dark impedes seeing, and extreme objects of the other senses similarly. What is called destruction is interference with the operation of perceiving due to an extreme sensible object, that is, discordant with itself and hence out of concord with the range of the sense. There will be some perceiving going on because of these extreme objects, but it is not the sort that well discriminates its objects like perceiving things in accord with the sense's range. That Aristotle considers the operation of sense a *logos* can be observed in the way he speaks of sensing "as being some *logos* of the sense" (ὡς λόγου τινὸς ὄντος τῆς αἰσθήσεως, 426b3). In 424a24–28 the sense is a *logos* of the sense organ, but here what is the *logos* of the sense must be the operation of the sense.

That sense in operation is a *logos* vulnerable to extreme sensible objects calls for an explanation of pleasant and painful sensible objects (426b3–8). Pure and unmixed sensible objects can be pleasant, when they can be led into the *logos*, that is, when they are not excessive so that they interfere with perceiving and they fit

[14] This agrees with the interpretations of Simplicius *In de an.* 194,8–9 and Philoponus *In de an.* 475,28–476,13. The text as emended by Ross 1961 (εἰ δ' ἡ φωνὴ συμφωνία τίς ἐστιν) permits the same interpretation. Hicks 1907, 442, however, takes συμφωνία as the subject and φωνή as predicate, because he wishes to restrict συμφωνία to its musical application, but then the conclusion of the argument does not follow from the premises.

[15] Even if the text of 426a27 is εἰ δ' ἡ συμφωνία φωνή τίς ἐστιν, a valid argument results by taking the conclusion also as particular; i.e., hearing is some sort of *logos* (λόγον τινὰ εἶναι). It is undesirable to eliminate καὶ ἔστιν ὡς οὐχ ἓν τὸ αὐτό from the text in 426a28 that is present in all the manuscripts. These words reinforce recognition that when the first part of the clause says that voice and hearing are as one, he means to recall 425b25–27 and to prepare for the point that excessive sensible objects destroy sensing. This would be meaningless were sensible and sensible object simply one and the same.

well with other sensibles (b3–4). Aristotle's examples of the pure and unmixed – high note or sweet or salty flavor (τὸ ὀξὺ ἢ γλυκὺ ἢ ἁλμυρόν, b5) – may show that he means the differences within the sensible range that can blend with others rather than just the extreme contraries. Salty already seems some blend of sweet and bitter (see 422b10–12), yet there can surely be too intense salty flavors. Generally more a concord (συμφωνία) and pleasant to perceive than these are the mixed sensibles (τὸ μικτόν), that is, the sensibles between the contraries that are more a blend and a ratio of them (b5–6; cf. *De sensu* 439b25–29, b31–440a3, 442a12–17, and *Problems* 921a3–6). More pleasant than a high or low note is a note that mixes these, and for touch more pleasant than hot or cold is something between these; the sense in perceiving these sensibles that are a *logos* is the *logos* (426b5–7). Thus sensible objects that are excessive, that is, have a poor ratio, cause pain or destroy the sensing (ὑπερβάλλοντα δὲ ἢ λυπεῖ ἢ φθείρει, b7–8).[16] This also perhaps acknowledges that certain sensible objects interfere with sensing by causing pain. A purpose of this discussion is to suggest that proper sensible objects are blended from the contraries. This occasions reflection upon the ranges of sensible objects and the discrimination of sensible objects.

426b8–427a16 Aristotle has so far avoided precarious duplications and divisions: the perceiving of perceiving does not require a further sense or a regress of perceivers, and the sensible object is not something distinct from the perceiving of it but one with it. He now evades introducing any additional sense to discriminate the objects of the five different senses. The unification of the senses in a central sense that helps explain awareness of sense-perceiving serves as well for discriminating objects of different senses. Awareness of sense-perceiving connects with discriminating opposing objects since only through being aware of perceiving more than one sensible object can the discrimination occur. The drive toward unification of the senses proceeds cautiously, however, because Aristotle respects the need for several senses (see 425b4–11). Moreover, he has much work in explaining unification since that one thing can discriminate opposites at once may seem to run afoul of the principle of noncontradiction, and he has to remain at the level of sense rather than stray into higher cognition to allow beasts to discriminate the various sensible objects. In Plato's *Theaetetus* 184–186 that forms the background to the present discussion, Plato inquires into what *thinks* about the objects of different senses. But Aristotle needs to keep to the level of sense perception.

Each of the five senses belongs to its own sense organ as a sense organ (ὑπάρχουσα ἐν τῷ αἰσθητηρίῳ ᾗ αἰσθητήριον, 426b8–10), that is, not to the sense organ merely as part of the animal's flesh – which might be hot or cold or wet or dry

[16] Ross 1961, 279 offers arguments for going against the manuscripts and changing "pains" (λυπεῖ) in 426b8 to loosens (λύει) on the basis of Priscianus and a comparison with 424a30–31. But this harms the meaning and ignores the changed context. Back in 424a30–31 Aristotle speaks of shaking up the sense *organ*, and so undermining the capacity to sense-perceive, but in 426b7–8 he speaks of the effects of intense sensible objects on sensing itself. Since he has spoken of the disruption of sensing and more and less pleasant sensible objects, there is reason for him now to include the view that some sensible objects give rise to painful sensing or interfere with sensing.

or have some other features – but as sense organ capable of supporting sense perception. Probably the soul as a whole is in each part of the body – at least when some plants and animals are divided each part receives the entirety of the soul (see, e.g., 411b19–27) – but we may say that the various senses are most closely associated with those specific parts of the body called sense organs and insofar as they are sense organs. Now each particular sense has its own range of sensible objects (τοῦ ὑποκειμένου αἰσθητοῦ; cf. 422b31–34 and 425b13–14) and discriminates (κρίνει) the sensible objects within its own range (426b8–11). Ὑποκείμενον, referring to its own sensible range, literally means underlying, which is usually translated "substratum" or "subject." Each sense has such a subject domain because it discriminates differences within its domain, and a genus containing distinct members can be viewed as the substratum for these differences. This nicely illustrates the often-made observation that "subject" and "object" have reversed their meaning in modern thought. Aristotle speaks of the class of sensible things as subject whereas for modern thinking the conscious being becomes the subject. The senses judge or discriminate the differences of the underlying class of sensible things (κρίνει τὰς τοῦ ὑποκειμένου αἰσθητοῦ διαφοράς, b10–11). This reemphasizes that the sense power is a capacity for making discriminations among its objects.[17] It engages in quasi-judgments since it distinguishes its various objects. For example, sight distinguishes white and black color; taste distinguishes sweet and bitter flavor (b11–12). Aristotle adds, "Similarly this is so in the case of the others" (b12). This can mean not only for the other senses beyond sight and taste, but also for the other sensibles intermediate between the extremes mentioned, that is, the mixed sensibles discussed immediately before (b5–6). Each sense discriminates its own sensible objects, and such discriminations determining that sensibles are different from each other requires nothing beyond sense perception and the very sense that perceives the sensibles of the same kind.

But in addition to discriminating the sensible differences within a single range, we discriminate the sensible objects of different senses, such as white and sweet, and there must be something to do this (426b12–14; cf. 431a20–b2). Here there seems to be a ready assumption *that* we discriminate the objects of different senses – as making the very assertion verifies – and Aristotle can seek an account of *what* gives rise to this possibility. Discrimination of sensible objects of different senses must still be sense perception since *sensible* objects are distinguished (b14–15). But if white and sweet are proper objects of different senses, neither perceived by the other except accidentally, how can we avoid some further sense perceiving that the objects differ? The rest of the chapter concerns the way discrimination is made of sensible objects of different senses. Even explaining the way sense discriminates objects of the same sense could raise most of the same difficulties since the sense that discriminates, for example, sweet and bitter, must perceive them at once and by the same thing, and so somehow must be opposites at once. But perhaps discrimination

[17] Hicks 1907, 445 comments, "In Book II., however, sense was more often described as ἀλλοιοῦσθαι, πάσχειν, ἐνεργεῖν. In Book III. its discriminating and intellectual side, already noticed 418a14, 422a21, 424a5 sq., is brought out and its relationship to thought and knowledge is emphasised."

of sensibles of different senses, such as sweet and white, makes more pressing that some one thing at the same time does the discrimination, and that what does it cannot just be one of the particular senses since the sensibles straddle different senses.

The requirement that what distinguishes the different sensible objects such as white and sweet, that is, objects of distance and contact senses, must perceive each of them, eliminates flesh as the ultimate sense organ (426b15–17). Flesh, that is, the outer flesh, could be supposed the organ rather than the medium of the contact senses, especially the sense of touch. Were flesh the ultimate sense organ, discrimination would have to take place through contact, though obviously many sensibles are perceived by distance senses. If it must be the same thing distinguishing the various sensibles, so that what distinguishes distance and contact sensibles is the same thing, then the outer flesh cannot be the sense organ for touch, or all sensibles would have to be objects of touch. Flesh in the higher animals includes nearly everything except bone, cartilage, tendons, blood, other fluids, hair, nail, and horn (*PA* ii 8). Both internal and external organs are fleshy. The present passage reaffirms, on the basis of a new consideration, the earlier argument that flesh, at least the outward flesh, is not the organ for touch but merely its medium; the organ is farther inward (cf. 423b20–26). "Last" or "ultimate sense organ" (τὸ ἔσχατον αἰσθητήριον, 426b16) is ambiguous. It can mean last in either direction, that is, the most outer organ as skin in contact with the external medium or the organ most inward and removed from the medium, the heart. Flesh should not be the outer sense organ for touch, but only the medium, or no sense would seem to require a medium at all, since we could perceive by direct contact with the sensible, and every sensible should have contact with flesh in order to be perceived. Allowing flesh to be the outer sense organ thus also results in its becoming the most inner sense organ because it entails having all sense perception occur through contact with the flesh. To discriminate the sensible objects of contact and distance senses, without requiring all sensibles to be in contact with the sense organ, there must be a sense organ other than flesh, or at least the outer flesh.

Flesh does not serve as the ultimate sense organ, yet the separate senses cannot do the job of discriminating each others' sensible objects: "Neither can separate things judge that the sweet is other than the white, but some one thing is needed in which both become clear" (οὔτε δὴ κεχωρισμένοις ἐνδέχεται κρίνειν ὅτι ἕτερον τὸ γλυκὺ τοῦ λευκοῦ, ἀλλὰ δεῖ ἑνί τινι ἄμφω δῆλα εἶναι, 426b17–19). This rejects the possibility that sight and taste, as separate from each other, could distinguish the objects of the two senses. In Plato's *Theaetetus* 184d the five senses, viewed as possibly totally separate, are compared to men in the Trojan horse, and the position is developed that soul by itself *thinks* about what pertains in common to the sensible objects of different senses (185a–e). Aristotle comparably suggests that separate senses discriminating each others' objects would be as if I were to taste sweet and you to see white and nonetheless it would be clear that they are other than each other (426b19–20). This seems absurd, of course, since a person need have no awareness at all of what someone else perceives, but what discriminates two things must be cognizant of both at once (b17–19). Previously Aristotle has insisted that *by sense*

such determination is made (b14–15). But he now states, "It must be the case that the one says that they are other" (δεῖ δὲ τὸ ἓν λέγειν ὅτι ἕτερον, b20–21).[18] Has Aristotle succumbed to Plato's way of dealing with such discriminations since he refers to "saying" (λέγειν) instead of perceiving the differences? Perhaps talk of judging (κρίνειν) has led inevitably to turning perceiving into speaking and thinking?

Aristotle is likely most concerned to argue that some *unitary* faculty makes the discrimination, though he does distinguish his position from Plato's. He possibly has two lines of argument. On the one line, he urges that the one (faculty) must say that the two sensibles are other, for the sweet is other than white (426b20–21). Consequently, the same thing must make the discrimination, or we run into the absurdity that it is as if different persons were perceiving the different objects (b21). He can then draw the implication: "So that as it says, so also it thinks and perceives" (ὥστε ὡς λέγει, οὕτω καὶ νοεῖ καὶ αἰσθάνεται, b22). The same thing that says the two sensibles are other than each other could be thinking or perceiving this. That it could be thinking or perceiving differs from Plato, who spoke only of thinking making such determinations. On the other line of interpretation, it is recognized that the words λέγει ἄρα τὸ αὐτό (b21) can be translated either as "Therefore what says it is the same" or "Therefore it says the same thing." On this second translation we get the argument that to determine that sweet is other than white, something is determining *the same* thing about both since to be other is to be other than an other. Hence, what judges that these are other says *the same* thing in regard to both, for sweet is other than white that is also other than it (cf. b24–25), and consequently the same one faculty is speaking about both. If something is saying the same about two things, aware of saying the same about the two things, what is saying it must be one thing. This emphasizes that both sensibles somehow are considered the same, as other than each other, when they are discriminated and so something the same and one must be doing the discriminating. Aristotle may take over this peculiar thought that something that is other than an other is thereby somehow the same as it from Plato's *Parmenides* 147d7–148a3. This second line of interpretation is fostered both by Aristotle's wording and by the seemingly unnecessary repetition in 426b21. On both lines of interpretation he manages an argument for the unity of the faculty while showing some disagreement with Plato.

Despite insisting that *sense* distinguishes the objects of the various senses (see 426b14–15), Aristotle readily speaks of the sense as judging (κρίνει, b10, b14, b17, b23, 427a3, a11, a13), and he refers to saying things (λέγειν, 426b20, b21, b22, b25, b26, b28) and thinking (νοεῖ, b22, 427a1, a9). Perhaps sense as a *logos* (see 424a27–28 and 426a27–b8) can speak (*legein*), and surely it is difficult for us to consider discrimination by sense without putting it into explicit statement. Yet Aristotle is careful never really to assert that perception "says" when he develops argument based on speech to support his point that some one thing must discriminate distinct things. The same sort of unity is surely needed for thinking, though thinking clearly

[18] This line might also be translated, "It must be the case that it says one thing [about them], that they are other." One of the manuscripts has τὸ ἕν after λέγειν facilitating this translation. This alternate translation allows a complementary interpretation of the subsequent argument.

may involve speech. Sense discrimination is open to all the beasts in a nonlinguistic way. Putting the argument in terms of speech makes it perfectly general, applicable to any cognitive discrimination. The references to thought indicate how closely sense discrimination resembles thought and how it prepares for thought. In the three-fingers example in Plato's *Republic* vii 523a ff., conflicts in determinations about a finger – the finger appears both large and small in comparisons with other fingers – provoke thought. Aristotle here has discriminations of the various sensibles of the *different* senses stimulating his thought about sense perception, but sense itself can discriminate its various objects. Thought's ability to think different things at once is also at stake in this consideration of the way sense can discriminate its objects, for the fundamental issue confronting either is how a single thing can somehow be opposites at once.[19]

Sensible objects separate from each other cannot be discriminated by separate senses, but they join to be compared and discriminated in a *single* sense, and this cannot occur at separate *times* but at one and the same time (426b22–24). Aristotle argues that the time must be the same so that the apparent contradiction of having opposed sensible objects at once cannot be mitigated temporally, as something might be pale and dark but at different times. Take for comparison the case in which the same thing says (λέγει) that the good and the bad are other (b24–25). Again this has "says" to make the argument general (cf. b20–22). Not only must the same thing say that the good is other than bad, but also it says *when* the good is other than bad that *then* they are other (ὅτε θάτερον λέγει ὅτι ἕτερον καὶ τότε θάτερον), and *when* is hardly accidental to what it says (b24–27). If it is not eternal things at issue, such as the essentially good and the essentially bad, but temporally changing things, and the emphasis upon the way the good is other than bad at the same time as the bad is other than good means that temporal things are at issue (b27–28); it matters *when* the determination is made since what is good or bad for the animal varies from time to time.[20] The discrimination of the good and the bad has to be made at one and the same *now*. It is not enough to say, "*Now* I say that they are other than each other," as if the time of the content of what is asserted is irrelevant, the *now* only concerning when it happens that judgment is being delivered, but the assertion must really say, "*Now* I say that the things under consideration are *now* other than each other" (b27–28). Statement is made now of what is now being discriminated, and the determination is simultaneous with what is determined (ἅμα ἄρα, b28). In the same way, objects discriminated by sense must be perceived together by a single sense and in the same time: something inseparable (ἀχώριστον) makes the discrimination in an inseparable time (ἐν ἀχωρίστῳ χρόνῳ, b28–29). Aristotle has allowed for temporally extended sensible objects, such as a

[19] The way sense is a central capacity allowing things to be put together at once may be compared to what is said about mind in iii 6.430a26–b6.

[20] Hicks 1907, 448 supposes that "good and bad . . . are of course νοητά, not αἰσθητά." But even the beasts deal with good and bad when they make determinations such as that about pleasant and unpleasant foods. And these determinations have temporal significance since a food or drink may seem good to the animal at one time rather than another.

tone, since discrimination must be made by something indivisible during the same or "insepable" time. Strictly the "now" is not part of time, since it is a limit of time. Yet the "now" may always be said to be "in time" (see *Physics* 221a13–17; cf. 223a7). The issue whether different things can be perceived at the same time is treated from a somewhat different perspective in *De sensu* 7.

By his arguments for the unity and simultaneity of sensing and discriminating, Aristotle prepares to clarify the nature of sense capable of making discriminations. Unity and simultaneity seem required yet impossible. Something has to be the same and indivisible while being moved by contrary motions in indivisible time (426b29–31; on contrary motions, see *Physics* v 5). The principle of noncontradiction may intrude on the possibility of discriminating opposing cognitive objects. Sweet moves the sense or the mind (ἢ τὴν νόησιν) contrary to the way bitter moves it, and white moves it still another way (426b31–427a2). Being moved in contrary ways applies both to sense and mind (*noesis*) either because Aristotle may refer to sensible or intelligible objects or because *noesis* may include *phantasia* that pertains to all the sensibles (see 427b27–29). For sense (or mind) to discriminate opposed cognitional objects, will it be possible for what judges to be at once indivisibly one in number and inseparable in time (ἅμα μὲν καὶ ἀριθμῷ ἓν ἀδιαίρετον καὶ χρόνῳ ἀχώριστον τὸ κρῖνον), while yet having been separated in its being (τῷ εἶναι δὲ κεχωρισμένον, a2–3)? That which judges opposing sensible objects must at once be somehow divisible to discern objects divided in their kinds, and also indivisible (a3–4). What judges might have its *being* somehow divisible (τῷ εἶναι . . . διαιρετόν) since it cannot be divisible in place, in time, or in number (a4–5). Can anything satisfy these extraordinary requirements of being indivisible in so many key ways while divisible in its being? Appeal to contrasting of potentiality and actuality, a typical resort, helps little. While the same thing both indivisible and divided is in *potentiality* the contraries, it cannot be the contraries in its very being (τῷ δ' εἶναι οὔ), but only in its operating (τῷ ἐνεργεῖσθαι) is it so divisible, and it is not able to be white and black at the same time (a6–8). Something can readily be contraries in potentiality, but discrimination of opposed objects seems to require that something impossibly is contraries at once in actuality, such as white and black, so that it has to undergo the forms (τὰ εἴδη πάσχειν) of these contraries simultaneously, assuming that such is what occurs in perception and intellection (ἡ αἴσθησις καὶ ἡ νόησις, a8–9).[21] He apparently switches from white and sweet to white and black to heighten the difficulty of contraries at once and to show that the need for contraries at once pertains to any distinguishing of sensible differences, even those within the range of a single sense. The buildup of the perplexity regarding discrimination leads to its resolution: there must be something divisible in actuality while yet indivisible so that it can simultaneously be contraries.

[21] Lines 427a6–9 are here read as they appear in Jannone 1966. The main alternative reading, without καὶ διῃρημένον, in a6 is even more straightforward without differing significantly in meaning. The more complicated reading nicely suggests that we seek something both indivisible and divided in actuality. Hicks 1907, 450 asks us to compare "undergo the forms" in a8–9 with 424a18, "where, however, δέχεσθαι and not the somewhat unusual πάσχειν is employed." Probably Aristotle uses "undergo the forms" in 427a8–9 because he has still to speak of intellection or *phantasia*, yet it is surely safe to indicate that these involve undergoing something.

If when an animal perceives a central sense is always in fact perceiving, the different senses must go together in this sense that is therefore necessarily both divisible and indivisible. This common or central sense perceives and discriminates various sensibles at once, whether from the same or different sensible ranges; the perceptual life of animals thus permits opposing actualities at once. Aristotle can illustrate through analogy the way this need not conflict with the principle of noncontradiction. A limit principle such as a point is indivisible while allowing for multiplicity of what it limits, so that sense and mind could be pointlike (427a9–11; cf. 407a12–15). He states,

> But just as what some call a point, in which way it is one or two, in this way also it is divisible. Now in which way it is indivisible, one is that which is judging and at once, but in which way it is divisible, not being one pertains to it; for twice at once it uses the same mark. Now in which way it uses the limit as two, it judges two things that are separate by something as if separate; but in which way (it uses the limit as) one, (it judges) also at once. ἀλλ' ὥσπερ ἣν καλοῦσί τινες στιγμήν, ᾗ μία ἢ δύο, ταύτῃ καὶ διαιρετή. ᾗ μὲν οὖν ἀδιαίρετον, ἓν τὸ κρῖνόν ἐστι καὶ ἅμα, ᾗ δὲ διαιρετόν, οὐχ ἓν ὑπάρχει · δὶς γὰρ τῷ αὐτῷ χρῆται σημείῳ ἅμα. ᾗ μὲν οὖν δυσὶ χρῆται τῷ πέρατι, δύο κρίνει καὶ κεχωρισμένα ἔστιν ὡς κεχωρισμένῳ · ᾗ δ' ἑνί, καὶ ἅμα. (427a9–14)[22]

The point, lacking any extension in magnitude, is indivisible, but yet may limit different lines, thus being in a way divisible. Aristotle has the point as the limit of two lines both joining them together while allowing them to be distinct and apart. The point is used as one, and since somehow divisible it is also used as two. Analogous to this the discriminative faculty as pointlike can be a unity judging opposed objects at one and the same time, while being sufficiently divisible to be acted upon at once by opposing objects. Aristotle speaks generally of what discriminates (τὸ κρῖνον), so that he may be explaining the way sense or even intellect can be moved by opposing objects at once. What discriminates may be sense or mind or the cognizing soul or animal using the sense or mind as pointlike.

Aristotle has the point limiting two lines that may represent opposing sensible objects to be discriminated. If the same solution applies to discrimination of sensibles either of the same or different senses, it is irresistible to expand upon on his account and to view all five of the senses as meeting at a point thus:[23]

A single point, representing the central sense, serves as limit to five lines. Aristotle suggests that that which discriminates, perhaps the central sense, is pointlike and works as if using such a point. *Physics* vi 3–6 helpfully argues that there can be no motion in a point, so the point here represents the sense rather than the sense organ

[22] Aristotle's wording in 427a10, "what some call a point" (ἣν καλοῦσί τινες στιγμήν), is explained by Ross 1961, 280, that στιγμή was a later term for point; the earlier term was σημεῖον. The text of 427a9–14 has many variations in the manuscripts. None of these much affects the interpretation of the passage.

[23] Alexander *In de an.* 63,8–13; Themistius *In de an.* 86,18–20; Plotinus *Enn.* iv 7[2].6.10–15 among ancient interpreters and Modrak 1981, 417–418 recommend viewing the sense as the center point of a circle. The slight advantage of the illustration here is that it just has five spokes representing the five particular senses. The disadvantage is that it makes the five senses appear quite different from the central sense.

that is a magnitude (see 424a25–28). Since sense gets sensible forms without the matter, that is, sensing is strictly activity (*energeia*) rather than motion (*kinesis*), the point illustration serves rather aptly to give a notion of the way opposing forms can be acting at once on the same thing. The view of sense as pointlike helps not only for discriminating the objects of different senses, such as white and sweet, but also for discriminations of opposing objects of the same sense, such as white and black, that still involve being affected by different objects at once.

By having the point either sense or mind and what the discriminating faculty can use in its discriminations, Aristotle avoids introducing homunculus problems. Though a point is not a soul or a capacity of soul, this is what it represents. Hence there is no need for any further homunculus or animunculus to be doing the discriminating. Later centuries introduced the "retinal image" view of vision, and eventually consciousness, in which the visual or conscious field is represented upon something like a cathode ray tube that is monitored by a homunculus. The homunculus provides unity of judgment, but through dealing merely with representations. Aristotle's imagery of the point has the distinct advantages that unity already belongs to the point rather than merely to some homunculus and that no representations of the sensible objects are introduced regarding which it must be asked how they relate to things outside the perceiver.

Discriminating opposing sensible objects cannot entail a new sense, or not only sight but a further sense would see color, a problem raised for perceiving perceiving (see 425b12–15). All the senses have to join in a unity while they still have diverse objects. Comparison of sense to a point, which resembles comparing joints of the limbs to a point (see *De motu* 1), assists the explanation.[24] The way discrimination of the various sensible objects leads to a central sense also suits the issue that opened this chapter, awareness of sense-perceiving. Aristotle argued that no further sense is needed to explain a sense's being aware of its own sensing; having all perception take place centrally accounts for this self-awareness and discriminating different sensibles. That the questions occupying this chapter work together to show the need for unification of the senses is echoed in *On Sleep and Waking* 455a12–26:

> Now, since every sense has something special and also something common; special, as, e.g., seeing is to the sense of sight, hearing to the auditory sense, and so on with the other senses severally; while all are accompanied by a common power (κοινὴ δύναμις), in virtue whereof a person perceives that he sees or hears (for, assuredly, it is not by *sight* that one sees that he sees; and it is not by taste, or sight, or both together that one discerns that sweet things are different from white things, but by a part common to all the organs of sense (τινι κοινῷ μορίῳ τῶν αἰσθητηρίων ἁπάντων); for there is one sensory function, and the controlling sensory organ is one, though differing as a faculty of perception in relation to each genus, e.g., sound or colour); and since this subsists in association chiefly with the faculty of touch (for this can exist apart from all the organs of sense, but none of them can exist apart from it – a subject

[24] When it is supposed that a sphere rotates upon the two points of the poles, Aristotle objects that these are mere mathematical points rather than real beings (*ousia*, 699a22). He scrupulously keeps to real things as causes, though he may compare them to points, i.e., mathematical terminations, to give some account of the way they might work.

of which we have treated in our speculations concerning the soul); it is therefore evident that waking and sleeping are an affection of this. This explains why they belong to all animals; for touch alone belongs to all.

Aristotle in this other treatise needs to unite the senses so that they all become incapacitated or activated together when the animal sleeps or wakes. The initial evidence of this unity of sense is self-awareness of sensing and discrimination of opposing sensible objects, much as treated in *De anima* iii 2.[25] Self-awareness cannot be attributed to each sense as a private sense, but viewed as a subfaculty of the common sense power Aristotle has an account of perceiving, perceiving of perceiving, discrimination of sensible objects, and collective shutdown of the senses in sleep. Accounting for many phenomena is facilitated by viewing all sense-perceiving as being together in a central sense faculty.

Touch has its sense organ not in the outer flesh but farther in (see 422b19–23), and this should be the central sense organ for the other senses as well. When ii 12.424a24–25 says that the sense organ is that in which the sense power first is, this must ultimately mean that the inner sense organ is where all the senses reside. That the common sense power does all perceiving occasions no duplications since sense perception derives from reception of form immaterially that strictly, then, has no location. Animals do not perceive by touch, taste, smell, hearing, sight, and then again by a central sense. The common sense power perceives through all the particular senses, or the animal perceives through the common sense power.

Though of little pertinence to the general account of soul developed in the *De anima*, if a common sense can perceive multiple sensible objects at once, there is a start to perceiving a "world" of things with various relationships. Conceiving sense as unified in a point, or more aptly a form, Aristotle can perhaps handle the perceptual field or field of consciousness without representation as a "retinal image" or cathode ray tube.[26] By taking on diverse sensible forms, the common sense power allows perception of proper, common, and accidental sensibles. The perceptual field for Aristotle is merely a more complicated arrangement of accidental sensibles, for example, the tree beside the house. He does not need to spread out the field spatially in a representation to allow for perception of many things since the single point permits unlimited diversity. Ancient drama, like modern electronic media, emphasizes sight and hearing rather than the other senses; compare the situation of the cave dwellers in Plato's *Republic* vii. But the common sense power in Aristotle's account unites all the particular senses to prepare for everything that must be explained through sense perception.

[25] Caston 2002, 779 observes that "Aristotle always asserts that we *perceive* that we see, never that we see that we see. In so far as this sort of awareness is common to all perception, Aristotle is right to ascribe it to the perceptual capacity as a whole in *On Sleep and Waking* (2, 455a15–22) – it is not something vision possesses in so far as it is specifically the activity of *sight*. The perceptual system *sees* in virtue of its visual part. But it perceives that it sees in virtue of the nature of perception more generally."

[26] Hamlyn 1993, 128 complains, however, "neither here nor in *De Sensu* 7 does Aristotle pay any attention to the fact that the objects of perception may occupy a *field* – something obvious in the case of the field of vision, even if the existence of a field of this kind is problematic in the case of the other senses."

Aristotle has taken his account of sense as far as he needs to in this work. Securing the unification of the senses in a common sense power provides the basis for everything that involves sense. The magisterial conclusion to this chapter, "Concerning the principle by which we say that animals are percipient, let it be demarcated this way" (περὶ μὲν οὖν τῆς ἀρχῆς ᾗ φαμεν αἰσθητικὸν εἶναι τὸ ζῷον, διωρίσθω τὸν τρόπον τοῦτον, 427a15–16), not only confirms that he has taken the issues regarding sense in book 3 so far as he must, but also that the whole account of sense perception beginning in ii 5 has come to its rightful end. Awareness of perceiving, discriminating opposing sensible objects, and perception in general can occur without any thought, of which the beasts are incapable, if the senses join as subfaculties of a common sense faculty.

The account of sense offered in ii 12.424a16–19 as that "receptive of the sensible forms without the matter" still holds for sense unified as a common power. The account has in fact gained explanatory depth with the recognition that the five proper senses compose parts of a unified sense power. Even the lowest animals with just contact senses have a unified sense power. This unified capacity is most truly sense and its organ the ultimate sense organ. Thought may join with it and build upon it, but sense power is distinguished from intellectual capacity. Sensible forms without matter are unextended in magnitude and suited to be multiple in the same time and a single sense. Unification of sense to discriminate all the objects of sense reinforces the understanding of sense as a discriminative or critical faculty rather than merely a presentational or representational faculty. Critical activity of which the animal is aware is essential to animal life.

3

Distinguishing Sense and Thought; What Is *Phantasia*?

Aristotle has pursued two lines in considering sense perception, that which goes through the five proper senses and their sensible objects, media, and organs, and that which, avoiding duplications by arguing for just five senses and showing that perception of perception and discrimination of objects of the several senses require no additional sense, eventuates in a unification of sense. This latter line of reflection takes sense perception to the limits of its extension so that the realm of sense can be clearly demarcated. There are but five senses, and perception of perception and discrimination of all the objects of sense take place within the realm of sense. Humans generally combine their sense with thought and speech, however, and this makes thought hard to distinguish from sense. Plato may have been the first carefully to distinguish sense (αἴσθησις) from reasoning (συλλογισμός) and opining (δοζάζειν), yet perhaps even Plato was more concerned to disentangle thought from sense than to determine just how far sense can go.[1] It remains, then, for Aristotle to stake out the whole realm of sense, as he has in this work up through iii 2, to prepare to investigate thought. There was little question about the respective turfs of nutrition and sense perception, even if there may be doubt as to whether some simple organisms are plants or animals (see, e.g., *HA* 588b4–589a9 and *PA* 681a15–b13). Aristotle did not concern himself about nutrition encroaching upon sense – though the nonliving's growth, such as fire, might encroach upon nutrition – but sense and thought dispute terrain. Until thought is adequately distinguished from sense, *that* thought *is something* apart from other things remains insufficiently established. Therefore, in iii 3 Aristotle must distinguish thought from sense to show *that* thought is in order to prepare for determining in iii 4 *what* thought is.

This chapter will proceed from distinguishing thought and sense to exploring that and what *phantasia* is. Aristotle does not initially announce *phantasia* as a crucial topic for treatment. The reason that *phantasia* only emerges midstream so to say is that as long as sense might cover all of cognition, that is, thought is not distinguished from sense, there is no cause for supposing *phantasia* or any such cognition is at all distinct from sense or thought. Common ways of saying this or that "appears"

[1] See Plato *Theaetetus* 186d–187a; Frede 1987, 3–8; and Polansky 1992, 160–171.

encourage confusion of these faculties. Some Greek sophists or theorists make the startling claim that all appearances, or all phenomena are true, whereas others allow that some phenomena are false. Either group may suppose that the phenomena (*phainomena*), or all things that appear (*phainetai*), result indistinguishably from sense, thought, and *phantasia*. Since *phantasia* has unevident operation and an object hardly distinguishable from that of sense or thought, it does not stand out as an obviously separate faculty from sense or thought.[2] Having set out to distinguish thought from sense, it becomes essential further to demarcate *phantasia* from either of these in order to secure the main distinction.

427a17–b6 On the trail to setting thought and sense apart, Aristotle recurs to the marks of ensouled being. Back in book 1 he said, "The ensouled seems to differ from the nonensouled especially by two things: both by motion and by perceiving" (τὸ ἔμψυχον δὴ τοῦ ἀψύχον δυσὶ μάλιστα διαφέρειν δοκεῖ, κινήσει τε καὶ τῷ αἰσθάνεσθαι, 403b25–27). Now he states more expansively, "Since by two differences especially they define the soul, both by motion in respect to place and by thinking and understanding" (ἐπεὶ δὲ δύο διαφοραῖς ὁρίζονται μάλιστα τὴν ψυχήν, κινήσει τε τῇ κατὰ τόπον καὶ τῷ νοεῖν καὶ φρονεῖν, 427a17–19).[3] Aristotle focuses more directly upon animal life than before because he is most interested in perceiving and thinking. By referring explicitly to motion in respect to place, he speaks of the progressive motion of animals rather than the growth and related motions of plants and those animals lacking progressive motion. And instead of merely referring to all cognition as perceiving (αἰσθάνεσθαι), he specifies thinking (νοεῖν) and understanding (φρονεῖν). Perhaps νοεῖν here includes *phantasia* (see 427b27–28 and 433a9–10), and hence Aristotle immediately conjoins φρονεῖν with it (427a19), which more definitely means intellectual operations.[4] He may speak of *noein* and *phronein* here since he can go right ahead to suggest that they "seem just as *aisthanesthai*."

After mention of the two marks of soul, Aristotle states, "Thinking and understanding seem to be just as a kind of perceiving; for in both these the soul discriminates and is cognizant of something which is. Indeed the ancients say that understanding and perceiving are the same" (δοκεῖ δὲ καὶ τὸ νοεῖν καὶ τὸ φρονεῖν ὥσπερ

[2] Back in 414b14–18 Aristotle already indicates that *phantasia* is unclear: "at present it may be enough to say that all animals that possess the sense of touch have also desire. The case of *phantasia* is obscure; we must examine it later."

[3] Not much rides on the exact wording of 427a18–19. The manuscripts vary considerably, some replacing φρονεῖν with κρίνειν and αἰσθάνεσθαι. Discriminating (κρίνειν) might be pertinent since it applies to both perceiving and thinking. Hicks 1907, 454 declares, "This power of judging is obviously the common element in sense and thought: cf. *infra* 427a20 ἐν ἀμφοτέροις γὰρ τούτοις κρίνει. Whether we perceive or whether we think, we of necessity discriminate: we judge the thing known to be different from all other things and to be the same with itself."

[4] In 427b6–11 τὸ φρονεῖν and τὸ νοεῖν seem contrasted, with the former restricted to what is true. Also, φρονεῖν will appear in the passage from Empedocles quoted in 427a24–25 (and see 429a10–11). Ross 1961, 284 seems unduly restrictive when he says, "τὸ φρονεῖν is the exercise of practical wisdom," but see Hicks 1907, 455. Rodier 1900, ii 402 also suggests restricting τὸ φρονεῖν. Might φρονεῖν be used because the way to conceive thinking, usually associated with some type of νοεῖν, is just what is at issue in the whole discussion? See also Caston 1996, 24n11.

αἰσθάνεσθαί τι εἶναι (ἐν ἀμφοτέροις τε γὰρ τούτοις κρίνει τι ἡ ψυχὴ καὶ γνωρίζει τῶν ὄντων), καὶ οἵ γε ἀρχαῖοι τὸ φρονεῖν καὶ τὸ αἰσθάνεσθαι ταὐτὸν εἶναι φασιν, 427a19–22).[5] Using φρονεῖν to include intellection clearly in consideration, he asserts that his predecessors supposed thinking merely a type of perceiving. If *noein* can include *phantasia*, and *phantasia* does not really involve discrimination, the statement carefully inserts "seems" (δοκεῖ) in 427a19. Aristotle's wording leaves various possibilities for thought and sense: they are just the same, they are the same in some respect, or thought is some kind of sense. As inadequate as his predecessors' identification of thought and sense turns out, the difficulty of making any distinction, Aristotle indicates, sets him on the course of tracing analogies and disanalogies of sense and thought.

Empedocles offers an instance of those identifying sense and thought, for he supposed that human thought increases with respect to what is present to it, where what is present is the bodily condition and the object cognized (427a22–25; see DK 31B106 and B108). As we confront new and different things our thought changes and consequently expands. The emphasis upon what is present to cognition will soon raise the question about the possibility of error and may indicate the contrast of sense and thought and *phantasia*: the latter two are not restricted to what is immediately present. So prevalent is the view of cognition as bodily process occurring through presence of the like to the like that it goes back even to Homer (427a25–29; see *Od*. xviii 136–137).[6] The body's composition, endowing it with soul, prepares it to perceive and think that which is like it and in confrontation with it. Aristotle observes, "for all these comprehend thinking to be something bodily just as perceiving, and both perceiving and understanding are the like by the like" (πάντες γὰρ οὗτοι τὸ νοεῖν σωματικὸν ὥσπερ τὸ αἰσθάνεσθαι ὑπολαμβάνουσιν, καὶ αἰσθάνεσθαί τε καὶ φρονεῖν τῷ ὁμοίῳ τὸ ὅμοιον, 427a26–28; and cf. 404b8–405b19 and *Meta*. 1009b12–31). Whether the predecessors themselves comprehend thought as analogous to perception – and the way this very comprehension fits with their own conceptions – or this is Aristotle's suggestion for covering various possibilities is left obscure. What seems clear is that so long as the predecessors conceive sense and even thought primarily as bodily process, they not only have a faulty view, but also are barred from distinguishing thought and sense.

Problematic for this account of cognition as occurring through a like-by-like bodily process, which puts the sense in the immediate presence of its object, is allowing for deception (ἠπατῆσθαι, 427a29–b1). Aristotle says that being deceived "is more

[5] "Just as" (ὥσπερ) appears frequently at the start of this chapter: 427a19, a22, a27, a28, and 427b3. This perhaps reinforces the point that the capacities under discussion are quite hard to distinguish.

[6] The context in Homer is the disguised, returned Odysseus's warning to one of the suitors that our thought is filled with what fortune the gods give to us. This is changeable, and the suitor should abandon his misusing of the household of Odysseus before it is too late. So perception may immoderately try to take over the realm of thought, but Aristotle here puts it in its rightful place. Compare the way Socrates in Plato's *Theaetetus* 152e has Homer head of those who advocate flux and the relativity of cognition. Plato himself subtly uses the imagery of Odysseus's return from war and slaughter of the suitors in his *Charmides*, as Socrates fills the role of Odysseus with Critias and Charmides as the suitors for temperance. On Aristotle's attributions in 427a21ff., see Caston 1996, 25–27.

intimately connected (οἰκειότερον) with animal existence and the soul continues longer in the state of error" (427b1–2). Such pessimistic assessment connects him, for example, with Plato, who in *Republic* vii depicts humans as cave dwellers guessing at shadows, and who supposes generally that our embodied condition thwarts the soul's drive for truth: "to see the soul as it is in truth, we must not study it as it is while it is maimed by its association with the body and other evils – which is what we were doing earlier – but as it is in its pure state" (*Rep*. 611b–c; cf. *Phaedo* 66b–67b and 82d–84b). Perhaps for Plato so long as we humans lack what we most wish to know, such as the good, it is fair to say that we continue in ignorance (see *Apol*. 21d and 23a–b). Presocratics such as Heraclitus also frequently lament the obtuseness of humans (see, e.g., DK 22B1, B2, B78, B79, B83). The tradition that views embodiment as a misfortune for the soul tends to have human life largely unseeing what is before it. Aristotle thus follows a tradition attributing limited understanding to the embodied condition of soul and inadequate education. Though proper sense perception is unerring (418a11–12, 427b11–12), what goes beyond this likely is pervaded by falsehood (428b17–30). Hence even the beasts, having complicated perception not reaching the level of thought and understanding, and living by *phantasia* (see 415a11) that always has something unreal about it, are ever in untruthful condition. Only with the emergence of thought arises the possibility of full truth but also of false opinion. Most humans have limited learning and even the learned do not persist in thinking what they know. If the gods' thinking sets the standard, most souls will spend most time in error. The emphasis on the pervasiveness of deception is what drives us to distinguish thought from sense. Lack of any account of error may encourage the error of viewing all cognition as basically of the same sort.

If we cognize what is present to us that is like us, we might always do so truly, and hence Aristotle's predecessors may try to deny any error is possible asserting, "all appearances are true" (πάντα τὰ φαινόμενα εἶναι ἀληθῆ, 427b2–3). But then thought would seem indistinguishable from sense, for perceiving will unerringly get to what is the case and be knowing. The difficulty of explaining false judgment, on the assumption that nonbeing has no existence, because false thought requires believing what *is not*, may lead to its denial (see, e.g., Plato *Theaetetus* 187c–200d and *Sophist* 236d–264d). What is not might seem not to be at all, and hence not to be thought or said, except negatively as in this statement. As an alternative to denying any falsity and error, Aristotle observes that his predecessors may instead allow that "deception is by touching the unlike" (τὴν τοῦ ἀνομοίου θίξιν ἀπάτην εἶναι, 427b4; cf. 404a28–29 and *Theaetetus* 152c, 189d, 199e).[7] Error through contacting the unlike would seemingly be contrary to recognition by contacting the like (427b4–5).

Yet this quite simple explanation of error as contact with the unlike runs into problems, for both knowledge and deception concern contraries (427b5–6). Aristotle frequently says that knowledge that is one and the same is of contraries; for example, medical art enables the doctor to heal or to harm (see, e.g., *Physics* 251a30,

[7] For Aristotle's view that truthful thought of incomposite things is due to touching (θίγγειν) them with the mind, that ignorance about them is not to touch them (μὴ θιγγάνειν), and that there is no deception (ἀπατηθῆναι) about such simple beings, see *Meta*. ix 10.1051b18–28.

Meta. ix 5, *NE* 1140b22–24; cf. Plato *Republic* 333e–334a, *Hippias Minor* 368a-b, 375b). Knowledge is of contraries, for Aristotle, because to know is to have the form in the soul, and the same form makes known its privation or contrary (see *Meta*. 1032a32–b6). Therefore the *same* knowledge recognizes the contraries unerringly, but different perceptions would seem needed for contrary sensible objects. Now, those deceived about something, lacking the form as it is, might also be in a similar case regarding its contrary. Thus whether we know, and grasp the contraries *X* and un-*X*, or we are deceived about *X* and un-*X*, both knowledge and deception concern contraries. But then these thinkers trying to salvage error need to explain how contacting either the like or the unlike accounts for knowledge or ignorance not just of one thing but also *of its contrary*.[8] Since knowledge prepares us to deal with contraries, that is, the like *and* the unlike, how could error be attributed peculiarly to contact with the unlike?[9] Thus a fuller account of cognition is required going beyond the immediate or mediated contact that might be suitable for sense perception.

427b6–16 The discomfort error causes those viewing cognition as somatic, by means of contact with what is present, and through like by like, accentuates the need for a distinction of thought and sense. There must be a way for cognition to go beyond what is immediately present. Without thought distinguished from sense, beasts become measures of all things as well as humans, and faulty judgment is entirely excluded (see Plato *Theaet*. 161c–d). Aristotle's comments about error, assuming we wish to maintain a place for deception, open the way for claiming it evident that thought and sense differ: "Now that perceiving and understanding are not the same is manifest; for the one is present in all, but the other in few of the animals" (ὅτι μὲν οὖν οὐ ταὐτόν ἐστι τὸ αἰσθάνεσθαι καὶ τὸ φρονεῖν, φανερόν. τοῦ μὲν γὰρ πᾶσι μέτεστι, τοῦ δὲ ὀλίγοις τῶν ζώων, 427b6–8). That many animals have sense perception without understanding seems compelling. Yet it did not strike his predecessors this way (see 427a21–29), and Aristotle cannot stop with this straightforward argument since it may beg the question. The premise that only few animals think presupposes a distinction of thought and sense. Though Aristotle has used *phronein*, perhaps emphasizing that he means intellection getting to intelligible truth hardly available to other animals, until some further basis for the argument is specified, the argument remains in doubt. Surprisingly but appropriately, the faultiness of human cognition, the possible distinction of *phronein* and *noein*, clinches the argument that thought and sense perception differ.

Aristotle therefore continues to argue that sense perception and thought are not the same, and by arguing that sense of proper sensibles is always true whereas

[8] This interpretation of the problem can be found in Themistius *In de an*. 88,6–8.

[9] Hamlyn 1993, 130 comments, "Aristotle's objection to his predecessors that they failed to take account of error seems valid, since no purely physical account could deal with this. The suggestion that error consists of contact with the unlike is obviously puerile, and Aristotle rightly rejects it hotly." The first claim is correct, but since there is no alternative to viewing error as getting hold of what is other than or unlike the case, Aristotle hardly simply rejects what he proposes for his predecessors.

thought (*noein*) can be false or true (427b8–14). *Noein* seems contrasted with *phronein*; *noein* includes practical wisdom (*phronesis*), knowledge (*episteme)*, true opinion, and their contraries, and so *noein* can be both true and false.[10] *Noein* here has the same range as that given later in 427b24–26 to supposition (ὑπόληψις), but this may not be a complete division for *noein* since in b27–28 it also includes *phantasia*. If *episteme* covers theoretical and productive knowledge, Aristotle extends *noein* to every sort of knowledge and opinion. That such *noein* may be true and false connects with the complaint about the predecessors' neglecting to explain deception (427a29–b6). Sense seems to present what is the case, while thought opens to error. Yet how can sense be true if animals spend most of their time deceived (see 427b1–2)? Their erroneous condition pertains not to proper sensibles, such as color and odor, about which they are accurate, but to common and accidental sensibles about which they do less well, and to the extent that they lack mind, they miss out on any intelligible truth. Since there are intelligible things, the senses fall short of the possibilities of thought.

But why should Aristotle say that proper perception is "always true" (ἀεὶ ἀληθής, 427b11–12)? Plato's *Theaetetus* 186c–e denies that sense gets to truth at all; only thought can get to truth. Previously in 418a11–12 Aristotle claimed proper perception cannot be deceived (μὴ ἐνδέχεται ἀπατηθῆναι), while now he insists that it is true. Its truth cannot consist in making judgments and getting to essence, as thought may. Sense instead captures what is to be perceived, the truth or reality of the sensible object. Sense accurately discriminates what is there to be discriminated because the sense and its object, as stated in 425b26–27, are in actuality the same. What the sense actually perceives is what there is under the present conditions of the object, medium, and organ. And he can say that it *always* gets the truth not because it is never inaccurate (cf. 428b18–19) but because as a class the proper senses as available to all the animals are authoritative in their fields. There is no criterion for them beyond themselves, whereas thought can be checked by sense perception. If we seem to perceive something poorly – and a proper sense can do this when we are too far away, distracted, sick, and so on – the same sense in a better condition has to reassess what is perceived. Moreover, even misperception need not be or occasion a false *judgment.*

Whereas sense perception of the proper sensibles is always true, and this holds for all animals, thought (τὸ νοεῖν or διανοεῖσθαι), which belongs only to those animals having *logos*, may be true or false (427b8–14). Διανοεῖσθαι, used in b13, suggests discursive thought, that is, judgment, and hence Aristotle readily says it depends upon the animal's having *logos*, that is, speech.[11] The intellectual states that

[10] Where νοῦς (*nous*) is used, it may perhaps always be true (for example, 433a26, *NE* 1139b15–17, 1141a3–8, yet see 429a23 and 430a24). *Noein* seems to be its operation, but here it includes the possibility of truth and error, and in 427b28 it seems to be *phantasia.* And *noesis*, again an actualization of *nous*, seems in 429b16–17 to be *phantasia*. Thus these terms have more ambiguity and wider extension than might be supposed.

[11] Even nondiscursive thought will depend in humans upon their having *logos*. Since they begin without understanding essences, they can only learn to know them through speaking. J.-J. Rousseau suggestively states, "general ideas can be introduced into the mind only with the aid of words, and the

are always true, φρόνησις (practical wisdom), ἐπιστήμη (knowledge), δόξα ἀληθής (true opinion), cannot also be false as can thinking (διανοεῖσθαι), yet they have false contaries, unlike proper sense perception, which has no contrary. Discursive thinking surely only accompanies *logos*, both permitting falsity. There can be false speech, and consequently, there can be false thought. This is how Plato argued in *Sophist* 263d–264a. If *logos* is limited to some animals, perception does not at all depend upon *logos*, and thought that in contrast with sense can be true or false is implied by *logos*, then thought seems distinct from sense.

This argument distinguishing thought and sense apparently works by consideration of *primitive* or *initial function*. Sense perception of the proper sensibles that belongs to all animals from their very beginning is generally infallible. Other levels of sense based upon it, that is, perception of common and accidental sensibles, may well be deceptive, but the earliest level of sense is truthful. The thought of the individual person, however, requires education to develop from ignorance into knowledge. A human has opinion prior to higher-level understanding, and dubious opinions predominate, at least regarding ultimate principles. Even if humans happen to have true opinions, they generally can provide little account (*logos*) of them – disclosed again and again in Socratic dialogues – with the result that they still are largely ignorant and often ignorant of this ignorance. Hence, thought, in its origination with its liability to error, contrasts with the beginning of sense. Of course thought of the proper intelligibles, that is, essences (see *Meta*. ix 10.1051b17–33), is generally true, as is perception of proper sensibles. Intellection of essence is basic for thought, but it does not emerge at the very beginning of the intellectual life of the human as proper perception is at the start of perceptive life. This contrast in order of truth attainment, as a result of the role of developing judgment, is key to distinguishing sense and thought. Introduction of *logos* into the argument distinguishes the deceptiveness of common and accidental perception, which do not imply judgment, from error in judgment connected with discourse.

That Aristotle has but this argumentation to distinguish thought and sense may seem disappointing. He began saying that it is "manifest" (φανερόν) that they are not the same (427b6–7). Yet earlier he admitted it was not so clear to his predecessors (see 427a21–22). Particularly those who deny that any error is possible, claiming all appearances are true (427b3), reject his argumentation and any distinction of thought and sense. We may doubt that any arguments will make the distinction obvious to them if the arguments that he has provided do not. Not only may such thinkers not distinguish their own high-level reflection from what people engage in most of the time, but also they do not even demarcate it from what the beasts do. What argument could counter such lack of self-knowledge, and especially for those who deny any error? The case resembles that of those who deny the principle of noncontradiction (see *Meta*. iv 3–6, esp. 1009a15–22). Aristotle's further reflection

understanding grasps them only through sentences. That is one reason why animals cannot form such ideas or even acquire the perfectibility that depends on them" (*Discourse on the Origin of Inequality*, p. 50, Cress trans.). Sorabji 1995, 201–202 controversially supposes, however, that Aristotle allows universal concepts to the beasts even without speech.

in iii 4 upon what thought is will be eliciting further differences from sense, but these further differences are elaborated only upon the initial acceptance of the distinction of thought and sense.

Having contrasted sense and thought in regard to truth and falsity, and having restricted thinking (διανοεῖσθαι) to animals with *logos*, Aristotle points out that φαντασία (*phantasia*) is other than both αἴσθησις (*aisthesis*) and διάνοια (*dianoia*), though *phantasia* does not arise without sense and supposition (ὑπόληψις), which includes *dianoia*, does not arise without *phantasia* (427b14–16).[12] The close connections of *phantasia* and sense and thought may cause these to be confused. Animals without *logos* have *phantasia* that is often deceptive, and if as some claim *phantasia* is thought, the arguments distinguishing thought and sense totter. In Plato's *Sophist* 264b *phantasia* is said to be the blending of *aisthesis* and *doxa* (see 428a24–b9), and later Aristotle has *phantasia* as part of *noein* (427b27–28). Moreover, earlier in 427b3 he referred to those who deny error and hold that "all appearances (τὰ φαινόμενα) are true." If φαντασία enters into all φαινόμενα, then it might enter into all cognition, and again sense and thought may be the same. He wishes to maintain that *phantasia* connects intimately with thought and sense without being either of these. By arguing that *phantasia* is neither thought nor sense, he can sustain his arguments distinguishing thought and sense.[13]

427b16–26 Aristotle must distinguish *phantasia* from sense and thought to uphold the distinction of sense and thought. In keeping *phantasia* somehow apart from these, he shows *that* the capacity of *phantasia* is something in its own right, and he proceeds to establish *what* it is. He starts off saying that it is manifest (φανερόν) that νόησις is not the same as ὑπόληψις (427b16–17), paralleling the claim earlier in b6–7 that it is manifest that sense-perceiving and understanding are not the same. If the text as given in most manuscripts is correct, as the parallel supports, νόησις is used for φαντασία.[14] Such use of νόησις may be acceptable since immediately

[12] Use of ὑπόληψις here rather than *dianoia* serves to encompass intellectual virtues such as knowledge and *phronesis* along with opinion. The dependence of ὑπόληψις upon *phantasia* could be understood in terms of the genesis of concepts and knowledge discussed in *Posterior Analytics* ii 19 and *Metaphysics* i 1. Memory, which depends upon *phantasia*, is crucial in concept formation. But in the discussion of the role of *phantasia* in thought in iii 7–8 it becomes clear that *phantasia* also plays a role in initiating the putting to use of already possessed dispositional knowledge and opinion.

[13] *Phantasia*, it will emerge, is not a discriminative faculty, as are sense and thought, but a presentational or representational faculty. Wedin 1988, ch. 2 insists that Aristotle does not emphasize the "object" of *phantasia*; i.e., he does not speak of *phantasta* as he speaks of *aistheta* and *noeta* (in *De mem.* 450a24 φανταστά is in one manuscript though not in others). Since faculties or potentialities were to be understood according to ii 4 in terms of their operations and objects, the lack of such speaking in regard to *phantasia* indicates, according to Wedin, that Aristotle is not putting *phantasia* forward as a faculty or power of the soul on the level of sense and thought. Yet we observe that Aristotle does not emphasize any lack of object for *phantasia* or its not being a faculty, though he does seem to contend that it is not discriminative as sense and thought are but a presentational or representational faculty.

[14] Jannone 1966 has αὕτη (this), however, rather than ἡ αὐτή (the same) in 427b17, with no explanation or indication that the manuscripts have the other reading. On Jannone's text Aristotle is denying that *phantasia* is *noesis* and *hypolepsis*. Since Aristotle goes on in b20 to speak of *doxazein* (opining),

afterward he divides νοεῖν into φαντασία and ὑπόληψις (b27–28) and in 433a9–10 he indicates some νόησις may be *phantasia*. Ὑπόληψις (supposition) seems employed, as in 427b15–16, to include knowledge (ἐπιστήμη), opinion (δόξα), practical wisdom (φρόνησις), and their contraries (b24–26, cf. b10–11). Supposition (ὑπόληψις) thus covers those intellectual states, whether true or false, that accept something as true. Perhaps merely opinion rather than true opinion is listed here in b24–26 in contrast to b10–11 to lead us to the reflection that the contrary of knowledge and of true opinion turn out to be the same, that is, false opinion, or if the contrary of opinion is doubt, to suggest that supposition may involve various levels of conviction. It is urgent initially to demarcate *phantasia* from supposition since otherwise it may seem that *phantasia* embraces all cognition. Having initially distinguished *phantasia* from supposition, he can soon argue against *phantasia* being any of the various types of supposition when he turns directly to consider *phantasia*.

Phantasia differs from supposition because we can have *phantasia* when we wish, whereas our suppositions are not just in conformity to our wishes (427b17–21). Aristotle says, "this affection is within our power whenever we wish (for we can produce before our eyes just as those placing things in memory feats and image making), but forming opinions is not up to us for it is necessary to be false or to be true" (τοῦτο μὲν γὰρ τὸ πάθος ἐφ' ἡμῖν ἐστίν, ὅταν βουλώμεθα (πρὸ ὀμμάτων γὰρ ἔστι ποιήσασθαι, ὥσπερ οἱ ἐν τοῖς μνημονικοῖς τιθέμενοι καὶ εἰδωλοποιοῦντες), δοξάζειν δ' οὐκ ἐφ' ἡμῖν· ἀνάγκη γὰρ ψεύδεσθαι ἢ ἀληθεύειν, b17–21). Because belief enters into our judgments, we cannot be so free with them. We do not embrace a false opinion when we recognize its falsity. We only tend to hold a belief when we suppose that it is true. This argument is clearly directed at humans, where the holding of opinions is at issue.

Distinguishing supposition and *phantasia* by our wishes is useful. We do often put images before our minds as we wish. We can even engage in "constructive imagination" that draws together various images to produce such imaginary beings as winged horses or golden mountains. If we could not produce images at will, and such *phantasia* play some role in our thinking, then we might not be able to think about what we wish. Aristotle illustrates our control of *phantasia* by mnemonic practices that use imagery and image making more widely.[15] Yet we also sometimes find that we cannot get images out of our minds, and hence we cannot always control *phantasia* so completely as we might wish. Moreover, we do have some responsibility for our opinions. Socratic cross-examination assumes that though we do not choose our opinions, our opinions can be improved. Interlocutors recognizing that an opinion is false should be eager to reject it and to seek a better one, but many interlocutors

that pertains to *hypolepsis*, there would be little obvious reason to conjoin *noesis* with *hypolepsis* in b17.

[15] Aristotle has in mind the "place system" for enhancing memory. The items to be remembered are assigned to particular places (*topoi*) within a well rehearsed mental framework, such as the rooms of a building, and thus associated with something the rememberer easily recalls. This procedure is mentioned explicitly in *Topics* 163b28, *De memoria* 452a12, and *On Dreams* 458b20, and for discussion consult Yates 1966. It is the origin of our term "commonplace" and probably gives the title to Aristotle's *Topics*.

prove uncooperative. Aristotle's argument has hold of something important and sufficient for his purpose; *phantasia* generally responds to our wishes but opinion much less so. What underlies the point is that belief enters into supposition but not into *phantasia*. *Phantasia* is mere presentation or representation rather than a belief that involves *logos*.

Aristotle further argues that our opining (δοξάσωμεν) that something is terrible or fearful or confidence building impacts straightaway upon us emotionally, whereas *phantasia* of such things, as merely looking at a drawing, leaves us unaffected (427b21–24). Belief bestows reality and provokes response. We might object that people and beasts can respond to pictures or images, and that beliefs are held over long periods without occasioning emotional outpouring.[16] Evidently Aristotle refers to "occurrent" belief, that is, a judgment presently occupying our thought. These confront us with things that tend to affect us emotionally. Such occurrent beliefs about *phantasiai* cause emotional response. So long as there is merely a presentation giving rise to little conviction, however, there is little emotion. Of course the beasts live by *phantasia*, since they lack thought and *logos* that might oppose it, so in their case they cannot help "affirming" what appears to them and responding to it (see 429a4–8). Already suggested by these arguments is that *phantasia* is not thought or sense because it is not a discriminative power; unlike these, which detect differences in things, *phantasia* merely presents or represents things.[17]

Though Aristotle has begun to speak of *phantasia*, the main topic so far is the distinction of thought and sense. In connection with thought or supposition, he says, "There are differences of supposition itself (αὐτῆς τῆς ὑπολήψεως), knowledge and opinion and practical wisdom and the contraries of these, concerning the difference of which there will be another *logos*" (427b24–26). The list of kinds of supposition differs in arrangement from that in b10, which lists practical wisdom and knowledge and true opinion. The list in b10 emphasizes the truthfulness of some intellectual states whereas the list in b24–25 has opinion standing between knowledge and practical wisdom as somehow involved in both. Since the list in b24–25 has opinion rather than true opinion, either we are to understand true opinion, so that the contrary is false opinion – which also happens to be the contrary of knowledge – or Aristotle means to have something like doubt, where we are unsure of our convictions, as the contrary of opinion. If this is the case, not all supposition must be something affirmed and believed. That all opinion involves conviction will be stated in 428a20–21, but supposition may perhaps also include doubt and hypothetical positions, that is, views with rather limited conviction. The announcement that the

[16] In *Rhetoric* ii 5.1383a3–8 Aristotle shows that the opinion that something is terrible will not lead to fear under some circumstances, such as when there seems no chance of escape, hope is lost, and the person is despondent. Aristotle in 427b24 speaks of looking at drawings rather than, say, watching tragedies since vivid imitations in dramatic spectacles are especially likely to affect us emotionally, even if part of the response is due to our realization that they are just imitations.

[17] Some contemporary criticism of traditional philosophy has focused upon its privileging presence. If we note Aristotle's emphasis upon sense and thought as discriminative, that is, grasping differences or things with reference to others, whereas *phantasia* is the presentational faculty, the criticism appears less obviously appropriate.

differentiating of the various sorts of supposition is another *logos* (427b26–27) need only mean that it is another discourse from that presently engaged in. Of course *episteme* and *phronesis* are distinguished in *Nicomachean Ethics* vi, but as 427b29 indicates, Aristotle will be going on to some extent in this work to consider the type of *noein* that is supposition.

427b27–428b9 The distinguishing of thought and sense has now been completed (427b27–28). When Aristotle divides τὸ νοεῖν into φαντασία and ὑπόληψις, insisting that τὸ νοεῖν (thinking) has already been distinguished from αἰσθάνεσθαι (perceiving), he in effect separates *phantasia* from sense perception (b28–29). If *noein* includes *phantasia*, and *noein* differs from sense, then *phantasia* must too. As does thought, *phantasia* might belong to fewer animals than sense perception, and *phantasia* can be erroneous (and this sort of argumentation will be utilized soon in 428a5–16). Including *phantasia* within *noesis* may cause surprise. This perhaps began in 427b17 (and maybe even as far back as 404b5–6). Possibly this is popular usage, but it reappears in 432a12–13 and 433a10.[18] It is true that when Aristotle indicates that *noesis* is *phantasia* in 427b28 he says it "seems to be" (δοκεῖ εἶναι), and he generally expresses some reservation about calling *phantasia* a sort of *noesis*, especially as it will be seen to be caused by sense perception and defined in terms of sense perception (429a1–2). But a reason why Aristotle wishes *noesis* to cover *phantasia* is that he thereby has "mind" involved in all voluntary animal motion, if *phantasia* contributes to initiating motion. And, if intellectual apprehension of principles should be called *nous*, and working dialectically through *endoxa* or the phenomena leads to the principles, then *phantasia* can somehow be called "mind."[19] In this way mind moves itself rather than depending upon something else, and something much lower than it. This applies as well to the stimulation of thinking by *phantasmata* in those persons who already know. Thus the role of *phantasia* in intellection and action warrants extending to it the term "mind."[20] Before considering in iii 4 τὸ νοεῖν in the sense of ὑπόληψις, the more usual meaning of thought or mind as supposition, Aristotle continues now with investigation of τὸ νοεῖν as *phantasia* (427b29).

To some extent in announcing that *phantasia* differs from sense and thought and arguing its distinction from supposition in his discussion of the difference of sense and thought (427b14–27), Aristotle has already assumed or given some evidence *that* there is *phantasia*. In his treatment now devoted to *phantasia*, he distinguishes it from other cognitive capacities, so he might be taken to be further securing *that* it is along with determining more definitely *what* it is.

[18] In *Physics* 203b22–28 and 208a14–22 Aristotle considers the way thinking (*noesis*) of extension beyond any limit gives rise to the supposition of an actually infinite magnitude. Such thinking appears to be *phantasia*.

[19] Owen 1986 emphasizes that the phenomena (τὰ φαινόμενα) are *endoxa* as well as perceived things. Much literature has developed this position (see, e.g., Nussbaum 1982 and Pritzl 1994). Some questioning of this line of thought can be found in Bolton 1991.

[20] Perhaps Aristotle's broad use of *noesis* encourages later thinkers to call nearly everything in the soul through which awareness occurs "thoughts" (see, for example, Descartes *Meditations* III and Hobbes *Leviathan* I 2).

The initial notion that we have of *phantasia*, if we ignore metaphorical uses of the term, Aristotle says, is that *phantasia* is that by which a *phantasma* arises in us (εἰ δή ἐστιν ἡ φαντασία καθ' ἣν λέγομεν φάντασμά τι ἡμῖν γίγνεσθαι καὶ μὴ εἴ τι κατὰ μεταφορὰν λέγομεν, 428a1–2). The ignored metaphorical usage is that extended way of saying anything "appears" (φαίνεται) so that *phantasia* might include any cognition whatsoever.[21] Were this wide meaning assumed, there would be little point to distinguishing *phantasia* from other faculties so that *phantasia* doubtfully would be a distinct faculty. Aristotle eventually discloses that *phantasia* applies only to that to which sense perception pertains (428b10–17). Hence any occasions in which Aristotle himself says that such and such "appears" (φαίνεται) to be the case, where what appears is incapable of direct presentation to the senses, he himself is speaking metaphorically.[22] He cannot be too clear now, however, about metaphorical and nonmetaphorical cases because he is in the midst of establishing what *phantasia* is, and various sorts of cognition are still possible candidates. What can so far be accepted is that *phantasia*, if a distinct faculty, is that whereby a *phantasma* occurs.

The way to understand *phantasma* is perhaps undetermined. Most interpreters propose "image" or "mental image," while some suggest that "appearance" is more apt. "Image" fits nicely with the view that *phantasia* is the remnant of sense that enters into dreams, afterimages, memory, and constructive imagination, that is, cases in which sense perception is not currently directly in play and we seem to be picturing something. "Appearance" might work better for *phantasia* in illusory perception, as when the Sun appears very small or a nonhuman viewed from far away appears to be a human.[23] Had Aristotle simply wished to be more specific in meaning, he might have selected another term. In Plato's *Sophist* the distinction of images (*eidola*) into semblances (*phantasmata*) and likenesses (*eikones*) is crucial for locating the sophist (see *Sophist* 235c–236c). Likenesses have the same

[21] Themistius *In de an*. 89,21–35 says that the metaphorical usage of *phantasia* is that in which it might be applied to sense or thought. Strictly Themistius suggests that it is the faculty through which images and imprints (τύποι) arise. Hicks 1907, 460–461 says, "In this metaphorical or extended use φαντασία may be said to mean πᾶν τὸ φαινόμενον or πάθος ὁτιοῦν τῶν ἐν τῇ ψυχῇ. The reason is that φαντασία means presentation, appearance, and any of the cognitive faculties, or again even sense perception, may be described as presentative; that is, the result they produce is something present to the soul, something that appears (ὃ φαίνεται). In fact the wider, or what A. here calls the metaphorical, meaning is based on the felt connexion of φαντασία with φαίνεσθαι, while the more limited meaning is determined rather by the meaning of φαντάζεσθαι and φάντασμα." For a quite different view of the neglected metaphorical type of *phantasia*, see Frede 1995, 280n3, suggesting that the constructive imagination mentioned in 428b17–20 is ruled out "since it never recurs in *De Anima* and does not suit the *cognitive use* which Aristotle wants to ascribe to *phantasia*." This interpretation seems unnecessary and unlikely since Aristotle is only denying that truth and falsity apply to such imagination in the way that they apply to judgments.

[22] Consider, e.g., the way Aristotle speaks of *phantasia* in its first appearance in the treatise in *De anima* 402b23. The appearance of all accidental beings seems unlikely to be limited strictly to those presented to the senses.

[23] Cf. Plato *Philebus* 38c–d and *Republic* 602e. Schofield 1978 contends that "appearance" rather than "image" was the meaning of *phantasma* at least until Plato. *Phantasma* is taken to derive from φαντάζω (cf. Nussbaum 1978). Birondo 2001 defends "mental image" for *phantasma* and claims that since *phantasia* accounts for illusory perception, *phantasmata* cannot be in play in all *phantasia*.

proportions as the original and are recognized to be like it, but the semblance is distorted so as to appear to be either a likeness or the original itself when observed by the naïve from a distant vantage point. Whereas the philosopher aims for likening to God, the sophist manages to become a semblance of the wise (see *Sophist* 266d–268d). Aristotle might choose *phantasma* because of its link with *phantasia* and this Platonic background that suggests that *phantasmata* can be deceitful. Perhaps Aristotle's usage covers both Plato's likenesses and semblances. This permits *phantasia* as a faculty for *phantasmata* to play all the roles given it. If, as is likely, the object of *phantasia* is ambiguously the very appearance or that which appears in the appearance, for instance, either the appearance of a human or the human that appears, *phantasma* serves quite nicely for the object, and there is no need for any term, such as *phantaston*.

The case Aristotle will soon make that *phantasia* is not a critical and discriminative faculty, as are sense and thought, indicates that *phantasia* is a faculty of presentation or representation. *Phantasia* is not involved in all sense perception, as the metaphorical usage to cover all appearance allows or entails. *Phantasia* has especially little role in perceiving the proper sensibles though on occasions in which we perceive them poorly, as in bad lighting, *phantasia* would be in play. Thus *phantasia* does not enter into and underlie all sense perception. Neither is *phantasia* the interpretation of sense perception that would be another way for it to be discriminative. *Phantasia* is rather the presentation occurring when things appear that are not currently being perceived, when they appear in perception otherwise than they are, or things appear along with perception. Those occasions in which there is presentation without current sense perception fit with speaking of images deriving from previous sense perception, as in dreams, afterimages, memory, and imagination. The occasions of illusory perception require similar explanation slightly modified. Because animals can have inaccurate perceptions and have perceived things in the past and retain remnants of their sense perception, they are capable of having things appear to them otherwise than they are, especially when they are in a passionate state. The current perception somehow links with *phantasia*, that arising from past perceptions and perhaps current perception, to make a misleading presentation or appearance (cf. *On Dreams* 460a32–b27). In these cases we might say that the *phantasma* is not merely an image but the appearance resulting from the combination of *phantasmata* with the current perception to offer an illusory appearance. But the possible judgment we make about what appears is not itself the appearance. *Phantasia* can also enter into some true perception, as becomes apparent in 428b27–30.

Were *phantasia* to discriminate things and to put us in truth or falsity (καθ' ἣν κρίνομεν καὶ ἀληθεύομεν ἢ ψευδόμεθα), it would have to be sense (αἴσθησις), opinion (δόξα), intuition (νοῦς), or knowledge (ἐπιστήμη, 428a3–5).[24] Aristotle argues that *phantasia* is none of these alternatives, that is, it is not sense or ὑπόληψις, hence it cannot be a power of discrimination, but it is a power of presentation or

[24] Some manuscripts reverse the order of knowledge and mind (or intuition). In the order given here we perhaps have the suggestion that sense may give rise to opinion and intellectual grasp of principles may give rise to scientific knowledge.

representation giving rise to perceptionlike appearances.[25] Only when the animal goes ahead to take the presentation as true or real, and it is not so, has the animal been deceived. But while the appearance due to *phantasia* permits or encourages such deception, it is not *phantasia* itself that is making the determination (see 432a10–12). The other capacities listed in 428a4–5 are those putting us into truth or falsity. By rejecting any of these alternatives for *phantasia*, Aristotle shows not only that it cannot be a discriminative power but also *that it is* a psychical power in its own right. Were it to collapse into any of these other powers, it would require no further separate investigation into *what* it is.

Aristotle has several arguments purporting to compel acceptance that *phantasia* differs from sense. So far in this chapter there have been two sets of arguments distinguishing things, those that distinguish thought and sense (427b6–14) and those distinguishing *phantasia* and supposition (427b16–24). Now in arguing that *phantasia* differs from sense Aristotle makes arguments resembling the former set. *Phantasia* cannot be *aisthesis*, he contends, because things appear (φαίνεται) to us when we in no way sense (428a5–8). Sense is either potentiality (δύναμις), that is, the dispositional capacity to perceive, for example, vision (ὄψις), or the actuality (ἐνέργεια) of this sort of potentiality, for example, seeing (ὅρασις). But when an animal sleeps, sense of both sorts becomes inoperative, yet *phantasia* may then operate in dreams. Thus *phantasia* seems separate from sense, because it occurs when the other does not. Where we say that such things as dreams *appear* and we are not presently perceiving, *phantasia* is in play. We recall that previously Aristotle argued that sense belongs to all animals but thought merely to humans.[26] Different spheres of operation, sense and *phantasia* sometimes having different spheres, suggests different powers.

The next argument, working along similar lines, even more evidently resembles what preceded. If there is some discomfort in denying that animals have perception when they sleep, as animals always have the power of sense, since this is what constitutes an animal, still they may not all have *phantasia* (428a8–11). The ant, the bee, and the grub, Aristotle says, seem to lack *phantasia*.[27] A twist in this argument is the denial that *phantasia* is the same as sense perception *in actuality* (τῇ ἐνεργείᾳ τὸ αὐτό, a9); that is, sense-perceiving can be actually taking place without any *phantasia* occurring. Thus animals always have perception but the

[25] Cf. the discussion in Barney 1992, 290–292. Ross 1961 punctuates 428a4 so that it is a question rather than merely a statement as in Jannone 1966. Punctuating as a question seems preferable if *phantasia* is not in fact discriminative or judgmental at all, but rather merely presentational, as turns out to be the case.

[26] Aristotle might have argued earlier that we think while asleep though we do not perceive. In *On Dreams* 458b10–25 he says that we may think during sleep, though this is not part of our dream. This would not be too convincing, however, unless one previously agreed that sense and thought differ. Also, sleepwalkers and other sleepers seem somehow to perceive during sleep (see *GA* v 1.779a13–21).

[27] Perhaps Aristotle denies *phantasia* to insects because some predecessors failed to observe that these sleep and dream (see *On Sleep* 454b15–23). Ancient commentators such as Themistius *In de an*. 90,6–8 either have a different text, merely denying *phantasia* to grubs, or were so bothered by the text that they interpret it this way.

activity of perceiving need not involve *phantasia*. Previously *phantasia* occurred without sense, at least in sleep, but here sense without *phantasia*. If this argument is correct, *phantasia* is quite separate from sense, even if they derive from the same faculty, because the operations need not occur together. And that the same faculty is in play may be doubted if some animals with perception completely lack *phantasia*. In fact, later Aristotle concedes that all animals may have *phantasia*, though it is indefinite in the lowest animals (see iii 11.433b31–434a5). Therefore, this argument is in part based on *endoxa* and dialectical. It would parallel the earlier one restricting thought to humans, if *phantasia*, as does thought, extends to fewer animals than sense.[28] An important reason that Aristotle uses this argument, even if it is partly merely dialectical, is to support the divorce of *phantasia* from the actuality of *aisthesis*. He risks saying that some animals entirely lack *phantasia*, something he does not himself believe, in order to prevent *phantasia* from being involved in and composing all actual sense-perceiving. *Phantasia* depends upon sense perception, as was stated in 427b15–16 and soon again in 429a1–2, but *aisthesis* does not depend in the same way in turn upon *phantasia*. The causality goes generally in only the one direction.[29]

Aristotle's next argument against *phantasia*'s being sense contrasts them regarding truth, again paralleling the earlier argumentation distinguishing sense and thought. Sense perception, at least of the proper sensibles, is always true, while *phantasiai* are predominately false (αἱ δὲ φαντασίαι γίνονται αἱ πλείους ψευδεῖς, 428a11–12). *Phantasiai* cannot be false in the way suppositions are false, as believed, but rather as faulty presentations differing from the way a better criterion and more realistic presentation discloses them to be. They are false as misrepresentations that are *capable* of deception. This fits nicely with the role of *phantasmata* in Plato's *Sophist*. Appearances of what is not presently the case thus seem false in their very mode of being. When an animal has *phantasia* presenting the object of desire, that is, some future attainment not now the case, and all such hypothetical or imaginary appearances, these can be called false. Some cases in which *phantasia* is not thus false may be the retention of how things are when we shut our eyes or generally

[28] In 428a22 and a24 Aristotle still suggests that *phantasia* belongs to "many" or "some" animals rather than to all animals.

[29] Emphasis on this point answers Wedin 1988, ch. 2. He rightly holds that *phantasia* is presentational or representational rather than discriminative, but Wedin wishes to go further and contend that *phantasia* has no special object of its own and is not a separate faculty of the soul but rather that which underlies all cognition. *Phantasia* would then explain intentionality of cognition, i.e., that sense and thought are directed toward objects. *Phantasia* is what presents or represents to the soul what we perceive or think. Some of Aristotle's predecessors, those supposing all appearances are true, similarly make *phantasia* pertain to all cognition. Instead for Aristotle sense as the cause of *phantasia* must already present things to itself. *Phantasia* can be presentational because its cause, sense, already is. (The nutritive capacity can also have an object, food, without requiring something further to direct it to this object.) Caston 1998 reinforces Wedin's position by seeming to deny that sense perception of proper sensibles is intentional and that only higher-level psychical acts are, for all of which *phantasia* forms the representational basis: that is, *phantasia* is the basis of intentionality. This ignores Aristotle's insistence that sense perception generally is a critical faculty and his clear assumption of the intentionality of proper perception.

undistorted memory of how things were in the past. But *phantasia* can also often distort the past. Perhaps Aristotle's use of γίνονται . . . ψευδεῖς in 428a12 means something like "turn out . . . false," because many of the things we expect and desire turn out to be other than we anticipate (cf. 428b8).

If someone were to hesitate about accepting that appearances can be false in view of the assertion that "all appearances are true" (427b3) or the claim that what appears surely appears, Aristotle may answer with the next argument. He points out that we say that things "appear" (φαίνεται) such and such to us when we do not cognize them plainly: "Further we do not say when we are accurately engaged with the perceptible object that this appears to us to be a human, but rather when we do not perceive distinctly, then the true and the false [*phantasia* may occur]" (ἔτι οὐδὲ λέγομεν, ὅταν ἐνεργῶμεν ἀκριβῶς περὶ τὸ αἰσθητόν, ὅτι φαίνεται τοῦτο ἡμῖν ἄνθρωπος· ἀλλὰ μᾶλλον ὅταν μὴ ἐναργῶς αἰσθανώμεθα· τότε ἡ ἀληθὴς καὶ ἡ ψευδής, 428a12–15). We only say that perceptible things *appear* such and such to us when we do not perceive clearly and are unsure whether it is true or not.[30] Presumably we here say that this *appears* to us a human because we are *aware* that we are not perceiving plainly. This appearance, though unclear, can turn out to be true or false. For example, someone can appear to be a human and turn out to be one. Often we go ahead and decide in spite of the inaccurate appearance or are unaware that we do not perceive accurately. Hence on the basis of the appearance we may say what is true or false. The appearance or presentation should be distinguished from our saying something based upon it. Whether we go on to say what we peceive or not, the *phantasia* can be true or false because what appears can turn out in fact to be the case or not to be so.[31]

Aristotle has us using "appears" not only where we do not perceive at all, as in dreams, but also where we are aware of perceiving imprecisely. Yet he leaves unclear whether this means that *phantasia* occurs during and within such obscure sense perception or that *phantasia* is this imprecise perception or that such perception merely serves as analogue of *phantasia*.[32] It seems likely that *phantasia* enters into our obscure perception when we say it "appears" to be such and such. This appearance (*phantasma*) seems due to combination of what is being perceived with *phantasmata* arising from this perception and from previous perceptions. What thus has *phantasmata* in its composition can be a *phantasma*. There would be no chance

[30] This again seems to oppose the view of Wedin 1988 that *phantasia* is involved in all sense perception inasmuch as Aristotle observes that we only tend to introduce appearance language when we are unsure of what we perceive. Those pushing such embracing theories of appearance might well point out, however, that appearance language *can* be used quite widely to cover *all* cases of cognition. But these seem to include the cases that were called metaphorical in 428a2.

[31] The words τότε ἡ ἀληθὴς καὶ ἡ ψευδής in 428a15 are difficult to construe, so that Ross 1961 changes the text. But perhaps as they stand they can indicate that the *phantasia* arising when we do not perceive clearly may be true or false.

[32] Schofield 1978 contends that inaccurate, nonstandard, or "nonparadigmatic" perceptions are *phantasiai*, as when we see things indistinctly or from too far away. But this turns *phantasia* into sense perception and a discriminative faculty. Schofield does not sufficiently consider the possibility that Aristotle is only giving a role to *phantasia* in misperception.

for anything other than perceiving to be going on unless perceiving gives rise to *phantasia*.[33]

To deal a little more fully with *appears* with reference to perceptual appearance, we may observe that Aristotle has two basic sorts of inaccurate perception, imprecise perception of common sensibles or accidental sensibles. While proper sensibles are generally perceived truly, the other two sorts of sensibles lend themselves to inaccurate perception (see 428b19–25). The example of the Sun's appearing small (428b3–4) is an instance of an inaccurate perceiving of a common sensible; the example of perceiving a human obscurely (428a13–14) is a case of a possibly mistaken accidental sensible. When a statue of a human enters our visual field, we may see it as a statue, be unclear exactly what appears to us, or suppose that we see a human being. Where we are unclear or we suppose that we see a human, talk of "appearing" is appropriate. An obvious way to explain such usage is to say that what the senses perceive is combined with *phantasia* to which it gives rise and remnants of previous sense perception to make an obscure appearance, or there is a presentation as if of a human being, and this we may carelessly determine is a human.[34] Common sensibles thus also make for misperception. We can of course perceive these accurately, for example, when we look straight on at something round at not too great a distance. But when we look at a circle from an angle, it appears elliptical though we may recognize it as round. Both the elliptical appearance of the circle at an angle and the perceiving it as round may seem to involve *phantasia*. If we stop to consider what appears, we should hardly say that we "perceive" an ellipse since we perceive something circular. This is like the case of viewing the Sun. We definitely see the Sun, but it appears to be small when it is not, so we cannot be perceiving its size rightly. Perhaps we can say that the small appearance of the Sun and the elliptical appearance of the circle have something to do with the way that small things look and elliptical things look. What we perceive gives rise to *phantasia* that combines with other *phantasmata* to compose a presentation that may be unclear or deceptive (in 434a9–10 Aristotle says that one might be made from many *phantasmata*). When we adjust for the elliptical appearance of the circle and perceive it as circular, it is likely that such adjustment is due to our combining the present

[33] This interpretation is supported by reflection upon *Meta*. v 29.1024b21–26. Here dreams and shadow drawings are said to be false because they produce a *phantasia* that is not really of them. The *phantasia* of a dream occurs when we are not presently perceiving, but that of the shadow drawing when we are. In this case our perception of the shadow drawing must be filled in with *phantasmata* that present a faulty appearance to us. Thus it seems that present perceptions can be joined with *phantasmata* from present and past perception to develop a faulty *phantasma*. Plato in *Theaetetus* 191–195 combines perception and thought or knowledge to account for some false opinions; Aristotle is trying to explain the way the perception can be a misperception through combination of perception with *phantasia*.

[34] Cases in which accidental sensibles are perceived inaccurately or misperceived are cases in which *phantasia* contributes to their being presented as what they possibly are not. Nussbaum 1978, 255–261 (followed by Bynum 1993, 100–102) seems incorrect to interpret *phantasia* as "perceiving as," i.e., as interpreting; rather it appears that where there is the chance of misperception *phantasia* contributes to "presenting as." We should perhaps also use *phantasia* to explain the way we remember what we have perceived previously or anticipate or expect things in the future, as when we expect that when we walk around the couch we shall see the other side or we deliberate about a possible course of action.

appearance with previous appearances so that we link the elliptical presentation with a circular presentation. Thus we have an "appearance as" circular that permits perceiving the round thing as round. Thus we need not include *phantasia* in all cases of perception or take *phantasia* to be misperception or "perception as," but *phantasia* is a presentation due to sense perception that may contribute to inaccurate perception, misperception, or perhaps accurate perception.

The last argument distinguishing sense and *phantasia*, or perhaps merely a reminder of an earlier one, is that visions (ὁράματα) appear even when our eyes are closed (428a15–16). This again allows that *phantasia* can take place apart from sense-perceiving, as in the initial argument about dreaming in sleep. Perhaps mention of what "was said before" (a16) refers to 428a6–8 or 427b17–20. This reemphasizes that *phantasia* is separate from sense yet pertains especially to the sense of vision.

Aristotle has argued rather effectively that *phantasia* is not sense perception: his two basic arguments, that *phantasia* and sense do not always occur together and that while sense is always true *phantasia* is not, resemble the arguments distinguishing sense and thought. Perhaps the resemblance in the argumentation has to do with the connection and analogy of the faculties. The arguments several times mention the *actuality* of sense perception (428a6, a9, a13). Actuality reappears in the eventual definition of *phantasia* (see 428b13, b26, 429a2). Consideration of the arguments, as has been given earlier, and consideration of these appearances of "actuality," suggest that *phantasia* does not universally enter into the actuality of sense-perceiving. *Phantasia* will rather be set up or initiated by the actuality of sense perception, and then *phantasmata* can be linked with present perceptions especially when we are unsure what appears to us through perception. *Phantasia* contributes to a presentation that can be dubious. Perhaps *phantasia* also contributes to perception of common sensibles and accidental sensibles as we anticipate the future stages of motion of a body in motion or smelling something cooking we expect to perceive a type of food. But as significant a role as *phantasia* plays for Aristotle, he does not extend it, as some have, to serve as a constituent of the whole realm of cognition. There is no need for *phantasia* to underlie the perception of proper sensibles.[35]

As disentanglement of *phantasia* from sense has been completed, Aristotle makes short work of *phantasia* as possibly *episteme* or *nous*, that is, faculties that always put us in the truth of things. Here *nous* seems to be what truly apprehends first principles of *episteme*, as in *Nicomachean Ethics* vi 6. *Phantasia* cannot be one of these because *phantasia* can be false (428a16–18). *Phantasia*, as a faculty of presentation or appearance, is not making assertions that are believed, and so false in the way that judgment is false when it fails to say what is, but rather *phantasia* is

[35] Some of Aristotle's predecessors extended "appearance" talk very widely, as in saying that all appearances are true, and much subsequent philosophy has wished to speak of all awareness as involving appearance. It seems the case for Aristotle, however, that appearance talk is hardly honorific but instead suggestive of lack of clear awareness.

false because what it presents is somehow unreal; that is, it presents nonbeings as if they were realities or truths. In *Metaphysics* v 29 Aristotle indicates that "false" can apply to statements or thoughts when they do not correspond to reality, and it can apply to beings when they are deceptive, for example, dreams or shadow drawings (1024b21–26, 1025a5–6). *Phantasiai* should thus be false in the sense of being deceptive and possibly giving rise to false statements and thoughts. The misstatement, misthought, or misperception, however, though due to a faulty appearance contributed to by *phantasia*, is not itself the *phantasia*.

Since opinion (*doxa*) may be true or false, and it was among the original candidates for *phantasia* in 428a4–5, it remains to consider opinion (428a18–19).[36] *Phantasia* cannot be opinion, Aristotle holds, because trust or conviction or belief (πίστις) follows upon opinion; that is, when we arrive at a judgment (δοξάζοντα) we believe, at least to some extent, that we have the truth, whether we really do or not (a19–22).[37] Yet the beasts, though many have *phantasia*, cannot have belief (*pistis*). If all opinion implies some conviction, and the beasts lacking conviction nonetheless have *phantasia*, then *phantasia* cannot be opinion. This resembles the first sort of argument against identifying sense and thought (see 427b6–8). But now resemblant of the additional sort of argument distinguishing sense and thought (see 427b8–14), Aristotle introduces *logos* to explain why opinion implies conviction, the beasts lack conviction, and *phantasia* cannot be opinion. The beasts cannot have been persuaded (τὸ πεπεῖσθαι) since they lack *logos* (428a21–24). From the Greek verb πείθω (persuade) are derived both πίστις and πεπεῖσθαι. Conviction or trust in something arises from having been persuaded, which is primarily effected through *logos* or speech. Those animals lacking *logos* yet having *phantasia* cannot be persuaded, cannot have belief, and cannot have opinion. Thus *phantasia* cannot be opinion. Part of this argument is a series in *modus tollens* form: If *p* implies *q*, which implies *r* which implies *s*, and not *s*, then not *r*, not *q*, and not *p*, where *p* = opinion, *q* = belief, *r* = having been persuaded, and *s* = having *logos*. *Phantasia* thus has a wider extension than opinion. The connection of opinion with *logos* introduces another sort of falsity than that pertaining to *phantasia*, so this

[36] We may wonder why Aristotle gives new arguments distinguishing *phantasia* and *doxa* because he already presented workable arguments in 427b17–24. There he was, however, speaking more generally of supposition (*hypolepsis*), and especially of opining (*doxazein*), so he perhaps needs to deal with *doxa* as a faculty to complete the distinction. Also, he must reject the Platonic view in *Sophist* 264a–b of *phantasia* as *doxa* mixed with *aisthesis*.

[37] Hamlyn 1993, 132 suggests that Aristotle may mean "something less strong than conviction by πίστις (*pistis*) e.g. acceptance. For it does not seem obviously true that belief always implies conviction." Those who have opinions are not always sure that they are correct. Aquinas *In de an*. §632 also seems to prevent those who have opinion from overestimating what they have when he says, "when we understand an intelligible object we affirm that it is such and such; but when we form opinions, we say that such and such seems or appears to us. For, as understanding depends upon sensing, so opinion depends on imagining." Nonetheless, those holding an opinion must be more or less convinced by the view they hold or it would not be their opinion. See Plato *Theaetetus* 190a for the strong notion of opinion. Perhaps we should distinguish thought (*dianoia*) from opinion (*doxa*), and thus we may deny that Socrates or a skeptic has any opinions about the greatest matters.

argument may not be so different from the additional sort differentiating sense and thought.

The claim that opinion involves conviction from being persuaded by *logos* joins Aristotle with the Socratic-Platonic tradition. Those holding to false opinions convinced that they are true burden themselves with ignorance of their very ignorance. Even those with true opinion can be so persuaded by it that overlooking its insufficient account and mistaking opinion for knowledge, they suffer conceit of wisdom. Hence there is need for Socratic cross-examination. In several contexts Plato suggests that thought (*dianoia*) is silent internal conversation in which we are asking ourselves questions and trying to answer them (e.g., *Theaetetus* 189e–190a, *Sophist* 263e–264a). Thought is thus an internal Socratic dialogue: we in effect have two conversants within us at once. This seems appropriate as model for our efforts in thought to determine what things are. It helps explain the possibility of self-deception as one interlocutor becomes duped by a deceptive, sophistical appearance. The internal conversation, which is the process of thought, may result in opinion with strong conviction's preventing progress toward knowledge and wisdom. Besides this conversational model of thought, there is also a perceptual model: thinking things is like seeing them or touching them. The first model is of thought as discursively engaged in understanding complex things and the latter is of thought as direct apprehension of ultimate simples and principles. Instead of opinion as the result of internal conversation, we could arrive at the essence, and thinking of the essence may resemble perceiving. Both models of thought may be inescapable, and Aristotle employs both (see iii 6).

It has been argued that *phantasia* is neither sense perception nor opinion. In Plato's *Sophist* 264a–b, however, *phantasia* is called a blend of both of these (σύμμειξις αἰσθήσεως καὶ δόξης; cf. *Timaeus* 52a). In response Aristotle affirms that being neither sense nor opinion, *phantasia* could manifestly not be opinion "with sense perception" (μετ᾽ αἰσθήσεως), nor opinion "through sense perception" (δι᾽ αἰσθήσεως), nor a "weaving together of opinion and sense perception" (συμπλοκὴ δόξης καὶ αἰσθήσεως, 428a24–26). If *phantasia* is not opinion, because the beasts have *phantasia* but completely lack *logos* and opinion, *phantasia* could hardly in general be a blending of sense perception with opinion. But argument applying strictly to humans seems needed since Plato deals with human *phantasia*.

The additional argumentation against *phantasia* as some combination of opinion and sense is this. The opinion would have to have the same object as the sense perception in combination with it (428a26–28). For example, if a human *appears* pale, both the perception and opinion to be combined have to be about paleness (or the pale person), rather than an opinion about goodness (or the good person) and a perception of paleness (or the pale person, a28–b2). It cannot just be accidental that opinion and perception are about the same thing when something is appearing, as it would be in that case, else there is no real mixture of sense and opinion to form *phantasia*. Yet what about cases in which the supposition (ὑπόληψις) is true while what appears is false? For instance, the Sun appears (φαίνεται) about a foot in width, but we are convinced that it is larger than the inhabited world

(428b2–4).[38] Aristotle could be considering the case when we are not presently sense-perceiving the Sun but merely imagining the way it looks, as when we are indoors. The context, though, is the conjoining of sense and opinion. We then perceive the Sun but its size only inaccurately. Where we perceive inaccurately, we may say things appear such and such to us (cf. a12–15). Thus the Sun *appears* about a foot across because its presentation resembles how something a foot across looks to us. Hence, as Aristotle is arguing (see a3–4), *phantasia* is not discriminative and judging things, but as derived from sense experience it mixes together with present sense to give rise to a faulty appearance. The *phantasia* is not itself sense perception (or misperception) or opinion, but it is a presentation that we may resist, as in the case of the Sun that we are convinced is larger than the inhabited world, or we succumb to an appearance and develop a false opinion due to it.

In such cases of conflicting appearance and supposition, when the matter at issue (e.g., the Sun) has not changed (σωζομένου τοῦ πράγματος) and we have not forgotten or been persuaded otherwise, were *phantasia* to be a mixture of sense and opinion, we could only end up with a faulty appearance were we to throw out our true opinion when we have the faulty appearance, or our opinion is at once somehow true and false (ἀνάγκη τὴν αὐτὴν ἀληθῆ εἶναι καὶ ψευδῆ, 428b4–8). The opinion has, absurdly, to be both true and false if we retain our true opinion while the false appearance is supposed also to include a false opinion about the same matter mixed within it. But a true opinion, such as that the Sun is huge, only would become false (ψευδὴς ἐγίνετο) when unbeknown to us the matter it concerns changes, as is not here the case (b8–9; cf. 428a12). This argument not only refutes having *phantasia* as mixture of opinion and sense, but since opinion may oppose appearance, it attacks having *phantasia* as opinion at all. Hence, it can be concluded that *phantasia* is none of the candidates proposed in 428a4–6 – sense, opinion, intuition, knowledge – and neither can it be any combination of these (b9–10).

Aristotle's argumentation against *phantasia* as combination of opinion and sense combats a tendency, perhaps captured or encouraged by Plato, to turn the whole of the ordinary cognitive condition of humans into *phantasia*, or simply to equate any use of *phainetai* with *phantasia*. When the cave dwellers who are much like us in *Republic* vii spend most of their lives guessing the sequences of shadows on the wall convinced of their reality, they could be involved in *phantasia*. All perception and thought might seem to be a work of interpretation that is the project of *phantasia*. Aristotle rejects any such expanded understanding of *phantasia*. His argumentation distinguishes *phantasia* from other faculties, especially those that are discriminative and/or make suppositions. Most or all animals have *phantasia*, but it need not occur within and underlie all sense-perceiving. It does not enter into proper sensation,

[38] This example (cf. Heraclitus DK 22B3, Aristotle 345b1, 448b12–14, 458b28–29, 460b18–20) concerns misleading appearance of a common sensible, as discussed earlier. It might seem to support the interpretation of Schofield 1978 of *phantasia* as "nonparadigmatic" perception. To prevent any such interpretation, Hicks 1907, 465 and ancient commentators such as Themistius, Simplicius, and Philoponus take φαίνεται here to refer not strictly to φάντασμα but to extend to sense perception.

and some simple beasts may have no *phantasia* at all. Because beasts have *phantasia* and *phantasia* may oppose our true opinion, *phantasia* is no sort of opinion or conviction. Thus *phantasia* is presentation or representation rather than affirmation or belief, but not a presentation that constitutes all sense perception whatsoever.[39]

Aristotle has been establishing *that phantasia* is something by distinguishing it from the other cognitive faculties of soul and showing that *phantasia* occurs both when these other faculties are operating and when they are not. This exhibition has cleared the way for attention to *what phantasia* is while already offering useful hints about what it is. Among the faculties of soul that he investigates, only in the cases of *phantasia* and the locomotive faculty (see iii 9) does Aristotle require elaborate processes of elimination prior to determining what they are. This is perhaps because these two faculties lack some of the obvious features of the other psychical faculties. What, for example, are the objects of *phantasia* or the locomotive faculty, as there are evident objects for nutrition, sense, and thought? And locomotion seems to depend upon a conjunction of two other faculties, desire and cognition, while *phantasia* also seems to straddle many. And what is the operation or function of *phantasia*? Already in this chapter Aristotle indicates that *phantasia* enters somehow into memory (427b18–20), dreams (428a8), visions (428a15–16), faulty appearances (428a12–15), and supposition (427b16). Subsequently, *phantasia* plays a prominent role in initiating thought and locomotion. Thus *phantasia* has many possible functions or purposes.[40] We may suggest in fact that *phantasia*, rather than lacking an object, has two quite different possible objects: the *phantasmata* themselves and that of which they are the *phantasmata* that appears by way of them. This ambiguity obscures the object of *phantasia*.[41] *Phantasia* is that faculty in virtue of which some *phantasma* arises in us (428a1–2), but because of this we may either pay attention to the appearance itself or what it seems to picture (as in an afterimage, daydreaming, constructive imagination, or desire) or to that of which the *phantasma* is a likeness, that is, the original experience giving rise to it (as in

[39] Aristotle says explicitly that "*phantasia* is not one of these [including sense or opinion], nor from these" (428b9–10), and we should suppose that he conversely holds that these, sense and opinion, are not from *phantasia*. Hicks 1907, 460 says, "The student of post-Aristotelian philosophy will remember that Zeno analysed αἴσθησις into φαντασία and συγκατάθεσις, as mental presentation *plus* an act of assent." Wedin 1988 assigns the Stoic view also to Aristotle. It seems that Aristotle resists such a view of *phantasia* as presentation underlying all discrimination of sense and so inevitably an aspect of sense perception. This resistance is seen in the earlier argument that all animals have sense perception but not all have *phantasia* (428a8–10) and in our only speaking of things appearing in connection with actual perception when we do not perceive clearly (428a12–15 and 428b2–4).

[40] This need not occasion much surprise inasmuch as the other faculties of soul, nutrition, perception, mind, and locomotion, seem to be faculties composed of several subfaculties, and thus to have multiple functions. *Phantasia* might well divide into subfaculties as do these other faculties of soul.

[41] Wedin 1988, 59–63 urges the absence of φανταστόν as object of *phantasia*; lacking its own object, he contends, *phantasia* is not a faculty of the soul. (Modrak 1990, 67–69 questions both Wedin's points.) The ambiguity in object of *phantasia* as here disclosed explains why *phantaston* would be an unhelpful term. How could it cover both the image and that of which it is the image? It turns out also that the locomotive capacity has an object, viz., the object of desire.

memory).[42] Why the treatments of *phantasia* and the locomotive faculty pose some difficulties should now be apparent: these faculties less tidily fit the pattern of the others. Yet analogies remain, and Aristotle keeps them before him.

428b10–429a9 Having shown that *phantasia* is none of the other cognitive faculties of soul, and thus *that* it is something in its own right, Aristotle proceeds to determine *what phantasia* is. His investigation of what *phantasia* is begins in this way:

> But since when something is moved another thing can enter into motion because of it, *phantasia* seems to be motion of a sort and not to arise without perception, but to occur for percipient beings and in regard to what can be perceived, and there is motion arising by the actuality of perception, and this motion is necessarily similar to the perception itself, this motion would not be possible without perception or exist for non-percipient beings, and its possessor does and undergoes many things in virtue of it, and it is true as well as false. ἀλλ' ἐπειδὴ ἔστι κινηθέντος τουδὶ κινεῖσθαι ἕτερον ὑπὸ τούτου, ἡ δὲ φαντασία κίνησίς τις δοκεῖ εἶναι καὶ οὐκ ἄνευ αἰσθήσεως γίγνεσθαι ἀλλ' αἰσθανομένοις καὶ ὧν αἴσθησίς ἐστιν, ἔστι δὲ γίνεσθαι κίνησιν ὑπὸ τῆς ἐνεργείας τῆς αἰσθήσεως, καὶ ταύτην ὁμοίαν ἀνάγκη εἶναι τῇ αἰσθήσει, εἴη ἂν αὕτη ἡ κίνησις οὔτε ἄνευ αἰσθήσεως ἐνδεχομένη οὔτε μὴ αἰσθανομένοις ὑπάρχειν, καὶ πολλὰ κατ' αὐτὴν ποιεῖν καὶ πάσχειν τὸ ἔχον, καὶ εἶναι καὶ ἀληθῆ ἢ καὶ ψευδῆ. (428b10–17)

That when something has been moved another thing may be moved by it (428b10–11) refers to a major line of his physics: everything that is in motion must be moved by something, and that what is in motion can be a moved mover of further motion (see *Physics* vii 1 and viii 4). *Phantasia* seems to be motion of a sort (κίνησίς τις), and this he tries to establish by appealing to what he said before in 427b15–16, that *phantasia* cannot come to be without sense perception (428b11–12). But this is ambiguous. It might mean that *phantasia* only exists since sense perception exists, that *phantasia* does not exist in beings that cannot perceive, that *phantasia* as a kind somehow depends upon sense perception, or that each instance of *phantasia* is caused by sense-perceiving that it resembles. When he proceeds to say that perceiving beings have *phantasia* and that it is of the things that are perceived (b12–13), he indicates that *phantasia* is caused by sense perception in the percipient being and such that an instance of *phantasia* is due to instances of sense-perceiving. In fact there is motion that arises because of the actuality of sense perception, and this motion necessarily is similar to the perception (b13–14). If sense-perceiving is giving rise to further motion like it, then *phantasia* should also be motion of a sort. The *necessity* of similarity means not only that *phantasia* is motion of a sort like perception, but also that *phantasia* can present the perceiving of what has been

[42] The possibility of remaining with the images themselves or going through them to that of which they are the images figures prominently in Plato's "divided line" in *Republic* vi. At the very lowest level of the line, it is ambiguous whether *eikasia* is dazzled with images and supposes them realities or it is conjecturing on their basis about the originals of which they are the image. Hence there is disagreement among commentators on interpreting the line and about the way the sections of the line are intended to map into the various parts of the cave allegory in book 7. In *De mem.* 450b20–451a2 Aristotle explains that the *phantasma* can function as a picture (ζῷον) and a likeness (εἰκών). In a picture we see what is pictured with no sense of time, but as a likeness of the perceiving or thinking that gave rise to it, the *phantasma* allows for memory of and remembering that occasion.

perceived or what has been perceived, even if it may reconfigure it, as our imagination can put to use only its previous perception.[43] Aristotle has managed to justify the genus of the definition of *phantasia*, motion of a sort, and the principal specific difference, as due to the actuality of sense perception. It can be said with assurance that this motion that is *phantasia* is not possible without perception and to nonpercipient beings (b14–16). Not being possible without sense perception must mean being caused by actual instances of sense-perceiving that it resembles. This motion that is *phantasia* may itself give rise to further doing and suffering (b16–17). The doing *phantasia* leads to is voluntary animal motion, and the suffering is animal affectivity, that is, passions and desires, possibly faulty perception, dreams, afterimages, memory, and such, and thinking in humans. Some of these might also be called doing. *Phantasia*, as true or false and only similar to sense, differs from sense.

An advantage of taking *aisthesis* and *phantasia* as motion of a sort (*kinesis tis*) rather than calling them activity (*energeia*) is that one motion can cause another, according to physics, but how activities impact upon each other or other things gets beyond physics. When Aristotle says in 428b11 that *phantasia* seems (δοκεῖ) to be motion of a sort he might do so not only because this is an *endoxon* but also because it is more strictly correct to say that it is an activity. In addition putting *phantasia* somehow in the genus of motion assists with an extraordinary feature, that we may call up appearances and memories deriving from long past sense experience. As motion – perhaps more resembling alteration than locomotion – *phantasia* may persist as a kind of projectile motion long after initiated.[44] The motions of *phantasia* will generally be unobserved much as stars obscured by the Sun's light or embers before they flare up, but when other motions settle down or they flare up, they reemerge into awareness. Or, since Aristotle hardly embraces projectile motion, perhaps it is

[43] Because *phantasia* is a sort of motion arising from the actuality of perception and therefore necessarily similar (ὁμοίαν) to the actuality of perceiving something, it can along with other functions serve as the basis for remembering. Aristotle says in *De memoria* regarding remembering, "whenever one exercises the faculty of remembering, he must say within himself that he formerly heard or perceived or thought of that" (449b22–23). One remembers the *perceiving* of some content rather than just the content of perception. Consequently, Aristotle explains memory thus: "[memory or remembering] is the having of a *phantasma*, related as a likeness to that of which it is a *phantasma*" (φαντάσματος, ὡς εἰκόνος οὗ φάντασμα, ἕξις, 451a15–16). As similar to the actuality of perception from which it arises, the *phantasma* is a likeness of the previous perceiving of something (or, accidentally, thinking insofar as thinking is initiated by *phantasia*). Serving as a *likeness* of perceiving in actuality, *phantasia* allows remembering the perceiving, but as just a likeness *phantasia* will not be critical as is the original perception. The account of *phantasia* in the *De anima* thus accords well with the account of memory and remembering in the *Parva Naturalia.*

[44] *Physics* 267a12–15 gives Aristotle's clear denial that projectile motion can be continuous but instead only contiguous or consecutive. Some discussion of how the motions of *phantasia* might be conceived as projectiles is found in *On Dreams* 459a24–b7. "Motion of a sort" straddles the cognitive and somatic domains especially helpfully for the later accounts of memory, dreaming, and so on, in the *Parva Naturalia*. Kahn 1995, 362 says: "In modern terms phantasms may be thought of either as mental events or as brain states; since for Aristotle phantasms are hylomorphic items, they will correspond to both."

better to conceive the motions of *phantasia* settling into a condition of potentiality rather like a supported rock that when the support is removed the rock or the *phantasia* becomes reactivated (cf. *On Dreams* 461b7–21). So *phantasia* is motion of a sort set up by sense-perceiving, but the emergence of the motion is only occasional. Aristotle does not here have to explain the retention of *phantasia* but only what it is.

Since *phantasia* is motion of a sort caused by the *actuality* of sense perception, it is not itself the actuality of sense perception, as it would be were *phantasia* the motion of the potentiality for sense. "Actuality" is added because *phantasia* derives from actually occurring sense-perceiving rather than merely from the fact that an animal is sentient. Set up by sense perception and similar to it, it can come into play subsequently even when the animal is not still perceiving the same thing and in ways rather like the sense perception. Aristotle emphasizes that *phantasia* presents what sense perception does and its motion is similar to the initial perception.[45] If this were not stated, the motion arising from the actuality of sense perception could be motion such as walking or running rather than the sort of cognitive motion appropriate for *phantasia*. And as only *similar* to sense perception, *phantasia* can be presentational rather that discriminative or critical. Yet without becoming critical, the *phantasia* reflects the sort of critical perception of which the animal is capable.

Aristotle's adding that those having *phantasia* do and suffer many things in virtue of it and that it may be true or false contributes to the definition. That *many* things arise from *phantasia* indicates that there is not a single or limited set of purposes or functions of *phantasia*, but it contributes to many other operations of soul and animal. That *phantasia* may be true as well as false accords with his earlier discussion (see 428a12, a18, b2), but he means this presentationally rather than judgmentally. False *phantasia* is that presenting things *not* as they are so that the animal may be deceived by them.

To complete the definition of *phantasia*, Aristotle discusses the way *phantasia* is true and false in connection with sense perception.[46] The major purpose for this additional discussion is to prove that his account of *phantasia* suffices to explain the variety of functions and operations attributable to it. Most bothersome might seem to be imprecise perception referred to in 428a12–15 that leads us to speak of something "appearing." It might be surprising that a faculty of soul is regularly involved with falsity. The way *phantasia* relates to misperception requires some treatment, and there may be some suggestion of the role of *phantasia* even in true perception.

[45] That Aristotle asserts that *phantasia* can present that which *aisthesis* does (καὶ ὧν αἴσθησίς ἐστιν, 428b12–13) takes care of the difficulty about the object of *phantasia*. Its object might be either the *phantasma* or what appears through the *phantasma*, that which can be perceived on the perceiving of it.

[46] That the remainder of the chapter reinforces the definition of *phantasia* by justifying some of its features is proposed by Aquinas *In de an*. §660. Only the definition of soul in book 2 (and to some extent that of sense) requires such confirmation as here needed by the definition of *phantasia*.

Phantasia can be both true and false because it arises from sense perception of proper, common, and accidental sensibles (428b17–30). In this discussion, there is no special reference to humans, so the falsity pertains to animals generally and does not require judgment. Proper sense perception, Aristotle says, is true or has the least falsity (b18–19). He admits that atypically falsity may enter such perception perhaps because of fatigue, sickness, problems with the medium, and so on (cf. *Meta*. 1010b2–26).[47] Falsity occurs more routinely in identifying the accidental sensibles, those going along with the proper sensibles, when, for example, there is misidentification of what it is that is pale in color. There is no error about the paleness, since proper perception is generally true, but about whether it is this or that which has paleness as its feature (428b19–22). Most prominently falsity concerns the common sensibles accompanying the accidental sensibles to which the proper sensibles belong. About motion, magnitude, figure, and so on, which accompany other sensibles, error in perception is frequent (b22–25). Aristotle indicates the way the various sensible objects are intertwined.[48] The accidental sensibles go along with the proper, but from the standpoint of their very being the proper sensibles belong to accidental sensibles. Accidental sensibles are the substrata in which inhere the proper sensibles, but from the standpoint of the senses the proper sensibles have priority. The common sensibles accompany the accidental sensibles inasmuch as bodily beings must have common sensible features, and the common sensibles go along with proper sensibles since they are perceived because of them (cf. 425a14–16). The intertwining of these sensibles explains why there can be truth and falsity in ordinary sense perception. For example, an animal can truly perceive color, for example, that something is pale, yet misidentify the pale thing, or it can truly perceive and identify the Sun but have a faulty view of its size. Perception of the common sensibles figure and magnitude is particularly liable to faulty appearance to vision at a great distance since distance causes things to appear smaller than they are and may distort the figure.

Since *phantasia* is motion arising from actual sense perception, the *phantasia* will differ regarding truth and falsity depending upon which of the three sorts of perceptions gives rise to it. Aristotle states,

> The motion [that is *phantasia*] arising due to the actuality of perception from these three [kinds of] perceptions will differ. The first is true while the perception is present; the others may be false whether it is present or absent, especially when the object of perception is far

[47] Burnyeat 2002, 45n45 suggests that rather than sensory illusions due to any particular animal's condition, Aristotle's reservation about proper perception has to do with certain classes of animals, such as those with hard eyes, that consequently give rise to inaccurate perception (see ii 9.421a9–26). Humans, e.g., have a less accurate sense of smell than other animals inasmuch as we can distinguish fewer differences of odor than these other animals. It seems unlikely, however, that such limited capacity in a species would lead to Aristotle's saying that proper perception is false since the species perceives truly those sensible differences that it discerns but it may have a rather restricted range of differences that it readily perceives.

[48] The text of 428b24 (ἃ συμβέβηκε τοῖς αἰσθητοῖς) should not be relocated to b20 as Bywater proposed and as endorsed by Ross 1961, 288–289. This obscures the point about the intertwining of the three sorts of sensibles.

off. ἡ δὲ κίνησις ἡ ὑπὸ τῆς ἐνεργείας τῆς αἰσθήσεως γινομένη διοίσει ἡ ἀπὸ τούτων τῶν τριῶν αἰσθήσεων. καὶ ἡ μὲν πρώτη παρούσης τῆς αἰσθήσεως ἀληθής, αἱ δ' ἕτεραι καὶ παρούσης καὶ ἀπούσης εἶεν ἂν ψευδεῖς, καὶ μάλιστα ὅταν πόρρω τὸ αἰσθητὸν ᾖ. (428b25–30)

This means that *phantasia* set up by proper sense perception that is actually present will be true. Clearly, then, *phantasia* can be simultaneous with the perception causing it. But when other sorts of sense perception give rise to *phantasia*, and especially at a distance in place or time from what is perceived, falsity is quite possible. The falsity, as mentioned previously, is the deceptiveness of the presentation or appearance rather than any judgment or conviction to which it gives rise since only the presentation is the *phantasia*. Hence we can explain why *phantasiai* set up even by proper sensibles not currently present can be false. *Phantasia* of a proper sensible not actually present is possibly false because it represents something absent as present and something that may no longer be the case as the case. All *phantasiai* of what is not actually present thus have something potentially false about them: notice Aristotle says only that *phantasiai* can be *false* whether the perceptible objects giving rise to them are present or absent, but he does not say that they can be *true* when the perceptible object is absent. Of course where there is *phantasia* involved in memory or anticipation and these are accurate, we incline to call them true.

If perception of a common sensible such as motion involves some anticipation of the direction the body in locomotion is going, then *phantasia* may have a prominent role even in true perception of this common sensible. And if motion enters into perception of the other common sensibles (see 425a13–24), then *phantasia* joins in perceiving any common sensible, and therefore in perceiving accidental sensibles that incorporate common and proper sensibles. Moreover, since any perception is likely to give rise to *phantasia*, whether we are having accurate or inaccurate perceptions of common or accidental sensibles, these will cause *phantasia.* But it is unlikely that such *phantasia* is immediately much presenting itself to us, because it is eclipsed by the present perception itself, and so this *phantasia* need not be contributing to the very perception that gives rise to it.

Aristotle is especially explaining the possible falsity of *phantasia* as the result of its source in perception. Since the different types of sense perception, of proper, accidental, or common sensibles, have different relations to falsity, and their objects may no longer be present, the motion of *phantasia* set up by them can have such relations to falsity. This may be clear enough. Yet there is a complication due to Aristotle's emphasis previously in 428a12–15 that "we do not say when we are accurately engaged with the perceptible object that this appears (φαίνεται) to us to be a human, but rather when we do not perceive distinctly." Appearance and *phantasia* thus enter into play especially in faulty or inadequate perception. Misperception can give rise to faulty *phantasia* and itself involves *phantasia*. The *phantasia* arising in the very presence of the perceptible object will be false. And *phantasmata* hanging around from previous sense perception reenter cognitive life to fill in what is now obscure to lead to the faulty perception. As *On Dreams* 460a32–b16 indicates, passions, desires, and disease lead to deceptive perception from even small

resemblances. Most likely Aristotle takes his discussion of the emergence of false *phantasia* in connection with sense perception to allow for the role of *phantasia* in any false or obscure perception. His discussion thus does good work in showing *phantasia* stemming from sense perception possibly false and capable of spreading that falsity long afterward. This clinches his definition of *phantasia* because it can sufficiently account for every operation and function attributable to *phantasia*.

Now that he has shown that *phantasia* in close relation to sense perception can be true or false, there is nothing that needs to be added to his definition and nothing else but *phantasia* can fit with what has been said. Aristotle's definition stands: "If then nothing else besides *phantasia* has the things being talked about, then this is what has been said, *phantasia* would be motion arising from sense perception according to actuality" (εἰ οὖν μηθὲν ἄλλο ἔχει τὰ εἰρημένα ἢ φαντασία, τοῦτο δ' ἐστὶ τὸ λεχθέν, ἡ φαντασία ἂν εἴη κίνησις ὑπὸ τῆς αἰσθήσεως τῆς κατ' ἐνέργειαν γιγνομένη, 428b30–429a2; cf. 459b17). This offers a streamlined definition with just the genus and a single difference. *Phantasia* is motion of a sort, the sort set up by sense perception in actuality. It is to be understood that this motion resembles sense perception both in being a cognitive motion, rather than a bodily motion such as walking or swimming due to perception, or even an affective motion such as pitying or fearing, and in presenting such objects as are perceived (he returns to this point in 429a5). Since *phantasia* is motion arising because of the perception according to *actuality*, rather than the potentiality of perception, it is not just the motion of perception itself; that is, it is not just the actuality of the potentiality for sense perception. The emphasis in the earlier arguments upon actuality (428a6, a9, a13) should be recalled. *Phantasia* is motion caused by sense perception according to actuality and that resembles perception without being perception or having to be any part of perception. Nonetheless, *phantasia* can be simultaneous with the motion of perception giving rise to it, as can any motion caused by another motion, and can persist or reemerge long afterward. Aristotle just suggested that *phantasia* of the presently transpiring proper perception is true (428b27–28). The term "imagination" as used today better fits that *phantasia* that is much after the original sense perception, and especially that which is called up at our wish (427b17–18), than that which occurs simultaneously with sense-perceiving or joins in with it.

In both his announcements of what *phantasia* is (428b14–16 and b30–429a2) Aristotle prominently and unusually uses optative forms. And fairly often elsewhere in this chapter optatives are employed (see 428a9–10, a23, b8, b29). These may well suit *phantasia*, that it is spoken of in the mode of possibility. The reader seems invited to have some sort of *phantasia* of what *phantasia* might be. Though we perhaps inevitably view *phantasmata* as some sorts of pictures (see, e.g., *De memoria* 450a29–30, b15–16, and b20–27), *phantasmata* need hardly always be as clear and sharp as a picture. A picture typically depicts some particular thing, but often *phantasmata* are not that definite. How definite is the *phantasma* we have, for example, of a thousand-sided plane figure? Such indefiniteness is helpful for such tasks as deliberation, where reflection may proceed from the general to the particular, and for learning, as there is progression from the particulars of sense to grasping the form or universal.

Though *phantasia* is motion arising from the actuality of sense perception and presenting something similar to what is perceived, it may give rise to a *phantasma* quite apart from a current sense perception. Such may surely occur in dreaming and memory. What is necessary is that some actual sensing originate *phantasia* and that *phantasia* is limited to what can be sensed. Therefore we need not be surprised to find Aristotle saying in *De motu animalium* 702a19: "*phantasia* comes about either through thought or through sense perception" (αὕτη [*phantasia*] δὲ γίνεται ἢ διὰ νοήσεως ἢ δι' αἰσθήσεως). This need only mean that *phantasia* can be provoked by thinking as well as initiating it. The *phantasia* called up by thinking will still be *phantasia* that originated from actual sense-perceiving and is like what can be perceived. Thought calls up such *phantasia* in us, as when someone speaks to us of trees and this stimulates us to imagine a tree that we have seen growing or in a drawing. Thus the *phantasia* arising from thought hardly has to differ in kind from *phantasia* generally. And in the *De memoria* Aristotle explains that memory is only accidentally of thought inasmuch as *phantasia* is what initiates thinking (see 450a12–14 and a22–25). Hence when Aristotle in iii 10–11 distinguishes sensitive *phantasia* from calculative *phantasia* this distinction will be based upon their respective roles in kinds of lives rather than upon different origins or contents of the *phantasia*.

The name *phantasia*, linking it particularly with vision, may seem inappropriate if *phantasia* arises from the actuality of sense perception generally rather than just from vision.[49] Surely, we can imagine sounds, odors, flavors, and the feel of things as well as visual aspects. Aristotle needs to explain how the derivation of the name *phantasia* confirms the origination of *phantasia* from sense perception. Crucial is the point that "vision is especially sense perception" (ἡ ὄψις μάλιστα αἴσθησίς ἐστι, 429a2–3), by which Aristotle means that it is the dominant and most impressive sense for the animals having vision.[50] The connection of *phantasia* with vision therefore serves for its connection with sense perception more broadly. The name φαντασία derives, Aristotle suggests, from φάος, the word for light (429a3–4).[51] Without light there is no seeing. This should not be read to mean that *phantasia* is required for sense, which is the reverse of what we want, for Aristotle is saying that the name *phantasia* derives from light as light plays a vital role in seeing. The name arises from something essential for *actual* seeing, and *phantasia* generally arises from *actual* sense-perceiving, and not just seeing. ("Image" and "imagination" similarly link with sight.)

Phantasia, resembling the sense perception that causes it and remaining in the animal, leads animals to do many things (καὶ διὰ τὸ ἐμμένειν καὶ ὁμοίας εἶναι ταῖς αἰσθήσεσι, πολλὰ κατ' αὐτὰς πράττει τὰ ζῷα, 429a4–6; cf. 428b14 and b16–17). Beasts, lacking mind (*nous*), engage in their voluntary motions because of *phantasia* (429a6). Animal desire seems to originate with *phantasia* since desire is for what is lacking, that is, for some anticipated future, and *phantasia* can present this. Even

[49] In iii 11 Aristotle argues that the simplest beasts with just contact senses have *phantasia*, as limited as it may be. Hence, even mere touch and taste give rise to *phantasia*.

[50] In another way it happens that hearing is most crucial for humans; see *De sensu* 437a4–17.

[51] Modern etymology accepts that the verb φαίνω (show) derives from the verb φάω (shine).

when the object desired is immediately sense-perceived, *phantasia* is in play to put the animal into some future relationship with it, because, for example, the animal desires *to drink* the water and *to eat* the food. Humans might act through choice and reason, but they act according to *phantasia* when their mind is eclipsed by passion, disease, or sleep (a7–8). Though desire in humans originates in a way from *phantasia*, since *phantasia* presents the objects that enter into deliberation, when *phronesis* and choice (*proairesis*) are in charge in a virtuous or continent person, Aristotle hesitates to say that the human is led by *phantasia*.

Aristotle ends the discussion indicating that enough has been said about what *phantasia* is (τί ἐστι) and on account of what it is (διὰ τί ἐστιν, 429a8–9). What it is is motion set up by actual sense perception and very like sense. Aristotle's account of *phantasia* makes it the presentation or representation of what might be sensed. That on account of which it is refers primarily to the sense-perceiving that gives rise to it as moving cause, but may also refer to those motions or functions that it in turn gives rise to as moving or final cause, such as desires, emotions, voluntary motions, voice, memory, or thought.

Aristotle's account of *phantasia* has been seen to differ from that of Plato, and it differs as well from that of most Hellenistic schools. For these later schools *phantasia* tends to embrace any cognitive presentation to the soul. *Phantasia* for many philosophers is at the base of all other cognition. Aristotle seems ready to allow that *phantasia* has crucial roles in the soul, as in provoking thought, originating animal emotion and motion, and perhaps even perception of some common and accidental sensibles, but he attacks introducing *phantasia* into basic perception of proper sensibles. Probably his concern to have *phantasia caused by* sense perception rather than the fundamental cause of sense perception is to safeguard his realism regarding sense perception and thought, that is, that we are receptive to sensible and intelligible objects as they are. Putting *phantasia* at the base of all cognition would suggest that animals play a fundamental role in constituting their experience rather than that they are primarily acted upon by the things of which they are aware.

The contrast of Aristotle's account of *phantasia* with some modern thinking about imagination may be illustrated with some examples. Hobbes states, "Sense in all cases, is nothing els but originall fancy, caused (as I have said) by the pressure, that is, by the motion, of externall things upon our Eyes, Eares, and other organs thereunto ordained" (*Leviathan*, p. 86). And, "the Greeks call it *Fancy*; which signifies *apparence*, and is as proper to one sense, as to another. IMAGINATION therefore is nothing but *decaying sense*; and is found in men, and many other living Creatures, as well sleeping, as waking" (p. 88). Observe that there is no clear distinction in kind between sense and fancy, the latter entering into every case of the former. Similarly, Kant proclaims, "we must assume a pure transcendental synthesis of imagination that itself underlies the possibility of all experience (inasmuch as this possibility presupposes necessarily that appearances can be reproduced)" and "the synthesis of apprehension is linked inseparably with the synthesis of reproduction. And since the synthesis of apprehension constitutes the transcendental basis for the possibility of all cognitions as such (not merely of the empirical but also of the pure a priori ones), the reproductive synthesis of the imagination belongs to the

transcendental acts of the mind; and, on account of this involvement of the imagination, let us call this power the transcendental power of imagination" (*Critique of Pure Reason*, p. 155). The modern tendency is to put imagination at the basis of all sense perception and any experience whatsoever. This tendency may continue in much contemporary philosophy of mind.

Phantasia may give flexibility to thought and action by preventing limitation to what is presently being perceived. Perceptions set up *phantasiai* enabling the animal to project beyond what is present to it. Humans can think of anything they wish and desire whatever might be possible. *Phantasia* originating in sense perception liberates from immediacy, opening up wider life possibilities. Evidently, then, *phantasia* plays an important role in getting other faculties of the soul to operate. Still it goes too far to say that for Aristotle all cognition depends upon *phantasia*. It also misconstrues his intentions to suggest that animal life and human life involve much interpretation, and that it is *phantasia* that is doing all this interpreting. Talk of what "appears" does not justify this for Aristotle. *Phantasia* may contribute to interpretation, but *phantasia* itself is presentational or representational rather than discriminating or evaluative. On the basis of what is perceived or presented the animal may arrive at evaluations and interpretations. In the course of this chapter Aristotle has distinguished *phantasia* from all the critical faculties (see 428a3–5). The only passage in the corpus that seems to make *phantasia* a critical faculty is *De motu animalium* 700b17–22. But all he need mean is that since *phantasia* is like sense perception that is critical, beasts and careless humans may have their *phantasia* lead to progressive motion as if it were a critical faculty (see book 3, ch. 11, n. 7).

4

What Is Mind as That Capable of Thinking All Things

Since chapter 3 has distinguished sense and thought, it has already begun the treatment of mind or intellect. Clearly chapters 4–8 complete the treatment. This section on the mind is much more tightly organized than it may appear. Chapter 4 sets out what mind is through consideration of the analogy and disanalogy with sense. The main assumption of this chapter is that mind can think all intelligible things, while each sense has a limited range. On the basis of this assumption mind turns out unmixed and separate. Nevertheless, humans acquire knowledge so that they somehow have the intelligible objects right in the soul, though hardly so as to restrict thinking but to foster it. This raises the question taken up especially in chapter 5 of what can get humans thinking if they already have intelligible objects somehow in soul. It will be seen that the very intelligible objects that we have in mind enable us to think. But they do not lead us always to be thinking since the *phantasma* resulting from sense is also needed to stimulate thinking. Chapter 6 will focus upon the various intelligible objects. Chapter 7 will defend the role of *phantasia* in initiating thinking. And chapter 8 will return to justify the initial assumption of the whole investigation, that is, that mind can think all things. Thus the treatment of mind is quite clear in its design.

The previous chapter argued that sense and thought differ. Consequently, Aristotle may be confident *that* thinking is something so that he can begin to determine *what* mind and thinking are. The discussion in chapter 4 has more unity than may seem evident. He discloses the way mind can be a special kind of potentiality. Once this is established (429a10–b22), the rest of the chapter considers how mind so conceived will be capable of operating. This accords with what Aristotle announces that he treats: what the difference is of the part that thinks and how thinking ever arises (429a12–13).

429a10–13 Aristotle deals with that part of the soul by which it both knows and understands (περὶ δὲ τοῦ μορίου τοῦ τῆς ψυχῆς ᾧ γινώσκει τε ἡ ψυχὴ καὶ φρονεῖ, 429a10–11). The cognitive terms used here do not have fixed meanings: γιγνώσκω could refer to science generally or merely the recognition of perceived things, while φρονέω could refer to intellection generally or merely to practical wisdom. Probably

φρονέω more clearly pertains to intellect, and it is a term used prominently in the previous chapter especially in regard to predecessors (see 427a19, a21–22, a24, a28, b7).[1] Use of φρονέω suggests that Aristotle deals with a part of the soul by which the soul can know intellectually rather than just by perception. This thinking capacity is said to be a part of the *soul*; that means that mind as it pertains to ensouled beings, that is, embodied, mortal beings, is under consideration rather than any mind of nonenmattered, eternal beings if such beings could have minds. In addition he emphasizes that it is *soul* that thinks (429a10–11) to accent this point, that thinking occurs by soul's employment of a special faculty. Prior to knowing what mind is, we cannot be sure what possesses it, though it seems to be a part of some souls and to be a faculty of soul by means of which soul knows and thinks things. But even as a part of soul, mind may nonetheless be somehow separate, and this could be fundamental to its nature. Aristotle seems to assume that the intellect is somehow separate, asking whether or not it is separate in magnitude or just separate in *logos* (εἴτε χωριστοῦ ὄντος εἴτε καὶ μὴ χωριστοῦ κατὰ μέγεθος ἀλλὰ κατὰ λόγον, 429a11–12; cf. 413b13–15 and 432a20). Were mind separate in magnitude, it might differ from the rest of the soul somehow in location and perhaps even be a different substantial being from the rest of soul, but at the least it is separate in account since it seems to differ in kind from the soul's other faculties (see 433b23–25 on the bones together at a joint being inseparable in magnitude and separate only in account). Often when intellect has been mentioned in the *De anima* Aristotle raises the question of its possible separation (see, e.g., 403a3–10, 413b24–27). The treatment of mind here in book 3 will return again and again to the way mind might be separate.

In the previous discussions in the *De anima* of the soul's capacities, Aristotle deals with capacities that humans share with plants and/or beasts. He takes up with intellect a capacity that humans seem the lowest level of living being to possess, and perhaps they are the only level of living being possessing mind. (The locomotive capacity shared with the beasts receives treatment only subsequently.) Higher beings engage in thinking though they may not need mind to do so. These thinking beings are separate in their being but not by having a mind that is separate. Perhaps surprisingly, human mind as considered by Aristotle must be separate in order to be in contact with all things through thinking them. To think *all* things in their essence, mind must lack limits. It will be seen that for mind to be conceived appropriately for its task, it must have access to all being and hence all thought, since thought and its object are somehow one and the same.[2] Mind must be nothing definite itself if it is to think all things, but this raises the Anaxagorean difficulty about how what is unlike anything else can come to think it.

[1] Philoponus *De intellectu* 1,8–13 takes φρονεῖ as equivalent to *phronesis*, and therefore he denies that Aristotle is here concerned with the contemplative intellect. By contrast, Alexander, *In de an.* 89,4–18 takes Aristotle throughout this section to speak of God since intellect is separate, unmixed, and unaffected. Both these interpretations seem very questionable.

[2] This is the position of Kahn 1995 that thought in humans requires two conditions, psychophysical sentience and pure mind. As humans we are thinking persons, but this requires also that there be mind that is not personal, i.e., separate from any material conditions.

Aristotle announces that he intends to determine the difference of intellect and the way thinking ever arises (σκεπτέον τίν' ἔχει διαφοράν, καὶ πῶς ποτὲ γίνεται τὸ νοεῖν, 429a12–13). This provides the plan of the chapter. Considering the difference of mind is defining it by gathering what it is; treating how thinking arises is clarification of mind's possible actualization given the account of its nature. This twofold project should be compared to what Aristotle said about *phantasia* (a8–9). But whereas in regard to *phantasia* Aristotle announces his accomplishment afterward, perhaps because *phantasia* was introduced as a topic only in relation to the distinction of thought from sense, he prefaces his discussion of mind with this division of tasks. Hence this announcement of tasks serves as a guide. The consideration of difference covers the argumentation of 429a13–b22; the account of the way thinking arises, though it is also involved in the account of the difference of mind, takes center stage only in 429b22–430a9. Perhaps, as well, the following chapters, iii 5–8, complete the account of how thinking ever arises.

429a13–b9 Since the difference of mind is under consideration, and in the context of the previous discussion the difference from sense is most crucial – both of them enabling us to discriminate things (427a19–21) – how far they are analogous or disanalogous seems most worthy of investigation. Aristotle says,

> If thinking is just as perceiving, either it would be undergoing something due to the intelligible object or something else of such a sort. Impassible therefore it ought to be, but receptive of the form and in potentiality such a sort but not this, and similarly just as the sense power is with respect to sensible objects so mind is with respect to the intelligible objects. εἰ δή ἐστι τὸ νοεῖν ὥσπερ τὸ αἰσθάνεσθαι, ἢ πάσχειν τι ἂν εἴη ὑπὸ τοῦ νοητοῦ ἤ τι τοιοῦτον ἕτερον. ἀπαθὲς ἄρα δεῖ εἶναι, δεκτικὸν δὲ τοῦ εἴδους καὶ δυνάμει τοιοῦτον ἀλλὰ μὴ τοῦτο, καὶ ὁμοίως ἔχειν, ὥσπερ τὸ αἰσθητικὸν πρὸς τὰ αἰσθητά, οὕτω τὸν νοῦν πρὸς τὰ νοητά. (429a13–18)

That thinking is in some ways just as perceiving echoes 427a19–20. Thinking or perceiving each results from undergoing (πάσχειν) the action of its respective object. Strictly speaking, neither sense nor mind is acted upon inasmuch as there is no alteration or motion in sensing or thinking (see 431a5–7), and to be acted upon is to be caused to enter into motion and particularly alteration. Rather than having one quality destroyed by another as occurs in ordinary alteration and being acted upon, the sort of action undergone here is that which saves what undergoes it (cf. 417b2–16). Allowing for this subtlety, Aristotle here indicates regarding thinking that "either it would be undergoing something due to the intelligible object or something else of such a sort." The disjunct, "something else of such a sort," gets closer to the true view: thinking is being acted upon in some way not involving motion at all, but a way that preserves the capacity such as discussed in ii 5. The exercise of intellect, as that of sense, because of its reception of the object of cognition, might more properly be called activity (*energeia*) rather than motion (*kinesis*).

As is sense, mind is acted upon and, while impassible, mind is receptive to the forms and may be in potentiality to them without becoming or being them. Were intellect already the form in actuality or such as the form, then it would not need to be acted upon or be receptive, and it could think nothing beyond the form that

it is. Were thinking to involve becoming the form materially, mind would turn into ordinary perceptible objects, such as rocks, plants, or animals. Though receiving the form's action, and in this way undergoing it (πάσχειν), intellect has to be unaffected or impassible (ἀπαθές) because it does not reenmatter the intelligible form. This term ἀπαθές, applied prominently by Anaxagoras to mind (see 405b19–21 and 408b25, b29–30), means at least that mind gets the form without enmattering it, as sense is receptive to sensible forms without the matter (424a17–19). Thus occurring without material involvement, the reception is not alteration or motion. "Impassibility" was not used in reference to sense perception in the earlier discussion – though it was mentioned regarding nutrition that the like is unaffected by like (416a31–34; cf. 410a23–26) – but it offers a contrast to the way in which bodies are acted upon. A body acted upon takes a new form right into its own matter; a power of soul acted upon is impassible insofar as it takes on a form without enmattering it. Aristotle will soon elaborate upon the application of impassibility to sense and to mind (see 429a29–b5).

So far thinking and mind seem quite analogous to sensing and sense. Both sense and mind may be receptive potentialities. They both are ready to take on cognitive forms. Yet, while sense perceives perceptible things, mind thinks *all* things (πάντα νοεῖ, 429a18).[3] All beings can be thought and known, for the ability to think the intelligibles (τὰ νοητά) empowers mind to think all things in their essence. This is the key assumption of the whole treatment of mind (it appears prominently in 405b15–17). Whereas a sense is the mean of the sensibles in its range and receptive to this particular range of sensible things (ii 11.423b27–424a15 and ii 12.424a25–b3), mind as capable of thinking everything must be pure and unmixed. How does Aristotle know that mind thinks all things? Back in iii 1 he proved that there are no more than the five senses and there are no sensibles that we fail to perceive. How do we know that mind thinks all the intelligibles and that there could be no beings beyond these? Within the Anaxagorean framework, it is evident that mind thinks all things since everything else is mixed with everything so that mind having access to anything other than itself has access to everything else (see esp. DK 59B12). For Aristotle perhaps the previous chapter's arguments distinguishing thought and sense support the extension of thought to everything. Those arguments were that only some animals have thought, and that thought can be true or false. Thought includes all supposition (ὑπόληψις). What can be known, what can be opined truly or falsely, and what can be at all put into *logos* are matters for thought. This seems sufficiently expansive to encompass all things. Yet, since this assumption that mind thinks all things is so fundamental, Aristotle explores it thematically in iii 8.

The comprehensive receptivity of mind leads to its difference. Since mind thinks all things, mind is "unmixed" (ἀμιγῆ), as Anaxagoras says, so that it might "rule"

[3] Themistius *In de an*. 94,9–13 suggests that the fact that mind can think all things yet is not always thinking or always thinking any of them indicates that mind is in the condition of potentiality so that it can switch what it thinks. God, however, thinking always, cannot then be potentiality and be *nous*, but God must be *noesis*, thinking (see *Meta*. xii 9.1074b17–1075a10). It is incorrect to speak of God for Aristotle as divine mind. Strictly a human thinks by way of having mind.

(κρατῇ), which means "know" all or even make all known (γνωρίζῃ, 429a18–20; cf. 405a16–17).[4] "Unmixed" and "pure" mean for Anaxagoras that mind, unlike everything else, is not a "mixture of everything in everything" or "all things together." Mind is separate from all other things and unlike them in order that it might "rule" and know and distinguish them. Aristotle similarly has mind thinking all things, and therefore mind for him must be unmixed with anything else to keep its range unrestricted. Anything else besides thought appearing within it mixed with it would hinder and block it (παρεμφαινόμενον γὰρ κωλύει τὸ ἀλλότριον καὶ ἀντιφράξει, 429a20–21; cf. 408a12); so the nature of intellect thus able to think all things should be nothing but possibility (μηδ' αὐτοῦ εἶναι φύσιν μηδεμίαν ἀλλ' ἢ ταύτην, ὅτι δυνατόν, 429a21–22).[5] Whereas Anaxagoras stresses that mind has nothing at all in common with other things (see 405b19–21), Aristotle holds that mind should be nothing *in actuality* prior to thinking so that it might think anything at all. As sense becomes

[4] Anaxagoras says in DK 59B12: "The rest have a portion (μετέχει) of everything, but Mind is unlimited and self-ruled (αὐτοκρατές) and is mixed (μέμεικται) with no thing, but is alone and by itself (μόνος αὐτὸς ἐφ' ἑαυτοῦ ἐστιν). For if it were not by itself (ἐφ' ἑαυτοῦ), but were mixed with something else, it would have a share of all things, if it were mixed with anything. For in everything there is a portion of everything, as I have said before. And the things mixed together with it would hinder it so that it would rule (κρατεῖν) no thing in the same way as it does being alone and by itself. For it is the finest of all things and the purest (καθαρώτατον), and it has all judgment about everything and the greatest power. And Mind rules (κρατεῖ) all things that possess life – both the larger and the smaller. And Mind ruled the entire rotation, so that it rotated in the beginning. And at first it began to rotate from a small area, but it <now> rotates over a greater range and it will rotate over a <still> greater one. And Mind knew all the things that are being mixed together and separated off (ἀποκρινόμενα) and separated apart. And Mind set in order all things, whatever kinds of things were to be – whatever were and all that are now and whatever will be – and also this rotation in which are now rotating the stars and the sun and the moon, and the air and aether that are being separated off. This rotation caused the separating off. And the dense is being separated off from the rare and the hot from the cold and the bright from the dark and the dry from the wet. But there are many portions of many things. And nothing is being completely separated off or separated apart one from another except Mind. All Mind is alike, both the larger and the smaller. But nothing else is like anything else, but each single thing is and was most plainly those things of which it contains most."

[5] Lewis 2003, 100n23 defends taking ἀλλότριον as referring to the object of mind rather than to mind as subject being other than its object (as urged by Ross 1961, 292 and Sisko 1999, 257) by comparison with 418b4–6 and 420a16–17, where the object of sense is said to be ἀλλότριον with respect to sense. This passage in which Aristotle says the nature of mind is to be possible led commentators to speak of "possible intellect." They generally suppose that this is human or some lower intellect. Hicks 1907, 476–477 (cf. Lewis 2003, 101–102) suggests that Aristotle besides using Anaxagoras follows Plato's description in *Timaeus* 50a–51a of the way the receptacle in order to receive all forms must lack any form itself. Consider this passage especially: "this thing upon which the imprints are to be formed could not be well prepared for that role if it were not itself devoid of any of those characters that it is to receive from elsewhere. For if it resembled any of the things that enter it, it could not successfully copy their opposites or things of a totally different nature whenever it were to receive them. It would be showing (παρεμφαῖνον) its own face as well. This is why the thing that is to receive in itself all the kinds must be totally devoid of any characteristics" (50d5–e5). Aristotle's παρεμφαινόμενον in 429a20 echoes Plato's παρεμφαῖνον in *Tim*. 50e3–4. Were Aristotle to have a doctrine of "prime matter," as some commentators have supposed, a matter that is pure receptivity to being enformed as any kind of body with any sorts of attributes, which corresponds to the receptacle in the *Timaeus*, the possible mind would in some respects be like this (see Hicks 1907, 480).

the sensible object through receiving its form, mind becomes the intelligible object by thinking it. Mind must start as nothing in actuality to be capable of thinking and being all things. What it should especially be unmixed with, if it is to be able to think *all* intelligible things, is any of the intelligible things. Aristotle has arrived at the very *nature* of mind: it is possibility of a certain kind.[6]

To treat mind as possibility that is pure and unmixed is vital to the project of clarifying mind and the way it resembles and differs from sense. Speaking of mind as "possible" (δυνατόν) rather than as "potential" is by design. The possible is broader than and encompasses potentiality and power. When similarity to sense is stressed as in 429a16, mind would seem in potentiality to its objects, but now Aristotle has more strictly indicated that mind need just be possible. Things that are possible may not yet be potentially the case (see 412b26–27 about seed); whatever is not impossible is possible (see *Meta*. v 12.1019b21–33). Something has potentiality when it already has a principle of motion within it (see *Meta*. ix 7). Hence bricks on the way to becoming a house are potentially a house, whereas clay would only be potentially a house when already formed into bricks. Yet we allow that it is possible for clay to become a house. Similarly, seed that is a possible full living being is now only potentially the fetus. Though not announced explicitly, mind that is merely possible includes mind even *before* it thinks anything at all. This is the mind prior to knowing anything, that is, before it can genuinely think and really has potentiality, most appropriately the case of the human newborn. The newborn can already sense-perceive, and this contributes greatly to the possibility of mind, but the newborn only has mind in possibility since whereas sense perception is already present receptivity to external objects, mind requires for its operation that intelligibles have somehow entered it from sense experience so that they can give rise to thinking (see 417b16–24). Why Aristotle need not elaborate upon this point is that even when mind has developed through learning some things, it still can possibly think all things. Whether mind knows nothing, something, or everything, it nevertheless has at least the *possibility* of thinking anything at all. He explicitly introduces developed mind, that is, mind that knows, in 429b6–10, and he says that such mind is in potentiality and not merely a possibility. This later passage indicates retrospectively, if it was not so far evident, that previously he has been speaking of mind to cover its condition even as it is prior to thinking anything at all.

Aristotle must keep clarifying the way mind is a possibility and its implications. He states,

> Thus that being called mind of the soul (by mind I mean that whereby the soul thinks and supposes) is, before it thinks, not in actuality any of the beings. For this reason it cannot reasonably be regarded as mixed with the body: if so, it would acquire some quality, e.g. warmth or cold, and even have an organ just as the sensitive faculty; as it is, there is none.

[6] Aristotle's view that for thinking all things mind must in itself be nothing might be contrasted with the views of his predecessors in 405b15–17 that since the soul knows (γινώσκει) all things, and it knows through like by like, the soul must be composed of all the principles of things. Of course Aristotle has replaced the actuality of things in the soul with the possibility of receiving the intelligible forms of all things.

ὁ ἄρα καλούμενος τῆς ψυχῆς νοῦς (λέγω δὲ νοῦν ᾧ διανοεῖται καὶ ὑπολαμβάνει ἡ ψυχή) οὐθέν ἐστιν ἐνεργείᾳ τῶν ὄντων πρὶν νοεῖν. διὸ οὐδὲ μεμῖχθαι εὔλογον αὐτὸν τῷ σώματι· ποιὸς γὰρ ἄν τις γίγνοιτο, ἢ θερμός ἢ ψυχρὸς, κἂν ὄργανόν τι εἴη, ὥσπερ τῷ αἰσθητικῷ· νῦν δ' οὐθέν ἐστιν. (429a22–27)

The sort of mind under discussion here belongs to soul, that is, to humans. This is probably why he refers to it as what is "being called mind of the soul" (cf. 407a4–5). In an Anaxagorean context *nous* belongs most properly to God. With the announcement that he deals with mind *of soul*, he obviously restricts consideration to human mind: divine thinking should not be merely possibility. But he must further specify because earlier *phantasia* and supposition (ὑπόληψις) were both called thinking (427b27–28), and νοῦς can mean a faculty of principles that is always in the truth (428a16–18). When he talks of what is "being called mind," then, he seems to mean what he himself presently speaks of as mind most generally as a capacity of soul. He indicates that the νοῦς he is investigating is that by which soul "thinks" (διανοεῖται), that is, entertains thought, and "supposes" (ὑπολαμβάνει), that is, arrives at a more or less considered view. The mind he treats is thus that which could prepare for and arrive at ὑπόληψις, which we recall from 427b24–26 might be our true or false determination about things.[7] Probably Aristotle here uses forms of *dianoia* and *hypolepsis* to indicate that mind generally can think in various ways, and to prepare to contrast with his subsequent use mainly of forms of *noein* that suggest the sort of thinking he will have in mind is thinking about what we already know rather than the sort of thinking that enters into opinion and coming to learning. Just as perception covers various sorts of perception, but Aristotle focuses in his account upon perception of proper sensibles, the exploration of mind will focus on intellection of essences. To say that *soul* thinks by means of mind recalls 429a10–11. It may just be a way of saying that the *person* thinks (cf. 408b25–27) without implicating body in this thinking, but having twice emphasized that soul thinks on account of mind and now insisting that mind is nothing in actuality prior to thinking, Aristotle supports a conclusion that mind is hardly a separate substantial being from soul.

Mind is said to be nothing in actuality before thinking, and it is soul that thinks (429a23–24). This fits with supposing that the mind so far in question can be the completely unknowing mind. Yet even when learning has occurred, the mind still is in a way nothing in actuality prior to actual thinking occurring. The possession of knowledge is not the sort of actuality of actually thinking something. As not anything in actuality prior to thinking, mind still has full possibility. If mind must be able to extend to all things and it cannot be mixed with anything else, meaning primarily the objects of thought, a further reasonable implication for embodied humans is that mind does not mix with body and mind requires no bodily organ. Sense is earlier called a mean or ratio of a bodily organ, enabling the sense to detect

[7] Someone might complain that mind is too restricted by Aristotle to determining what things are, much as Plato defines thought as silently asking and answering questions about what things are or depicts the cave dwellers as guessing about the shadows on the wall. Surely mind enters into much more: praying, telling jokes, action, and so on. Evidently Aristotle, like Plato, has the discriminative function of mind presupposed as the basis for its engagement in any other sphere of life.

differences in its range of objects (423b27–424a15, 424a24–b3, 426a27–b7). Sense, when we take into account the whole sensory apparatus, has bodily involvement. Mind cannot similarly be a ratio or mean of the body without having a similarly restricted field of objects. Since intellect is unmixed with its objects and is nothing in actuality before it thinks, it should not have any actual components, as the elemental bodies compose the sense organs. Otherwise mind would take on determinate qualities, as warmth or cold, and even have a bodily organ through which it works (429a25–27). Being nothing in actuality in any way before thinking occurs, mind should have no such participation in body or bodily features.[8] This line of argument Aristotle speaks of as quite reasonable (εὔλογον, a25). As merely reasonable, it is bolstered by the comment "as it is, there is none" (νῦν δ' οὐθέν ἐστιν, a27), which can mean that the mind is not *in fact* mixed with any other being or any bodily organ; that provides empirical verification for views so far derived by reasoning from the assumption that mind can think anything at all.

The obvious query might be, If mind is nothing in actuality but only possibility, how does it have any real being? Mind, it should be understood, is not just any old possibility, but the possibility enabling a human to think of any being. As in following Anaxagoras, Aristotle makes mind a special entity, he can also embrace the remark of his predecessors that the "soul is the place of forms" (τόπον εἰδῶν, 429a27–29). These presumably are Platonists; accord with prominent *endoxa* is helpful confirmation. To align Aristotle's account with this *endoxon* just the thinking capacity (νοητική) within the soul rather than the whole soul should be the place of forms (in iii 8.432a1–3 the mind is said to be a "form of forms"), and the thinking capacity as a place can have the forms only in potentiality rather than in actuality. The Platonic view referred to could derive from the claim in *Timaeus* 30b and 46d that mind must always be in soul in conjunction with interpreting the Demiurge as just a way of speaking of the realm of Forms, conceived as a Living Being.[9] For Plato, then, the Forms as intradeical, that is, within God, would be always giving rise to thinking in actuality. Aristotle's revision of this view offers some additional force to the conception of human mind as possibility and as separate and unmixed.

Aristotle has argued reasonably that mind has no bodily organ (429a24–27), and previously in 429a15 mind was called impassible (ἀπαθές), presumably because like sense perception it is receptive to forms without the matter. Additional empirical confirmation of mind's independence from body arises from reflecting further on

[8] The interpretation offered in this commentary is that since mind must be ready to think all intelligibles it must not be mixed with any of these, and as a *further implication* of this it must not be mixed with body. Brentano 1977 gives a different interpretation. Mind is not mixed with body so that instead of cognizing particulars, as the senses do that are *logoi* of a body, the mind can cognize universals. Brentano seems to get ahead of the text, however, since his point does not appear until 429b10ff. Lines 429a24–25 make clear that mind's being unmixed with body is an implication of mind's being pure of its intelligible objects. Also, it is more strictly correct to say that knowledge is in relation to universals rather than to say thinking is of universals.

[9] For the view that the Demiurge in the *Timaeus* just is the Forms, and that this is an ancient interpretation, see Perl 1998. Ross 1961, 292 says Philoponus holds that this passage refers to Plato (see Philoponus *De intellectu* 14,30–16,96), but Ross denies this and refers it instead to some follower of Plato.

impassibility. While both mind and sense are impassible as receptive to forms without the matter, there is a way, Aristotle insists, that the impassibility (ἀπάθεια) of the sensitive and intellective faculties is not similar (a29–30). The dissimilarity is manifest (φανερόν) regarding the sense organ and the sense: intense sensible objects such as loud noises, bright colors, and strong smells impair the capacity for further sense perception, but extremely intelligible objects make the capacity for thought even better able to think less intelligible things (a30–b4).[10] This is the case, Aristotle says, because "while the faculty of sense is not without body, mind is separate" (τὸ μὲν γὰρ αἰσθητικὸν οὐκ ἄνευ σώματος, ὁ δὲ νοῦς χωριστός, b4–5). The argument that sense perception occurs *with the body*, inasmuch as too intense sensible objects move the sense organs to the destruction at least temporarily of the *logos* enabling sense perception, appeared before at 424a28–31 and 426a30–b3. Back in 403a15–16, Aristotle asserted, "for it [the straight] is inseparable, if indeed it is always with some body." Whatever occurs "with the body," such that the body must suffer something at the same time (see 403a18–19), cannot be separate from the body. Sense occurs with the body so that the sense organs are vulnerable to overstimulation. In the case of intellect, the body need not undergo such clear and definite action while thinking occurs. Forms are received without the matter in both sense and mind, but for mind there is no necessary accompanying suffering of a bodily organ.[11] Even if mind is impacted by bodily events, for example, passion, disease, sleep, and drunkenness (see 429a7–8), and *phantasia* is what occasions thinking, still mind does not involve a bodily organ as does sense so that its own intense objects undermine its capabilities.[12] This is impassibility beyond and unlike that of sense.

We might observe that just as Aristotle takes up the way mind is separate, he has begun to speak in 429b3–4 of *mind* as thinking, parallel to sense as sensing (in 429a31–b3), whereas previously (in 429a10–11 and a23) it is soul that thinks by

[10] Aristotle's examples of too intense sensible objects are the objects of the distance senses. The contact sense of touch pervades much of the body. A too intense tangible either damages a limited area of the animal or by threatening all the sensibility of the animal endangers its life as an animal. Aristotle's contrast of the effects of intense sensible and intelligible objects may recall Plato's cave allegory in *Republic* vii, but be in some tension with it, for there while too bright light or too much darkness temporarily obscures vision, it analogously temporarily blunts mind, though the person escaping the cave first has to learn in order to see outside the cave and after some time for adjustment the person returning to the cave "sees" better in the cave than those who have not escaped. Aristotle does not suggest that any time for intellectual adjustment is required because he is not considering learning or any political context.

[11] Aquinas *In de an*. §689 observes of 429b5 that "this same text has been, for some, an occasion of falling into the error of regarding the intellectual power as quite separated from the body, as substance that exists on its own. Which is an utterly indefensible position." And §699: "Indeed it is astonishing how easily some have let themselves be deceived by his calling the intellect separate; for the text itself makes it perfectly clear what he means, namely that, unlike the senses, the intellect has no bodily organ . . . and in this sense only is it a 'separate' intellect." Themistius *In de an*. 105,8–12 traces levels of impassibility: "Thus he [Aristotle] is clearly of the view that while sense-perception is less easily affected than the organs (those of perception, that is), it is neither entirely unaffected nor separate, whereas the intellect, insofar as it does not use a bodily organ for its activity, is entirely unmixed with the body, is unaffected, and is separate."

[12] For the way mind may have a nonbodily "organ," see 432a1–3.

way of the mind. We should perhaps have been warned that this is only a way of speaking, since even to say the soul thinks is just a manner of speaking. Mind can be said to think as a capacity of soul, and soul thinks stands for a person thinks. Aristotle has provided at least three levels of argument leading to the conclusion that intellect is separate. The first is that mind thinks all things; that can only be so if mind is unmixed with anything else (429a18–22). The second is that sensibility has a limited range of objects because it occurs with a body, but since mind has no such limited range, it should not be restricted by a body (a24–27). Third, too intense objects destroy the sense, by the jarring of the bodily organ, but mind suffers no such impairment by intensely intelligible objects. It must not, therefore, be thinking because of an associated bodily organ (a29–b5). Regarding mind's separation from body, this third argument may be even more compelling than the second since the second was a reasonable inference (εὔλογον, a25), but this third is nicely empirically confirmed and Aristotle emphasizes that it is manifest (φανερόν, a30).

These arguments disclose the way the power of thought, the possibility belonging even to the unknowing human newborn, differs from sense. To think all things mind must be unmixed in actuality with any intelligible objects or with the body; intense objects do not thwart it as they do sense since mind is separate from body. The type of separability here in question is capacity to function without bodily instrument or organ. This seems to go beyond being separate in account (429a11–12), and it may amount to a sort of separation in magnitude since, though intellect is no magnitude at all and hardly a separate substantial being, intellect has no particular place in the bodily magnitude. Despite being as impassible and separate as mind is from body, there must nevertheless be some way in which mind gets beyond mere possibility if it is to serve a role in thinking:

> When it thus becomes each thing as the person knowing according to actuality is said to do (this happens when he is able to exercise the power on his own initiative), it is still then in potentiality somehow, but not in the same way prior to learning or discovery; and it is then able to think itself. ὅταν δ' οὕτως ἕκαστα γένηται ὡς ὁ ἐπιστήμων λέγεται ὁ κατ' ἐνέργειαν (τοῦτο δὲ συμβαίνει, ὅταν δύνηται ἐνεργεῖν δι' αὑτοῦ), ἔστι μὲν καὶ τότε δυνάμει πως, οὐ μὴν ὁμοίως καὶ πρὶν μαθεῖν ἢ εὑρεῖν· καὶ αὐτὸς δὲ αὑτὸν τότε δύναται νοεῖν. (429b6–10)

People learn. The person who has developed knowledge and is capable of thinking when he or she wishes still is somehow in potentiality. What Aristotle refers to is the condition of possessing knowledge rather than actually thinking. The phrase "according to actuality" (κατ' ἐνέργειαν) is ambiguous between dispositional actuality and putting this to use, as 425b27–426a2 makes clear, since there Aristotle has to add that he does not mean the case where an animal has the sense of hearing but is not hearing. And now Aristotle points out that the person knowing according to actuality is still somehow in potentiality, so it is dispositional knowledge under consideration. Such possession of knowledge is not merely the *possibility* of thinking all things in the same way as before learning occurs, but there is present the potentiality for the possessed knowledge to enter into play when desired. Prior to possessing knowledge the person cannot think on his or her own initiative but perhaps only when led to think by a teacher. Knowledge thus greatly modifies the

way mind is in potentiality. The learned person has developed potentiality in place of undeveloped potentiality.

This contrasts with sense, for in the case of sense perception animals are born ready to sense-perceive (417b16–18). No learning is necessary. Being awake and in the presence of sensible objects, animals sense-perceive. In the vocabulary of commentators, modeled on Aristotle's own words, and useful for interpreting ii 5, animals are born with "first actuality" or "second potentiality" level of ability to sense-perceive. Mind, at least for humans, starts at a lower level of potentiality. Thinking is initially merely a possibility. Just as humans have to learn to walk, they have to learn to think. This develops from sense perception, speech, and teachers. Once learning takes place, once the universal is in the soul, mind is still merely a potentiality but now a potentiality that can come into actuality much more readily and more according to the wish of the person (429b7; cf. 417a27–28, b22–26). The greater capacity for thinking derives from the person's already somehow having become the various things to be thought through attaining the universal.[13] The condition of being a knower is analogous to the condition of having the capacity for sense (cf. 417b16–18). Yet neither having knowledge nor being able to sense means having intelligible objects or sensible objects actually present in the soul mixed with it, so that they obstruct thinking or sensing, though the sense organs that are parts of the body may have some actual sensible features. The passage 429b6–10 makes clear retrospectively that mind as possibility (see 429a21–22) can be the undeveloped mind of the nonknower or the newborn.

Why the knower is now able to think himself in thinking (429b9–10) is just that the knower is able to think. A newborn with a completely undeveloped mind cannot think at all, but with any knowledge the person can think at will and thereby also become self-aware.[14] Much as sense perception always involves some awareness of the activity of sense-perceiving, animals perceive that they perceive (iii 2); the thinking of the knowing thinker always involves awareness of the activity of thinking. Self-awareness in sense perception results from the very activity of perceiving: the sense in taking on the sensible form becomes it, and therefore in perceiving its object also perceives itself. Analogously, mind, in becoming its object through receiving its intelligible form and thinking it, also thinks itself, for it now is what it

[13] Wedin 1988, 68–69 suggests that only the actually thinking subject is the same as its object (cf. Sorabji 1982, 301–302), but Aristotle says in 429b6–7 that dispositional knowledge is the same as the knowable (and cf. 430a4–5). Universals are in the soul of the knower (417b22–24), allowing easy thinking of the being of things. Ancient commentators spoke of those who have learned and know as having attained the "acquired intellect," in contrast with the unlearned condition referred to in 429a22 as the "possible intellect." The different notions of potentiality, discussed before in ii 5, likely derive from such Platonic discussion as the aviary in the *Theaetetus*. The aviary is first empty, but then birds are caught and stored in it, facilitating regrasping them. The condition of having birds already in the aviary resembles developed knowledge or developed potentiality. The aviary has the birds as a bodily representation of knowledge or perhaps opinion.

[14] Aristotle's wording of 429b9 in the text of the manuscripts nicely allows him to reassert the point that the knower can think on his or her own *and* to add that such thinking opens to self-awareness. But Bywater 1885 followed enthusiastically by Ross 1961, 292, changes the wording from αὐτὸς δὲ αὑτόν to αὐτὸς δι' αὑτοῦ to make the first point more repetitiously and to eliminate the additional point.

thinks in the way cognition becomes its object. The more that the knower knows – and Aristotle in 429b6–7 has spoken of the knower's having become each thing he knows – the more opportunity there is for actual thinking and for the thinker to become self-aware.[15] The way the unlearned, undeveloped mind comes to know and thereby becomes able to think itself is unclarified by Aristotle – an indication that his interest in thinking here is mainly the thinking of what we already know – but surely the mind ready to think its object is ready to think itself. The self that mind is aware of in thinking such and such is primarily mind in the act of thinking such and such. Only the long series of arguments constituting the *De anima* leads to the sort of general self-awareness that Aristotle is currently developing, that is, the understanding of the nature of mind and the way it becomes aware of itself.[16] The argumentation of 429b6–10 confirms that learning fits with the account of intellect so far: mind is still potentiality and separate, though the potentiality of the knower is a different sort from that of the unlearned mind.

429b10–22 Aristotle has so far dealt with mind and thinking without much treating its objects. He has been considering the way intellect is a potentiality that is unmixed with any of its objects and separate from any bodily organ. In light of Aristotle's previous methodological remarks and practice, it might cause surprise that he has not begun his investigation of intellect by concentrating upon its objects. Recall that in ii 4.415a14–22 understanding the capacity requires an account of its operation and prior to that of its object.[17] Perhaps all Aristotle has so far needed to get to the nature of mind is to emphasize its thinking *all* things or intelligible objects. Having secured the basic account of the nature of mind, he gives the objects of thought

[15] Aristotle speaks of the knower's becoming each thing, i.e., the various intelligible objects. The more that he or she thus knows, the readier the person is to exercise thought and to be aware of the thinking self. This is nearly the reverse of Descartes, who says in the famous wax example in *Meditation* ii: "Likewise, if I judge that the wax exists from the fact that I touch it, the same thing will again follow: I exist. If from the fact that I imagine, or from whatever other cause, the same thing readily follows. But what I noted regarding the wax applies to all the other things that are external to me. Furthermore, if the perception of the wax seemed more distinct after it became known to me not only from sight or touch, but from many causes, how much more distinctly I must be known to myself; for there are no considerations that can aid in the perception of the wax or any other body without these considerations demonstrating even better the nature of my mind. But there are still so many other things in my mind from which one can draw a more distinct knowledge of the mind, so that those things which emanate from a body seem hardly worth enumerating." Aristotle supposes that self-awareness occurs only because of thinking of things known. Descartes has us know ourselves much better than any of these other things and possibly even to derive self-knowledge from the mind itself.

[16] Hicks 1907, 485 may mislead when he says, "Experience shows that the mind thinks other things without any self-consciousness. . . . Hence intellect must know itself as different from the things which it thinks. It knows itself, then, by reflecting, or in so far as it reflects, upon its own operation. It knows that it thinks; it knows therefore that it has a nature adapted to become everything, which was *in potentia* before actually thinking. It knows itself indirectly, i.e. non per speciem propriam sed per alienam." Here Hicks seems to refer only to the elaborate general knowing of itself that thought enters into in Aristotle's own discussion.

[17] In fact, however, even in the case of sense perception Aristotle gives some general account in ii 5 before setting out the sensible objects in ii 6.

further consideration. If the essential objects of thought are separate from matter, this accords with and reinforces mind's being unmixed and separate. Since mind can think all things, however, the objects of sense and mind should somehow overlap, yet these objects can be distinguished and the way the different faculties relate to them can be distinguished.

When mind becomes its objects as it does through gaining knowledge (see 429b6–7), what sorts of objects can it become? So far he has just assumed that for mind (*nous*) there are intelligible objects (*noeta*) as for sense (*aisthesis*) there are sensible objects (*aistheta*, see 429a13–18 and b3–4). Aristotle refers to a distinction of magnitude and the being of magnitude (τὸ μέγεθος καὶ τὸ μεγέθει εἶναι), water and the being of water (ὕδωρ καὶ ὕδατι εἶναι), and the being of flesh and flesh (τὸ σαρκὶ εἶναι καὶ σάρκα, 429b10–13). Magnitude, water, and flesh are enmattered beings allowing for a distinction of their very being and themselves. Magnitude might include intelligible magnitudes as well as any perceptible body; water is an inanimate body and flesh pertains to the body of a sentient living being. He does not at first refer to the essence in his most telling phrase, τὸ τί ἦν εἶναι (but see 429b19), perhaps because this should most strictly be limited to the form of a substantial being (see *Meta.* 1030a2–27). "The being of *X*," τὸ *X* εἶναι, where *X* is in the dative case in Greek, may be a somewhat broader way to refer to *what* something is.[18] Aristotle readily speaks of what something is in categories beyond substance; the examples of magnitude, water, and flesh are possibly nonsubstantial though enmattered beings. There are also, however, things that are not enmattered, and of these there cannot be a distinction of the thing and its essence. Aristotle notes in 429b11–12 that some things are the same as their essence (cf. 430a3–5).[19] The most obvious instances are forms in any category of being, such as whiteness and concavity, that is, the very being of things considered apart from any substrata. If these forms were not to be the same as their essence, an infinite regress of forms and essences might commence. That some things are the same as their essence has immediate interest because of an argument such as this: since there are things that just are their essence, and mind thinks all things, mind will just think the essence in such cases, and of things distinguishable from the essence mind can think the essence, so therefore generally essence is the special object of thought. The more essence seems the special intelligible object, and this sort of being is separate from matter, the more compelling it is that mind is separate.

If the enmattered thing and its being or essence can be distinguished, Aristotle raises the issue what faculty cognizes the thing and its being, and in this context what faculty enables him to discriminate these objects as he now is doing: "the being of flesh and flesh are discriminated either by different faculties, or by the same faculty

[18] Aristotle can use such expressions with genitive rather than dative, as in *Physics* 220b32–221a9 we find τὸ εἶναι τῆς κινήσεως, where it refers to the length of duration of the motion's being through time. Ross 1936, 605 points out, that there is no distinction of a motion and its being through time since motion is a kind of becoming.

[19] The question when the essence is the same as each being appears centrally in *Meta.* vii 6 and reappears in vii 10.1035b31–1036a12.

differently applied, for flesh is not without matter, but just as the snub, this in this" (τὸ σαρκὶ εἶναι καὶ σάρκα ἢ ἄλλῳ ἢ ἄλλως ἔχοντι κρίνει · ἡ γὰρ σὰρξ οὐκ ἄνευ τῆς ὕλης, ἀλλ' ὥσπερ τὸ σιμόν, τόδε ἐν τῷδε, 429b12–14). That either different faculties or a single faculty in different applications must be in play in discriminating such a thing as flesh and its being is justified by the assertion that flesh is not without matter, but presumably its being is without matter.[20] Enmattered things he compares to the stock example of the snub (τὸ σιμόν), which is concavity in a nose (429b14; cf. b18–19, 431b13, *Physics* 186b22, 194a6, *Meta*. 1025b31ff., vii 5). These enmattered things are forms in matter: "this in this." Such different sorts of objects as the enmattered thing and its being require either different cognitive faculties or a faculty used differently. If different faculties are involved, surely mind thinks the essence and sense perceives the enmattered thing.[21] Aristotle can distinguish sensible objects (*aistheta*) from intelligible objects (*noeta*), in which case flesh as enmattered will be a sensible object and the being of flesh, separate at least in account, is an intelligible object.

Yet Aristotle cannot simply assign the different sorts of cognitive objects to different faculties and be done. Both sense and mind are critical or discriminating faculties. He uses forms of the verb κρίνω regarding both intellection and perception (see 429b13 and b15). This was also the verb used in iii 2 in the consideration of the way sense discriminates not only sensibles within a single range, such as white and black color, but also a color (white) and a flavor (sweet, 426b8–14). Since now Aristotle similarly considers not just how to cognize such things as flesh and its being, but also how to discriminate them from each other, he should not merely have distinct faculties in play. In iii 2 discrimination of the different sensible objects requires a *single* discriminative faculty of sense like a point terminating several lines. The present case, discriminating flesh and its being, should also have a single discriminating faculty, and talk of flesh may further remind us of the earlier treatment. In 426b15–17, after insisting that by sense the discriminations of sensibles have to be made, he urges that flesh is not the ultimate sense organ since not all the sensibles to be distinguished are tangibles. And he proceeds to claim that faculties that are separate from each other cannot discriminate objects that are separate from each other (426b17–427a16).

Mind as a faculty distinct from sense, were mind to think solely separate entities, would not much help with discriminating flesh from its being. Hence a *single* faculty should discriminate flesh and the being of flesh. When Aristotle says, "the being of flesh and flesh are discriminated either by different faculties, or by the same faculty

[20] Whereas previously in 429b5 it is said that the sensitive power is "not without body" (οὐκ ἄνευ σώματος), here in 429b14 flesh is "not without the matter" (οὐκ ἄνευ τῆς ὕλης). The sense faculty requires a bodily organ, while flesh already is a body, so in speaking about bodily flesh Aristotle has to say that it is not without its matter.

[21] This is the way nearly all interpreters read the passage (see Hicks 1907, 486–488). Rodier 1900, 447–449 is an exception. He takes flesh to be ambiguous between the particular piece of flesh and composite flesh taken universally. Mind could think both the universal composite and the essence. While Rodier's interpretation is unlikely for reasons given by Hicks, it suggests the need to have a single faculty considering the things to be discriminated.

differently applied" (τὸ σαρκὶ εἶναι καὶ σάρκα ἢ ἄλλῳ ἢ ἄλλως ἔχοντι κρίνει, 429b12–13), we suspect that though flesh and the being of flesh are distinct kinds of entities cognizable by distinct faculties, the same faculty differently applied can cognize both to distinguish them. Which faculty does this: sense or mind? If we are tempted merely to say mind, the example of flesh, along with the examples of magnitude and water, should get us to consider sense as well. By touch, for which flesh is itself generally part of the sensory apparatus, flesh is discriminated. And will not touch in discriminating flesh from other sensible objects also somehow discriminate the being of flesh from the being of other things, even if cognizance of the being of things is only incidental to sense perception? In some way touch's perception and its self-awareness enable it to discriminate flesh and the being of flesh, as what could be more basic to the sense of touch and its vital function than distinguishing self (flesh) and other? But in another way we expect mind to discriminate such items as flesh and the being of flesh. We should not hesitate to allow particular enmattered things to enter into thought even if they are not the special objects of thought but only incidental objects. That mind can think *all* things governs the whole treatment. With this appreciation that both sense and mind can serve as single faculties of discrimination with overlapping cognitive objects – recall that in iii 3 Aristotle did not appeal to different cognitive objects to demarcate sense and thought – we take up the entire argument that has posed such difficulty to commentators.

Aristotle asserts:

> the being of flesh and flesh are discriminated either by different faculties, or by the same faculty differently applied, for flesh is not without matter, but just as the snub, this in this. Now by the sense faculty it discriminates the hot and the cold, of which indeed flesh is a certain ratio; but by another either that is separate or as that which has been bent is with respect to itself when it is stretched out, it discriminates the being of flesh. Again in the case of entities by abstraction the straight is as the snub; for it is with extension; but the essence is other, if other is the being of straight and the straight; let it be twoness. By another therefore or by something applied in other ways it discriminates. And generally, therefore, as the objects are separate from matter so also are the things pertaining to the mind. τὸ σαρκὶ εἶναι καὶ σάρκα ἢ ἄλλῳ ἢ ἄλλως ἔχοντι κρίνει · ἡ γὰρ σὰρξ οὐκ ἄνευ τῆς ὕλης, ἀλλ' ὥσπερ τὸ σιμόν, τόδε ἐν τῷδε. τῷ μὲν οὖν αἰσθητικῷ τὸ θερμὸν καὶ τὸ ψυχρὸν κρίνει, καὶ ὧν λόγος τις ἡ σάρξ · ἄλλῳ δὲ ἤτοι χωριστῷ ἢ ὡς ἡ κεκλασμένη ἔχει πρὸς αὑτὴν ὅταν ἐκταθῇ, τὸ σαρκὶ εἶναι κρίνει. πάλιν δ' ἐπὶ τῶν ἐν ἀφαιρέσει ὄντων τὸ εὐθὺ ὡς τὸ σιμόν· μετὰ συνεχοῦς γάρ · τὸ δὲ τί ἦν εἶναι, εἰ ἔστιν ἕτερον τὸ εὐθεῖ εἶναι καὶ τὸ εὐθύ, ἄλλο · ἔστω γὰρ δυάς. ἑτέρῳ ἄρα ἢ ἑτέρως ἔχοντι κρίνει. καὶ ὅλως ἄρα ὡς χωριστὰ τὰ πράγματα τῆς ὕλης, οὕτω καὶ τὰ περὶ τὸν νοῦν. (429b12–22)

The ultimate conclusion, that as its objects are separate from matter so too are the things pertaining to mind separate, confirms that the whole passage 429b10–22 supports the contention of the previous part of the chapter that mind is unmixed and separate. Here, however, the point has been redirected to indicate that as the primary intelligible objects are separate so are the various sorts of intellect that think these. Surely the special objects of thought are separate beings, whether these are the being of perceptible bodies or the being of mathematical entities by abstraction, and hence mind that thinks them is separate. But for mind to think *all* things, it must in some way also grapple with enmattered beings, that is, not merely

with the essences of things, but without thereby ceasing to have its own separate nature. This makes the argument plausible and fits the context. Mind must be able to discriminate flesh and the being of flesh, as Aristotle himself now is doing, and not merely to depend upon sense perception for dealing with flesh and the intellect for the being of flesh. And in doing this mind must not sacrifice its own nature.

The passage begins with different faculties or a faculty applied differently discriminating flesh and flesh's being. The sensitive power is introduced as discriminating the hot and the cold that compose flesh. The hot and cold are discriminated by the sense of touch employing flesh. No explicit mention is made of which faculty is involved in discriminating enmattered flesh that is to be distinguished from the being of flesh. Surely the sense of touch can itself discriminate flesh, that after all is part of its own apparatus, and mind can also do this. Aristotle now says that another faculty makes the discrimination of the being of flesh. Either this other faculty is separate, or it is as the bent line to the line straightened out.[22] All interpreters read line 429b16 so that the other faculty is mind, but then disagreements begin about how to construe the disjunction. What does it mean to view mind either as the straightening out of the bent sense or as the bent version of the straight sense? The lines b16–17 stand out because right before in b13 and subsequently in b20–21 it is either another faculty or the same faculty differently applied, but in b16–17 it is another faculty either separate or as the bent with respect to the straightened.

Rather than viewing Aristotle as contrasting sense and mind, with the issue of how one of these could be as bent to the other as straight, it seems better to take him as suggesting that whichever faculty is distinguishing flesh and the being of flesh, whether sense or mind, the faculty cognizing the being of flesh is either separate from that cognizing flesh, since the being is separate, or as the bent with respect to the straight. If we consider the sensitive power as discriminating the hot and the cold and whatever else serves as matter for flesh, we recognize that touch can also discriminate flesh, since flesh is an accidental sensible while hot and cold are proper sensibles. Because sense discriminates proper and accidental sensibles, it should somehow also distinguish the being of the accidental sensible. Cannot sense in a manner of speaking discriminate the being of flesh when it distinguishes flesh from other sensibles? Sense thus only very accidentally discriminates such objects as essences. Such discrimination is most convoluted for sense, and hence Aristotle compares sense's functioning to the bending up of something nicely stretched out. Perceiving proper sensibles is like the straight and perceiving accidental sensibles like being bent, or perhaps the perceptions are like straight lines and the discriminating of them like bending such lines to meet at a point. The crux seems to be that the same power may operate in quite different modes in respect to its various sorts of objects. Sense most directly and straightforwardly discriminates its proper objects and in more complicated operations its other sorts of objects.

[22] Regarding the use of ἤτοι . . . ἤ, Smyth 1956, 648 says, "ἤτοι may be used instead of the first ἤ when the first member, as is commonly the case, contains the more probable choice." In Hicks 1907, 489–490 the translation of κεκλασμένη as "bent at an angle" rather than "broken in two" is defended by reference to *Physics* 228b24; *Meteor.* 377b21, 386a1; and *Problems* 882b33.

Mind similarly deals with its different objects either with separate powers or with its powers differently applied. Mind applied to thinking the being of flesh is either separate from mind dealing with flesh or like the relation of the straight with the bent. But whereas sense deals readily with proper sensibles and only more complicatedly with accidental sensibles and essences, mind deals directly with the being of things and only more convolutedly with enmattered things. Hence Aristotle need not be saying that mind is as bent or straight to sense, but instead he may say that either sense or mind must have separate capacities or have different applications to deal with its different sorts of cognizable objects.[23]

Aristotle refers to an additional sort of cognizable object, mathematical entities (429b18–21). As inhering in sensible objects, such as flesh or bronze, mathematical objects are sensible, but through abstraction, that is, through ignoring all aspects of perceptible beings besides their quantitative aspects, these entities become intelligible entities. Such mathematical entities still may have extension or continuous magnitude, what in *Metaphysics* 1036a2–12 is called "intelligible matter." Thus distinction can be made between the straight – whether extended sensibly in bronze or merely extended intelligibly – and its essence, which the Platonists suppose is twoness since the straight is the shortest route between two points. Aristotle only needs agreement that there is an essence or being of straight whatever it might be.[24] Whether sense is perceiving the sensible straight and only thought is thinking its essence, or thought is thinking both the intelligible extended straight and the essence of straight, another faculty or one differently employed is dealing with the being of the straight and the straight. The other faculty might be either mind as opposed to sense or just one sort of mind as opposed to another. This supports the interpretation offered of 429b16–18.[25] Surely thought by abstraction of perceptible matter arrives at a line with its intelligible extension, and by a different application of thought thinks its essence, perhaps twoness. Clearly the same faculty, mind, has these different modes of application. Were someone to insist, however, that there must be separate faculties to account for discrimination of these different sorts of objects, this would give even greater force to Aristotle's contention that mind is separate since its primary object is separate from matter. Because the special objects of thought are separate from matter, mind is separate from all other things, whether we suppose a separate faculty to think essences or we allow that mind thinks various sorts of things through different applications.

The conclusion from this argumentation in 429b21–22 is that mind will be separate as the intelligible objects are separate. Previously the argument for separation

[23] The contrast of bent and straight for mind may be Aristotle's reformulation of Plato's *Timaeus* 44a–c, where the infant has the orbits of soul all in disarray but through education these settle down to resemble the configuration of the heavens. Mind dealing with sensible things is bent, while when it comes to know the essence it is straightened.

[24] Perhaps Aristotle now speaks of essence (τὸ τί ἦν εἶναι) and not just the being of mathematical entities since the Platonists may suppose such entities substantial beings and speak of their essence.

[25] The passage 429b20–21, ἑτέρῳ ἄρα ἢ ἑτέρως ἔχοντι κρίνει, strongly resembles the passage 429b16–17, ἢ ἄλλῳ ἢ ἄλλως ἔχοντι κρίνει, except that ἑτέρῳ, meaning "other (of two)," has replaced ἄλλῳ, which is not restricted to two. This replacement may emphasize that mathematical thought and the thought of the essence of mathematical entities could only involve two sorts or applications of mind.

of mind was its need to think all things, so that it should not be mixed with what it thinks or have the limitation of a bodily organ; now this has been supplemented with the contention that unenmattered intelligible objects entail separability of mind. The case could not be presented completely straightforwardly since sense and mind can each relate to the other's objects which bars simply distinguishing mind and sense based on their objects.

The series of arguments from 429a10–b22 has established the basic account of mind. It is what can think all things, and it is this possibility even prior to learning anything. But having gained knowledge mind can readily think what it knows. Mind can have for its objects something enmattered either with perceptible or intelligible matter, though it thinks primarily of the being of such things; for thinking all its objects, mind must avoid bodily entanglement, and since the strictest intelligible objects are nonenmattered beings, there is additional justification for having mind as separate. Mind like sense is receptive to its objects but surpassing sense in impassibility and separateness and in the separateness of its supreme objects. This difference of mind from sense generates the need to explain the way mind functions as mind. How can something so impassive and separate be receptive to anything? This reflection occupies the remainder of the chapter.

429b22–430a9 Having so far presented extensive argumentation regarding mind's nature, that it is unmixed, impassible, merely potentiality, and separate, Aristotle needs to inquire how given such a character mind can think at all. Thus he takes up in earnest the issue raised way back in 405b19–23 and announced for treatment in 429a12–13: "one ought to consider what differentiates this part, and how thinking ever arises" (πῶς ποτὲ γίνεται τὸ νοεῖν).[26] He now states, "Someone might be perplexed, if mind is simple and impassible and has nothing in common with anything, just as Anaxagoras says, how it will think, if thinking is to undergo something" (ἀπορήσειε δ' ἄν τις, εἰ ὁ νοῦς ἁπλοῦς ἐστὶ καὶ ἀπαθὴς καὶ μηθενὶ μηθὲν ἔχει κοινόν, ὥσπερ φησὶν Ἀναξαγόρας, πῶς νοήσει, εἰ τὸ νοεῖν πάσχειν τί ἐστιν, 429b22–25). How can mind, given the nature established for it so different from other things and unaffected by them, be acted upon so that it can ever think? In general it seems that only insofar as one thing has something in common with another can it act on the other so that there are active and passive factors (ᾗ γάρ τι κοινὸν ἀμφοῖν ὑπάρχει, τὸ μὲν ποιεῖν δοκεῖ τὸ δὲ πάσχειν, b25–26).[27] For instance, bodily beings can

[26] Wedin 1988, 162 divides the treatment differently. He suggests that iii 4 deals with what mind is and only with iii 5 does the question of the way it ever can think is treated. He says 429b22–430a9 "raises and resolves some 'paradoxes' of thought." Wedin views these paradoxes as solved "in terms of the language in which they are set" in iii 4, while iii 5 will explain "how the mind can do what the solution requires of it" (167).

[27] In *GC* i 6–7 action (*poiein*) and passion (*paschein*) are restricted to cases of change in quality or alteration. In that treatment contact is required for any mover to act upon the moved, and alteration further requires *sameness* in genus; e.g., something having color is altered in color. Even if what is altered is initially unlike its mover in form, it must share the genus with its mover. And Aristotle keeps unmoved movers in mind and allows that an unmoved mover has "one-sided contact" with what it moves (illustrating this with the way a painful thing such as something pitiable touches us without our needing to touch it).

heat other bodies and be heated themselves, or the sense can be acted upon by bodily features because it has a bodily organ. Something common, such as being enmattered, having contact (mediate or immediate), and sharing the genus within which action occurs, such as color, permits action and passion. But this does not apply to mind as conceived by Anaxagoras, where mind is totally unlike everything else, and perhaps Aristotle has similar difficulty. Though the mind's simplicity was not mentioned previously in iii 4 and Anaxagoras does not explicitly say that mind is simple, mind's being unmixed perhaps leaves it only itself and partless. As truly simple and partless, mind will further seem incapable of being acted upon if we consider argumentation in *Physics* vi 4 that only what is divisible can undergo change.[28]

Along with the perplexity about the way mind as separate can be affected by anything to think it, there is perplexity about the way such a mind can even think itself: "further if it [mind] is even intelligible" (ἔτι δ' εἰ νοητὸς καὶ αὐτός, 429b26). If mind is nothing but possibility (see 429a21–22) and has nothing in common with anything else so as to be acted upon by it, how can mind act upon itself in order to be intelligible to itself? For mind to think itself, whether this means self-awareness of thinking while it thinks other things or its reflection upon itself such as here engaged in by Aristotle, mind needs somehow to be affected by itself if thinking requires being acted upon. Intelligible objects must have something in common with mind to act upon it, and mind to think itself must somehow be like the intelligible items so that it can act upon itself as do the intelligible objects.

There are some fairly obvious ways mind might think other things and think itself. One way is that all the intelligible things that mind thinks are themselves minds (ἢ γὰρ τοῖς ἄλλοις ὁ νοῦς ὑπάρξει, 429b27). Thus mind is not intelligible to itself in virtue of anything other than mind (εἰ μὴ κατ' ἄλλο αὐτὸς νοητός, b27–28). If the intelligible things are minds, then mind would be one in kind with what is intelligible (ἓν δέ τι τὸ νοητὸν εἴδει, b28), and mind can therefore be acted upon by the intelligibles like itself, and mind, being itself also mind and hence intelligible, will be intelligible to itself. Or another way to have mind able to think other things and itself is, instead of mixing mind into everything else, to mix into mind what will make it thinkable just as other things are thinkable (ἢ μεμιγμένον τι ἕξει, ὃ ποιεῖ νοητὸν αὐτὸν ὥσπερ τἄλλα, b28–29). Were the intelligibility of intelligible things mixed right into mind, mind could be acted upon by these intelligible objects and mind could also be intelligible to itself.

In order to make it seem possible that mind has enough in common with what it thinks to think them and to think itself, Aristotle has entertained the possibility either that all intelligible things somehow are minds or that mind has something like the intelligibility of those intelligible things mixed into itself. Either proposal in baldest form sabotages the previous account of what mind is since it seems to mix mind with other things, but Aristotle has been insisting that mind is separate and unmixed: something common to what acts and is acted upon enabling mind to think

[28] Wedin 1988, 197–199 focuses on the difficulty presented by mind's simplicity and the way this may be overcome.

its objects and itself without crudely mixing mind with what is other than it needs articulation. The sought alternative resides in the apparent difficulty: that both mind and what is thought are unenmattered suits them to interact. It has already been argued that as the objects of thought are separate from matter, so the capacities of mind are separate (429b21–22). Rather than straightforwardly mixing mind with things or things into mind, unenmattered mind is the potentiality to be acted upon by what similarly is unenmattered, and also thereby to become self-aware.

Aristotle proposes his alternative:

> Or in the way that to be acted upon according to something common has been distinguished before, that the mind is in potentiality somehow the intelligible objects but in actuality nothing until it thinks. Thus it must be just as in a tablet in which nothing exists in actuality written down, which occurs in the case of the mind. ἢ τὸ μὲν πάσχειν κατὰ κοινόν τι διῄρηται πρότερον, ὅτι δυνάμει πώς ἐστι τὰ νοητὰ ὁ νοῦς, ἀλλ᾽ ἐντελεχείᾳ οὐδέν, πρὶν ἂν νοῇ. δεῖ δ᾽ οὕτως ὥσπερ ἐν γραμματείῳ ᾧ μηθὲν ὑπάρχει ἐντελεχείᾳ καταγεγραμμένον ὅπερ συμβαίνει ἐπὶ τοῦ νοῦ. (429b29–430a2)[29]

There would surely be something common to mind and the intelligibles acting upon it were they just the same, that is, the intelligibles are mind or mind is the intelligibles. But this results more subtly and in accord with the account of mind by returning to the clarification of how things can be acted upon in ii 5, and thereby as well mind's receptivity closely parallels the case for sense (cf. 429a15–18). Aristotle seems to refer especially to the way a developed potentiality is "acted upon" not such as to have its quality destroyed, as in standard alteration, but rather saved when it is raised from its potentiality to its exercise in actuality (see 417b2–16).[30] With this way of understanding being acted upon, what is acted upon and what acts upon it are the same in potentiality. If mind is receptive to the action of the intelligible forms, and just by being them potentially, thinking and self-awareness can occur. The illustration of the blank tablet – probably deriving from Plato's *Theaetetus* 191c8 and *Philebus* 38e12, with subsequent fame as the tabula rasa – suggests the way mere potentiality to receive writing suffices. As a bodily example, like that of the signet ring in ii 12, it falters through introducing a body where precisely the absence of body is meant. Yet the blank tablet intimates the way the lack of actual

[29] This retains δεῖ in 429b31 as found in the manuscripts. Hicks 1907, 495–496 and Ross 1961, 294 can get no sense from the manuscript text and accept the suggestion of Cornford 1906, 13 to substitute δυνάμει for δεῖ: the mistaken reading in the manuscript is due to a scribe's confusing the abbreviation δυ for δεῖ. It seems, however, that the manuscript reading can be retained if some form of the verb for being (εἶναι) is understood.

[30] Ross 1961, 294 says the reference in 429b30 is back to 417b2–7, where the two ways of being affected (πάσχειν) are distinguished. Lewis 2003, 95n12 instead suggests the reference is to passages such as 416a29–b9, 416b35–417a2, and 417a18–20, where Aristotle indicates that prior to the action of agent upon patient they are unlike but they are likened by the action. But the context fits better with Ross's suggestion, and Lewis's reading, which assumes that "*nous* before it thinks is potentially *F*, while its prospective object is actually *F*" (2003, 95) has against it that Aristotle says nothing about the objects of intellect's being in actuality. Lewis 2003, 95n14 is correct against Ross on another point, "that Aristotle has in mind the actual exercise of knowledge rather than merely its acquisition," since the issue is how thinking arises rather than how we gain knowledge.

writing upon the tablet prepares it to receive writing. The very blankness facilitates clear writing through gouging out the surface of, say, a tablet of stone or wax. The tablet in which nothing is written *in actuality* is thereby written upon *in potentiality*.

We should ask whether the tablet's condition of blankness represents the condition of mind before it knows anything at all and is merely possible, as in human infancy, or it represents mind's condition once it knows and can think at will (cf. 417a21–28 and b16–26). Perhaps either state of potentiality could be represented, but the condition of being knowledgeable is more pertinent. The blank tablet is presently ready to be written upon by the knowing person, and analogously the mind that has knowledge but is not currently using it is ready to think. Obviously the blank tablet does a poor job of distinguishing the condition of knowledge from the lack of knowledge – were writing on the tablet knowledge, reading the writing would be thinking? – but it well represents the way something that might seem to have little in common with what acts upon it lends itself to be acted upon just because it is now in potentiality to it.

This account of the way mind's potentiality enables it to be receptive to the action of the intelligible object by clarifying the way intelligible things have enough in common with mind that action and passion can take place also handles mind's thinking itself. When the blank tablet is written upon, that is, thinking occurs, what is written is not just the intelligible thing thought but also the mind itself. The discussion runs,

> But it [mind] is indeed intelligible just as the intelligibles. For, in the case, on the one hand, of things without matter, that which thinks and the thing being thought are the same, since theoretical knowledge and that which is thus knowable are the same. But the reason for not always thinking ought to be considered. In the things having matter, on the other hand, each of the intelligible things is only in potentiality. With the result that to those things [with matter] mind will not belong (for mind is a potentiality of such sorts of things without matter), but to that [without matter] the intelligible will belong. καὶ αὐτὸς δὲ νοητός ἐστιν ὥσπερ τὰ νοητά. ἐπὶ μὲν γὰρ τῶν ἄνευ ὕλης τὸ αὐτό ἐστι τὸ νοοῦν καὶ τὸ νοούμενον · ἡ γὰρ ἐπιστήμη ἡ θεωρητικὴ καὶ τὸ οὕτως ἐπιστητὸν τὸ αὐτό ἐστιν. τοῦ δὲ μὴ ἀεὶ νοεῖν τὸ αἴτιον ἐπισκεπτέον. ἐν δὲ τοῖς ἔχουσιν ὕλην δυνάμει μόνον ἕκαστον ἔστι τῶν νοητῶν. ὥστ᾽ ἐκείνοις μὲν οὐχ ὑπάρξει νοῦς (ἄνευ γὰρ ὕλης δύναμις ἐστιν ὁ νοῦς τῶν τοιούτων), ἐκείνῳ δὲ τὸ νοητὸν ὑπάρξει. (430a2–9)

Mind is intelligible and can be thought as other intelligible objects are since for all things that are without matter what thinks and what is thought are the same. Aristotle might be claiming with regard to the identity of mind and its object that actual thinking is identical with its object in analogy to the situation with sense-perceiving (see 425b25–426a26). Sensing and the sensible object in actuality are one and the same, such as actual hearing and the sound being heard, though their being is distinguishable. Similarly, thinking mind and the intelligible objects, both without matter, should be the same. But whereas sense is only the sensible object during actual perceiving, the knowledgeable mind is the unenmattered intelligible object both when actually thinking and when not thinking in actuality. Aristotle explains, not as with sense that mover and moved in actuality are the same, but that theoretical knowledge and what is knowable by this are the same (ἡ γὰρ ἐπιστήμη

ἡ θεωρητικὴ καὶ τὸ οὕτως ἐπιστητὸν τὸ αὐτό ἐστιν, 430a4–5). Theoretical knowledge is dispositional knowledge. To possess dispositional knowledge is already to have the being as universal within the soul (see 417b21–27). This goes beyond claiming that the *actuality* of thinking and the *actuality* of what is being thought are the same to urging that theoretical knowledge with its possession of the thing universally already has mind unified with what is intelligible. If the knower having dispositional knowledge is already the same as the intelligible object even prior to thinking it, the knower that can think must be intelligible much as the rest of the intelligible things. When actual thinking occurs, the knower thinks what it already is and is also thinking itself. The person having knowledge is ready to write on the tablet; the writing is the thinking of what is already known. Such writing is the mind's thinking what it knows and thinking itself. Aristotle manages in a sophisticated way to "mix" mind with the intelligible objects and to "mix" the intelligible objects into the mind. Thus mind has enough in common with what acts upon it and is not just simple so that it can be affected by what is intelligible and can think itself.

Theoretical knowledge and its suitable object might be potentialities or give rise to thinking in actuality. Surely the gods are always engaged in thinking. Any temptation to suppose that since gods lack matter they are here under consideration ends with Aristotle's comment "But the reason for not always thinking ought to be considered" (τοῦ δὲ μὴ ἀεὶ νοεῖν τὸ αἴτιον ἐπισκεπτέον, 430a5–6). Evidently, the human mind, the only sort of mind that there is, has been investigated throughout this chapter; the mind only sometimes thinking is at issue. Previously he announced as topic how thinking *ever* arises (429a13), and now he says why thinking is not *always* going on ought to be considered. Aristotle might thus merely be alerting us that the theoretical knowledge at issue is dispositional, capable both of giving rise to thinking and not doing so.[31] He might also be urging there is a question why mind as knowledgeable and already having its object should not always be thinking, as the question might be raised why any self-moving being or any natural being with an internal principle of motion is not either always in motion or originating motion ex nihilo (see *Physics* 253a7–20, 255b18–23, and 259b1–20).

Theoretical knowledge correlates with nonenmattered objects, and intelligibility connects with being unenmattered. But there are enmattered things that are therefore only potentially intelligible: "In the things having matter, on the other hand, each of the intelligible things is only in potentiality" (ἐν δὲ τοῖς ἔχουσιν ὕλην δυνάμει μόνον ἕκαστον ἐστι τῶν νοητῶν, 430a6–7). Enmattered things only have the

[31] There is no mention here of taking this up again "later," as the Oxford translation suggests (cf. 431b19, where he does say σκεπτέον ὕστερον [one ought to consider later]). Gill 1991, 252 views 430a5–6 as fundamental for understanding iii 5. She says, "One might initially think that the productive intellect is introduced as ἀρχή (430a19) to explain why thinking starts on a given occasion, but this is not the question that Aristotle asks. The question that motivates the distinction between active and passive mind is why the mind sometimes fails to think (iii 4, 430a5–6). The failure is due, not to the active intellect, which always thinks (430a22), but to the passive intellect, which is subject to change" (cf. Kosman 1995, 354). This will not be the interpretation of this commentary. The question of iii 5 is what is the agent intellect, i.e., that which acts upon mind to cause it to think, but in answering this question Aristotle is also explaining why humans are not always thinking (esp. when iii 7 and iii 8 are included).

potentiality to be intelligible. Enmattered things have an essence, and hence there is in them the possibility of serving as objects of theoretical knowledge, but this potentiality of intelligibility differs from the potentiality of theoretical knowledge and its unenmattered object. Theoretical knowledge and its object have entered the human soul, and thinking can occur when we wish. But enmattered things, as enmattered, cannot presently think or be thought in their essential being: where there is an essence *enmattered*, it is not mind or presently thinkable. A particular enmattered being, such as a tree, is only potentially a source of our knowledge of the essence of tree, that is, only potentially theoretical knowledge as it is in the soul as universal potentially thinkable. As enmattered and having an essence only intelligible in potentiality, such a being is not the special object of theoretical knowledge though possibly being thought. This point resembles that in 412b26–27, where it was stated that the seed and fruit are only *potentially* a living body having life potentially. Of course the essence of an enmattered thing is presently enabling that thing to be what it is, but the essence is not similarly presently intelligible, only potentially so. While theoretical mind and its unenmattered intelligible object are the same, the enmattered being is merely potentially intelligible and the same as mind.

Aristotle appropriately adds,

> With the result that to those things [i.e., enmattered things] mind will not belong (for mind is a potentiality of such sorts of things without matter), but to that [i.e., the unenmattered or mind] the intelligible will belong. ὥστ᾽ ἐκείνοις μὲν οὐχ ὑπάρξει νοῦς (ἄνευ γὰρ ὕλης δύναμις ὁ νοῦς τῶν τοιούτων), ἐκείνῳ δὲ τὸ νοητὸν ὑπάρξει. (430a7–9)

Ordinary enmattered things will not be possessed of mind for mind is separate or without matter. Since enmattered things are only intelligible in potentiality, they cannot as such be objects of theoretical knowledge and be thought. Only the unenmattered can be theoretical mind or its object, and so only the unenmattered can presently be thought and thereby also become self-aware. Mind itself, whether by this we mean the theoretical capacity or the intelligible being possessed by it, as unenmattered is itself intelligible.

We can now well understand how in the case of things without matter what thinks and what is being thought are the same and how mind itself is intelligible (430a2–4). Aristotle is considering essences as they are apart from matter, that is, in the mind as theoretical knowledge, as composing the theoretical mind. Thus they can readily be thought and the mind itself is something intelligible. But as enmattered in things, whether perceptible things or mathematical entities with intelligible matter, the essences are merely intelligible in potentiality, and they are not mind.

Why is Aristotle concluding that to mind and to what is unenmattered intelligibility will belong (in 430a8–9)? He thus arrives at what is common to intellect and intelligible objects and answers the initial perplexity in 429b22–25. Mind and its object are surely the same when thinking occurs, but this can take place because theoretical mind already has the essence, its object, unenmattered, and is itself unenmattered. This explains the possibility for mind and thinking, for the intelligibility of theoretical objects, and for the intelligibility of mind to itself. Hence the

large part of this chapter devoted to showing that mind is separate and unmixed does not undermine the possibility for thinking but makes understandable that it can take place. What seemed to be the problem, that mind as separate is too distinct from what it knows, is really the solution. What mind knows likewise lacks matter. The intelligible and mind are right for each other. Aristotle has found a way in the person with knowledge to mix mind into intelligibles and intelligibles into mind so that there is no impairment of thinking but empowerment for it, and mind itself is intelligible.

5

What Enables Thinking to Occur

The previous chapter emphasized that mind that is part of the soul must be unmixed and separate to think all things. This, it was argued, is consistent with the possibility of thinking, for both mind and its principal object, where these are theoretical knowledge and its object, share the condition of being unenmattered. Aristotle now clarifies just what it is that acts in mind to originate thinking if human mind is primarily potentiality to think all things.[1] All he has to explain is what enters into occasioning this thinking, not to go into detail about the way it arises or to account for the development of concepts or knowledge.[2] He merely has to follow

[1] The tradition called the subject of this chapter the "agent intellect" or "productive intellect" (νοῦς ποιητικός). Blumenthal 1996, 153 points out that this phrase and that for "passive intellect" (νοῦς παθητικός) do not occur in Aristotle's text: "That raises the question whether or not there was an Aristotelian concept corresponding to each of these two expressions." Blumenthal states that iii 5 "has caused more controversy than any other single chapter of Aristotle. Only the disputed hypotheses of the *Parmenides* can compete for the production of such lengthy and prolonged discussion among Platonists in antiquity – to say nothing of the continued controversies about the active intellect in later times" (152). He also observes that "Theophrastus, Aristotle's colleague and successor, was not prevented by his close contact with Aristotle from being as puzzled as we are by the difficulties of *De anima* 3,5, the problem about which we are best informed because it was, and has remained, the one least amenable to a solution that would command general assent" (10). This may be unfair to Theophrastus. Hicks 1907, 594–595 states, "I take it, then, that the object of Theophrastus is to confirm the conclusions of our treatise [the *De anima*] and that his method, which Themistius found so perplexing, is to do this indirectly by thinking out the only possible alternatives, which A. sometimes left unexpressed, and showing exactly what difficulties beset our path if we take the one or the other of two conflicting views."

[2] More about what provokes thinking in actuality will be found in iii 7. Aristotle's treatment of concept formation and knowledge occurs in *Posterior Analytics* ii 19 and *Metaphysics* i 1. Kosman 1995, 346 comments that "a dominant group of voices within the tradition . . . hold(s) that the office of the *nous poietikos* is the development of material *nous* into *nous* as *hexis*, the actualization, that is, of our native ability to think into the developed *skill* of intelligent thought." It seems unlikely, however, that this is the traditional view, and in any case it is a dubious view (cf. Wedin 1988, 176–177). Caston 1999, 200 denies that *De anima* iii 5 has a role in the "causal processes or mechanisms of human psychology. That story is complete without *De anima* 3.5." Instead Caston suggests that this chapter puts "human psychology in a cosmic perspective" by relating it to the highest intellect, the divine. He insists that there are two intellects at issue in the chapter rather than two aspects of a single intellect, and that his interpretation is simplest and most economical (202). He links the features specified for the second mind with those

out the implications of his remarks ending the previous chapter. Since theoretical knowledge is the same as the knowable, whereas the external sensible object acts upon the sense to make it operate, the intelligible object may give rise to thinking by way of the knowledge already *within* the soul. He needs to show that the mind can get itself thinking without seeming an impossible *causa sui* or self-mover.

Aristotle had said in 430a5–6 that one might consider why we are not always thinking. Divine beings will ceaselessly be thinking, but this does not seem to apply for humans. The reason must be that mind that belongs to soul, as he has established, is potentiality for thinking, and whatever is a potentiality can be or not be (see *Metaphysics* 1071b13–14, b19). Mind that is the potentiality for thinking need not be thinking. Even when knowledge is possessed, mind may have changed the way it is in potentiality, yet it is nevertheless in a way in potentiality (see 429b6–10). The intelligible object may always exist, and once we humans learn we have knowledge, and so the intelligible object within us, but still we are not always thinking. Something must get us thinking in actuality. Must there be something beyond our mind to get it thinking, or is there something within the mind that has yet to be disclosed to accomplish this task, or is the mind as already discussed somehow conceivable as having distinguishable aspects enabling one to be the agent and the other to be acted upon? Any self-mover, as any mortal living being, must be distinguishable into unmoved mover (e.g., soul) and what it moves (e.g., body; see *Physics* 243a11–15, 254b27–33, 257b12–13). If mind can then get itself to think, it must have a division into unmoved mover and what is moved by it.

This chapter depends upon Aristotle's understanding of knowledge possessed as a *hexis* or disposition, that is, a first level of actuality. Knowledge can thus be looked upon both as potentiality and as actuality. This may readily lead us to suppose that knowledge can itself enter into the second level of actuality. But in fact, strictly, knowledge does not itself undergo any transition from its dispositional condition to some activity of knowing. Instead it is the soul or person who engages in thinking because of the possession of knowledge (see, e.g., 408b25–27 and 429a10–11). Passages such as ii 1.412a9–11, a22–28, and ii 5.417a21–b16 may suggest that knowledge can be raised to actuality such that it is in operation, but closer inspection allows that it is always the soul or human that engages in thinking. Knowledge is an unmoved mover. Consequently, if a human possesses knowledge, it will not be this knowledge that itself thinks but something else thinks as a result of this knowledge. If this is correct, that knowledge does not itself enter into activity, and the human mind having gained knowledge as 429b6–10 announces it can think on account of itself, then this introduces some complexity of human mind to account for thinking.

430a10–25 Aristotle begins,

Since just as in every nature there is something that is the matter in each class (this is what is all those things in potentiality), but an other is the cause and agent (by causing all things, e.g.,

specified for God in *Metaphysics* xii 7 and 9. But besides difficulties in detail with this reading, and the mistaken supposition that God is mind, it seems to make this chapter quite out of place in its context in the *De anima*.

art with respect to the matter that has undergone it), it is necessary also that in the soul these differences belong. Ἐπεὶ δ' ὥσπερ ἐν ἁπάσῃ τῇ φύσει ἐστί τι τὸ μὲν ὕλη ἑκάστῳ γένει (τοῦτο δὲ ὃ πάντα δυνάμει ἐκεῖνα), ἕτερον δὲ τὸ αἴτιον καὶ ποιητικόν, τῷ ποιεῖν πάντα, οἷον ἡ τέχνη πρὸς τὴν ὕλην πέπονθεν, ἀνάγκη καὶ ἐν τῇ ψυχῇ ὑπάρχειν ταύτας τὰς διαφοράς. (430a10–14)

This is a most tantalizing sentence. The way "just as" (ὥσπερ) enters likens what pertains to every nature to the case for soul.[3] Either we are to suppose that soul as the nature of a living being follows the pattern of the rest of nature, and this may explain the "necessary" (ἀνάγκη) in 430a13 in regard to the conclusion, or perhaps mind as somehow separate (429a10–12) with no nature of its own (see 429a21) is merely in some sort of analogy with natural beings. That it is mind that is under discussion is evident from the links with the previous chapter and the way he goes on to concentrate upon mind.[4] Surely the appearance here of "nature" and the determination that "*in the soul* these differences belong" keep our attention on intellect as found in humans.[5] Gods as always thinking dubiously have mind, but they surely do not have soul (see on 429a22).

Talk of "matter" in relation to soul and mind may be surprising because previously it was urged that mind and the intelligible are unenmattered (430a3–4). "Matter" must be metaphorical, useful in relation to potentiality, emphasized by the way matter can become all things (see perhaps 417a27). The matter in each natural kind is what is "all those things in potentiality," where "those things" could be all of the natural kinds or all the members of each natural kind or perhaps especially the active powers pertaining to each kind or everything that can pertain to the natural kinds and their members. Clearly this phrasing recalls iii 4.429a18–22 that mind that can think all things is all that it can think in potentiality. We suppose, then, that talk of matter in connection with mind and the capacity to be various things intends to draw to attention mind's essential potentiality for thinking all things. Since Aristotle refers to the matter in each kind of natural being, we might expect him to go on to speak of the form and nature of the natural kind, along the lines of Physics ii 1. Instead, however, he speaks of the cause and agent, comparing this to art as generating effects within the matter. In accord with the previous chapter (e.g., πάσχειν in 429a14), the usage of terminology such as ποιητικόν, ποιεῖν, and πέπονθεν relates especially to qualitative change, or something analogous, which we recall from ii 5 was used to characterize the "motion" of sense perception. So

[3] Ross 1961, 296 claims that the structure of 430a10–11 makes ὥσπερ objectionable. Caston 1999, 205 rightly opposes its bracketing by arguing that the structure of the sentences depends upon it.

[4] Gerson 2005, 154n96 points out that ἐπεὶ δ', the opening words of the chapter, connect it closely with the previous chapter.

[5] "Nature" can be used metaphorically for any substantial being (see *Meta.* 1015a11–13), but saying both agent and matter are in nature tends to keep us below the gods. Themistius *In de an.* 102,30–103,19 emphasizes that the words "in the soul" exclude the sort of interpretation that has the "agent intellect" as the first god, most famously by Alexander of Aphrodisias (cf. Aquinas *In de an.* §736). Caston 1999, 206 suggests, however, that "in the soul" in 430a13 means "a difference between psychological kinds, and not parts within an individual soul." But this very questionably requires us to suppose that for Aristotle even the highest being, that surpassing human intellect, is a kind of soul, and in 430a29–31 that God has knowledge.

Aristotle might be considering the active powers inhering in any natural being; for example, elemental bodies have heat or cold as active powers. But the jarring reference to art as agent, unexpectedly introduced into the sphere of natural beings, may expand the consideration of what mind does since art generates all sorts of forms in relation to matter, and Aristotle emphasizes that the agent makes all things. In the case of production by art, there is knowledge of the form of the product in the soul of the artist (see *Meta*. 1032a32–b6), and this knowledge in the soul is the unmoved mover of the whole productive process. Reference to art thus puts us in the realm of knowledge capable of production pertinent to mind. If some aspect of mind has knowledge, and knowledge does not itself turn into thinking because it is an unmoved mover, then something else must be capable of thinking because of the possession of knowledge, presumably what has been called "matter," and so we again see why he states in 430a13 that it is necessary that these differences pertain to soul.

What 430a10–14 seems to be establishing is *that* there is some sort of difference within the soul pertaining to intellect so that Aristotle might proceed to determine better *what* is involved in this difference. That there is this difference within mind obtains whether we look toward nature or art, and knowlege straddles nature and art. There seems to be such difference because the mind is not always thinking (see 430a5–6), its knowledge cannot be thinking, and mind needs some cause or agent to get it thinking. Unlike the case with sense perception, where the agents are external sensible objects, the intelligible objects that give rise to thinking are not external but internal, so the difference might well be within soul or mind itself. The general argument seems to be this: if there are matter and agent pertaining to each natural kind, the same should apply to mind either because it is a natural kind or at least analogous to a natural kind, art imitating nature. And as nature and art are principles causing something else to be affected by them, mind possessing knowledge must have something to act upon as its matter. Consistently with his methodology, starting off showing *that* there is generally some cause and agent for investigation, Aristotle can proceed to examine *what* this is that gets mind to thinking.

Talk of agent and matter and of differences within the soul has encouraged some interpreters to view Aristotle as introducing quite radical division within intellect and even to have two or more kinds of intellect. Others seek merely some contrast in the way mind relates to itself.[6] Those proposing division into distinct intellects can emphasize how talk of mind as merely "possible" (429a22), as all things in potentiality (430a11), and becoming all things (430a14–15) contrasts with mind as making all things (430a12 and a15) and what Aristotle goes on to say about mind as always in actuality (430a18). Yet nothing Aristotle has said leads us to expect more than one intellect, so we might try to get along with one intellect in various relationships with itself. The previous chapter established mind as potentiality and receptive. But it also referred to knowledge according to actuality (429b6–10) and theoretical knowledge (430a4–5). Mind also is ignorant and then learned, so it can

[6] For interpretations in antiquity, see Philoponus (*In de an*. 535,1–19) and Blumenthal 1996, ch. 11.

be in different relationships with itself. Knowledge possessed by the soul can act as agent to get it thinking, and hence the use of art in 430a12 is suggestive, and what it acts upon is mind in its material aspect, that is, mind as capable of thinking all things.

Among potentialities for motion, there are active and passive potentialities (see *Meta*. ix 1). The previous chapter concentrated upon what is passive potentiality in mind such that it can be acted upon (see 429a13–15) by all intelligible objects to think all things, while also noting that mind has the potentiality of knowledge (429b6–10). The unlearned have the passive potentiality for learning and gaining knowledge and the learned have the passive potentiality to be led to think all things and have knowledge as the active potentiality to give rise to this thinking. This present chapter mainly considers this agency. Prior to learning, mind that merely possibly thinks all things is in potentiality, and even when it has learned and is not thinking mind is somehow in potentiality, but since more prepared to think all things it has potentiality like matter ready to be given form. Of course mind is separate and hardly matter, but the condition when it is not thinking resembles the potentiality of matter that might become whatever nature or art produces in it, and thus mind is receptive to intelligible forms that can put it to thinking. What is active, then, is like art with respect to the matter. Art is dispositional knowledge that can make things from matter. Art is the form in the soul of the craftsperson that makes as unmoved mover. Analogously to art, what is active in the mind to generate thinking is the knowledge it has gained. Hence Aristotle said in 429b6–10 that when someone becomes each thing as the actual knower does, then the person can think at will. The agent aspect of intellect is just the knowledge mind has attained. It "makes all things" (τῷ ποιεῖν πάντα, 430a12) as causing the transition from being a knower to thinking in actuality. When Aristotle says "in the soul these differences belong," that is, mind like matter and mind like art, he need mean only that we must distinguish what acts from what it acts upon since what acts, knowledge, comparably to art, is itself unmoved.

When Aristotle proceeds to state, "And there is one such mind by becoming all things, another by making all, as some sort of *hexis*, e.g., light; for in some way also light makes potential colors actual colors" (καὶ ἔστιν ὁ μὲν τοιοῦτος νοῦς τῷ πάντα γίνεσθαι, ὁ δὲ τῷ πάντα ποιεῖν, ὡς ἕξις τις, οἷον τὸ φῶς· τρόπον γάρ τινα καὶ τὸ φῶς ποιεῖ τὰ δυνάμει ὄντα χρώματα ἐνεργείᾳ χρώματα, 430a14–17) he need only be offering such a distinction and insisting upon the distinction.[7] Mind as able to become all things fits the previous chapter's description of thought possibly thinking all things. Mind as agent makes all things, but the previous comparison to art as maker has been replaced with a *hexis* such as light. If it was missed that art is itself unmoved, this should hardly be overlooked with regard to light for Aristotle has argued in ii 7 that light is unmoved. Light enables colored things visible in

[7] Hicks 1907, 500 states that those interpreting this sentence as calling for two distinct intellects take τοιοῦτος as predicative, whereas those who deny two distinct intellects take it as attributive, though he says that they have to take ἔστιν as existential. In fact either sort of interpretation could fit with either way of reading τοιοῦτος and without taking ἔστιν as existential (cf. Gerson 2005, 154n99).

potentiality to be seen (cf. *De sensu* 447a12: φῶς ποιεῖ τὸ ὁρᾶν). The way light "makes" color to be seen is more limited making than the way an art constructs the matter, even more appropriate for how our knowledge makes us capable of thinking what we know, and hence Aristotle says that light "in some way" causes colors in potentiality to be colors in actuality when it allows the sentient being to see them. Light or the illumined transparent works on the sense organ, or allows the sensible object to work on it, rather than changing through making the sensible object. Calling what is active in mind actuality as a *hexis* and comparing it to light clarify its status as actuality and its operation as agent (cf. 418b18–20). Intellect as agent is a *hexis*; that is, it is a disposition or first actuality.[8] The examples of art and light suggest that what is agent, having the status of first actuality, is knowledge, and this follows from 430a4–5. Once knowledge is attained, we become capable of thinking at will (see 429b7). Were we to know all things, as suggested in 429b6–10, we can think all things. Though soul generally is first actuality of the body, mind is initially merely possibility before we have learned, and it attains the status of first actuality by learning and possessing knowledge. Acquired knowledge serves as agent for thinking, with knowledge as unmoved mover leading mind to think what it knows. A knowledgeable mind need not remake itself in order to think, but it merely has to illuminate items already known. This fits with 417b22–24 where Aristotle says that knowledge is of the universal somehow in the soul, and consequently thinking is up to us whenever we wish. It also accords with the claim that theoretical knowledge is the same as the intelligible object. Knowledge in the soul can get the intelligible object to operate to give rise to thinking. This much more resembles the way color in light acts on the sense's receptivity than the production of an artifact.

The knowledgeable mind can compellingly be called illumined or enlightened. This illumined mind only has to act within itself to give rise to thinking. Light or the illumined transparent is the medium for vision, and what is the agent in thought serves as a kind of medium so that the intelligible object gets the mind thinking. Aristotle borrows the comparison to light in 430a15, as commentators observe, from the Sun-Good analogy in Plato's *Republic* vi 506dff. In the analogy the Sun supplies light so that color can be seen and the eye has power to see, while the Good provides intellectual light so that the intelligible things can be thought and the soul has the power to think. The Platonic background may tempt some interpreters to put mind outside humans. The Good is clearly supposed to be the ultimate cause of all other things and of all understanding, and it is outside us. But since Plato holds that we only know through causes and especially knowledge of the ultimate cause, what the Good most importantly offers to understanding is knowledge of itself as the highest cause. Thus the Good gives the intellectual light, knowledge of the Good itself, in terms of which we can know all else. As ultimate cause and measure of things, only in its light, that is, through insight into the Good, could

[8] Many commentators deny that *hexis* takes the meaning developed potentiality, disposition, or first actuality here, and they suppose instead that it contrasts with "privation," in the standard contrast of having and privation (see, e.g., Aquinas *In de an*. §729). But the further comparison with light and the earlier comparison with art support the present interpretation.

anything else become really intelligible. Knowledge of the Good, then, empowers us to know things and think well about them. Aristotle seeks some agent in thought comparable to knowledge of the Good in Plato's analogy. What is thus agent, our very knowledge, that is, possession of universals in the soul, analogously to light, does not change the object or change the mind; it just illumines the object so that it stands luminously before the mind. The knowing mind is thus induced to think the intelligible thing within it. Knowledge serves as agent mind for Aristotle, an unmoved mover.

Regarding what is agent in thought like light, that is, the mind as knowledgeable, Aristotle says, "And this mind is separate and impassible and unmixed, being in essence in actuality. For always the agent is more honorable than the patient and the principle than the matter" (καὶ οὗτος ὁ νοῦς χωριστὸς καὶ ἀπαθὴς καὶ ἀμιγής, τῇ οὐσίᾳ ὢν ἐνεργείᾳ. ἀεὶ γὰρ τιμιώτερον τὸ ποιοῦν τοῦ πάσχοντος καὶ ἡ ἀρχὴ τῆς ὕλης, 430a17–19).[9] The initial set of attributes bestowed upon agent mind, being separate, impassible, and unmixed, pertain to mind as such, as justified in the previous chapter.[10] What is new here seems only having its being in actuality. Many commentators take this to be the highest sort of actuality, activity (*energeia*) opposed to motion (*kinesis*). Thus the agent mind would *always* be doing in actuality whatever it does, for example, thinking if it is God or abstracting intelligible species if it is within the soul.[11] Nothing has prepared us to suppose this distinction enters here. The actuality intended need only be the sort appropriate to possessed knowledge, that is, first actuality or developed potentiality, that accords with its being called a kind of *hexis* and likened to art and light. Being mind in such a condition of actuality, it will be separate from body since knowledge as are its objects is without matter (see 430a3–5), unaffected since it is an unmoved agent, and unmixed with intelligibles in any way that interferes with its causal efficacy. To add to the justification for such mind to be in this way with these characteristics, Aristotle explains that the agent is always more honorable than what it works on and the principle than the matter. Hence those most dignified characteristics of mind must especially belong to the agent part of it, that is, possessed knowledge, even more than to what it acts upon.

[9] Most of the manuscripts have ἐνεργείᾳ (in actuality) in 430a18 rather than ἐνέργεια (actuality) as does Jannone 1966. Little rides on which is appropriate, but the dative better suggests that actuality is the condition of the agent mind rather than its very being.

[10] Caston 1999, 202–203 and 207–211 takes separate here to mean "taxonomically" separate: i.e., there is a kind of being, the divine, that has this sort of mind without having any other powers of the soul. But iii 4 has not been speaking of separate in this sense, and since God is always thinking and has no soul or mind at all it seems strange to speak of "noetic capacity" and use separate taxonomically regarding God.

[11] We have difficulty understanding, however, the way Aquinas's agent intellect is always in actuality abstracting species. Gerson 2005, 156–158, in spite of wishing to have but one intellect, allows that our intellect as immortal is always thinking or engaging in "self-reflexive activity" and "intellect itself operates without images." He distinguishes the thinking of intellect and the thinking of soul. Only when ensouled and embodied is intellect "employed in cognition via images that are other than it." Wedin 1988, 178–181 views agent mind as "the activity only of episodes of individual thought," so agent mind is the activity of thinking but episodic rather than ceaselessly thinking. A great difficulty with this is supposing that an activity of thinking is being employed to get something else also thinking.

Nothing too surprising or extraordinary has to be invoked either within or without our minds to get us thinking. Possessed knowledge serves as unmoved mover of mind's capacity for thinking.

This account fits perfectly with speaking of the person knowing according to actuality (ὁ ἐπιστήμων κατ' ἐνέργειαν) in 429b6–7, where it was dispositional knowledge that was meant. And as previously insisted Aristotle never speaks of knowledge as itself entering into actuality or activity in itself. Were agent mind to be some sort of activity, it becomes very hard to conceive as present in humans, and hence many traditional interpreters, especially if they supposed that the mind discussed in chapter 4 is just the mind in potentiality, had the agent intellect outside us. But as observed the previous chapter has talked of mind according to actuality in 429b6–7, and Aristotle has said nothing to make us suppose our mind is always thinking or engaged in any related activity, or how does it have any relation to soul and dependence upon *phantasia*? The text and the facts accord far better with agent mind as knowledgeable mind. The knowledge is an active potentiality (or *hexis*) ever ready to cause thinking, as a kind of light, but we are not always thinking (430a5–6) because mind that can be led to thinking is still somehow potentiality. Viewing what is agent as knowledge avoids having the productive intellect something always thinking or having it as anything but an unmoved mover.[12]

The agent mind will not move itself, but what it acts upon. It acts as if bestowing light so that thinking can occur by way of the possessed intelligible objects. In accord with the discussion in 429b22–430a9 about the way mind must have something in common with what acts upon it, what acts can be knowledge or the known intelligible object, and these are somehow the same. The knowing mind being separate from matter similarly to the intelligible object occasions our thinking it. Aristotle aptly proceeds to say in iii 5: "Knowledge according to actuality is the same as the thing; but knowledge according to potentiality is in time prior in the individual, though generally not in time, but it is not the case that sometimes it thinks and sometimes it does not think" (τὸ δ' αὐτό ἐστιν ἡ κατ' ἐνέργειαν ἐπιστήμη τῷ πράγματι · ἡ δὲ κατὰ δύναμιν χρόνῳ προτέρα ἐν τῷ ἑνί, ὅλως δὲ οὐ χρόνῳ, ἀλλ' οὐχ ὁτὲ μὲν νοεῖ ὁτὲ δ' οὐ νοεῖ, 430a19–22).[13] While Aristotle can speak of the knower in the highest state of actuality as thinking, knowledge according to actuality must here mean the developed *hexis* of knowledge as it has throughout the *De anima* (see esp. 429b6–7). Recall how in 430a4–5 theoretical knowledge, that is, dispositional knowledge, is the same as that which is thus knowable. If what serves as agent for

[12] Some traditional interpretations of this chapter are reviewed in Brentano 1995, and see Caston 1999, 199n1 for a list of those who have collected the history of the interpretation of *De anima* iii 5. While many traditional interpretations have the agent mind always thinking, in the Thomistic tradition the agent mind acts rather as a supernutritive soul digesting *phantasmata* such that the "intelligible species" are dematerialized and made available for thinking. Besides risking restricting thought to what can be presented by *phantasmata*, this puts agent intellect into activity though not thinking.

[13] Ross 1961, 296 wishes to delete these lines 430a19–22 since they are repeated in 431a1–3 and Ross supposes that they interrupt the sequence of thought. But if agent mind just is the person's knowledge, then these lines make quite good sense where they are. The repetition in iii 7 will be seen to be appropriate and to offer supporting evidence for the interpretation of iii 5.

mind is dispositional knowledge, then Aristotle continues here to characterize this agent. It is quite pertinent to insist that this agent, as dispositional knowledge, is the same as the object of thought. Thus both knowledge and the object of knowledge – after all they are somehow the same – may be said to cause thinking.

In addition to emphasizing the sameness of knowledge and the known, this passage gives some glimpse of the way we attain knowledge. In the life of the individual human, knowledge according to potentiality as undeveloped potentiality, that is, the mind before it has learned, is prior in time to knowledge according to actuality (430a20–21). Each human being is born unknowing. But generally among humankind knowledge precedes capacity to learn since adults exist who know and who teach the unknowing young. Thus if there always are humans, knowledge always exists among them. Many commentators have supposed that "generally not in time" (a21) has to refer to divine mind, especially in conjunction with "it is not the case that sometimes it thinks and sometimes it does not think" (a22). But this is highly unlikely for Aristotle since for him God should be thinking but not merely a mind or have any knowledge. Strange as this may sound, attributing mind or knowledge to God – Aristotle does not do so in any theoretical context – inappropriately gives God mere potentiality. God should be thinking (*noesis*) but without mind or knowledge (see *Meta.* xii 9).[14] Aristotle then contrasts to the single person born unknowing the generality of humankind, which has knowledge to teach the knower according to potentiality. The teacher's knowledge exists prior in time to the student's need for it, so knowledge generally precedes the capacity to learn.

The line "but it is not the case that sometimes it thinks and sometimes it does not think" (ἀλλ' οὐχ ὁτὲ μὲν νοεῖ ὁτὲ δ' οὐ νοεῖ, 430a22), which fosters the supposition of reference to divine mind, makes perfectly good sense applied to what Aristotle has been speaking about, the knowledge according to actuality of an individual or humankind in general. He should deny that knowledge according to actuality sometimes thinks and sometimes does not. Possessed knowledge is not sometimes thinking but a person is, and the knowledge of humankind never is something that thinks, except as individuals think.[15] Aristotle adds this line to refer especially to the agent mind and to reinforce the point of the whole chapter: since knowledge according to actuality is not what is sometimes thinking and sometimes not, there must be a distinction within mind of its knowledge and what this knowledge can

[14] Themistius *In de an.* 102,33–36 explicitly criticizes interpretation as here offered that excludes God. He says, "those who believe [that it {the productive intellect} is identical with] the premises [of knowledge and the bodies of knowledge derived from the premises] have gone completely deaf, and do not even hear the Philosopher crying aloud that this intellect is divine, 'unaffected' (430a24), and has its activity identical with its essence (430a18), and that this alone is immortal, eternal, and separate (430a22–23)". Cf. also Aquinas *In de an.* §729. It is comforting to learn that this interpretation had some takers in antiquity, though their identity is unmentioned and they provoked Themistius's scorn. We should similarly question his supposing God is intellect.

[15] Philoponus *De intellectu* 60,37–43 instead proposes, improbably, that the mind of humankind is always thinking. Were it supposed that Aristotle refers to mind as mere possibility, i.e., unlearned mind, such mind as unlearned also cannot ever think.

act upon. If knowledge could act upon itself to bring about thinking, this would remove any need for the differences within soul that he is endeavoring to clarify.

Comparison of thought with sense supports the proposed approach. The sense in potentiality is raised to actuality by its object, but the sense is only the same as its object when perceiving in actuality (see 425b26–426a1). The object acts on the sense through a medium to cause actual perceiving. In the case of intellect, dispositional knowledge is already the same as theoretical objects, that is, those without matter (see 430a4–5). Knowledge in the soul cannot act on itself, but it is ready to cause thinking when there is suitable occasion. For its "light" to lead to thinking of the intelligible objects there is need of an occasion provided by the *phantasma*. The intelligible object is the moving cause of thought, that intelligible object moving the mind by way of knowledge possessed in the soul and the *phantasma*. Knowledge and *phantasma* together serve as intermediaries, analogous to the medium in sense perception, enabling the intelligible object to give rise to thinking (cf. 431b2–8).

What is agent in thought, that is, knowledge, is what is divine in humans. Aristotle has already said that "the agent is more honorable than the patient" (430a18–19). Now he asserts, "When separated it is alone this which it is, and this alone is immortal and eternal" (χωρισθεὶς δ' ἐστὶ μόνον τοῦθ' ὅπερ ἐστί, καὶ τοῦτο μόνον ἀθάνατον καὶ ἀΐδιον, a22–23). Though what is agent in intellect is always as intellect somehow separate, it can be further separated from any human, at death or while we are alive, if we think of it apart from the rest of our capabilities or we even consider the way humankind in various times and places shares in knowledge. Knowledge in individual or humankind, as unchangeable and not dependent upon embodiment, can lose any link with soul and body.[16] It then is just what it is, and because unconnected with any mortal thing, immortal and eternal. Knowledgeable mind apart from soul – soul is after all the actuality of a perishable body – is eternal.[17] If there is any argument why this alone of mind is eternal, it is presumably that only this aspect of mind can be fully separated from destructible soul and body. Unlike that aspect of mind that sometimes thinks and sometimes does not, this sort of mind is according to actuality such that it is unchangeable. If the intelligible objects are eternal, and knowledge is the same as its object, knowledge should also be eternal. Such mind enters into humans for their brief lives, and hence Aristotle may be following the suggestion of Anaxagoras in DK 59B11: "In everything there is a portion of everything except Mind, but Mind is in some things too." Knowledge does not so much come into being as by alteration when we learn, but it is as if the mind settles down into its own true perfection (see *Phys*. 247b1–248a6) or mind

[16] Caston 1999, 207–211 takes this passage not to be speaking of "events occurring in an individual at a given moment of time, but rather with the taxonomical relations that hold between certain species of soul and their differentia" (211). The divine intellect is taxonomically separate since it exists without any of the other capacities of soul, to which it should be protested that God has no intellect or soul at all.

[17] Plato's presentation in the *Phaedo* suggests that one's knowledge is all that one might wish to take into an afterlife, e.g., 84a–b. Of course Plato's mythical presentation assumes that it is oneself with knowledge that is immortal. That mind alone might be immortal also seems emphasized in Aristotle's *Meta*. 1070a24–26.

enters from the outside (*GA* 736b27–29). Mind as knowledgeable that does not enter into being and have a beginning in time may then continue forever.[18]

The separated mind hardly provides humans an immortality of the sort told in eschatological tales, however, since Aristotle states: "We do not remember because this is impassible, but the *pathetikos* mind is destructible, and without this it thinks nothing" (οὐ μνημονεύομεν δέ, ὅτι τοῦτο μὲν ἀπαθές, ὁ δὲ παθητικὸς νοῦς φθαρτός, καὶ ἄνευ τούτου οὐθὲν νοεῖ, 430a23–25).[19] *We* do not remember individually or collectively a condition either preceding our knowledge or subsequent to embodiment. Knowledge totally separate from any human cannot remember the life of the individual, any more than the individual can remember the existence of knowledge preceding the individual's own existence, since knowledge as such is totally impassible or unaffected. Though this has to do with memory rather than thinking, it accords with the previous claim that knowledge does not sometimes think and sometimes not (a22). Whether previously, subsequently, or while we are alive it is not this aspect of mind that provides us any memories or remembers anything at all, and surely nothing of a particular nature. And neither can the general knowledge of humankind pertain to any particulars of some human. Knowledge relates to universals rather than to particulars (see 417b22–24), and hence it cannot pertain to any particular experiences. Memory for Aristotle requires *phantasia*, which intellect with no connection with body and perception must lack (see *De mem*. 450a12–14 and *NE* 1147b3–5). Aristotle ironically speaks of "we," even while denying that the separated agent mind under consideration remembers us after we are gone, any more than we living humans remember any preexistence of mind since in its preexistence mind had no ability to accumulate experiences.[20]

Whereas the mind that can be separated from the human is eternal and unaffected, Aristotle refers in 430a24–25 to mind that is capable of being affected (*pathetikos* mind) and is destructible. By this he is most often taken to mean the matterlike mind spoken of at the start of the chapter that can become all things.

[18] Eternal knowledge seemingly preexists and exists after the mortal life of the human. This fits Aristotle's comment in *GA* ii 3.736b27–29 about mind's entering into the reproductive process from outside, unlike the nutritive and sensitive capacities, which go along with body. Its entering from outside is as straightforward as our being taught by others (cf. Burnyeat 2002, 70n111). Caston 1999, 215 instead suggests that since for Aristotle mind does not have a bodily organ and the mother supplies matter and the father form, what Aristotle means is that mind arises exclusively from the father in generation and so can be said to be already in the father's semen. This seems much less helpful in this context.

[19] Jannone 1966 follows one manuscript that has παθητός rather than παθητικός in 430a24, but this alternative seems to have little effect on the meaning of the passage. Caston 1999, 213–215 reads 430a23–25 not as pertaining to any *human* separated mind but as saying that we humans do not remember that while the divine intellect is unaffected (and so is eternal) our mind is affected and so perishable. It thus again brings to our attention our place in the cosmos. Wedin 1988, 180 suggests that we do not remember because while we can remember the content of thinking, "We may be reflexively aware of the activity itself while engaging in it but it drops out as a candidate for memory." Were this so, however, it seems to make Aristotle's analysis of thinking here in the *De anima* unlikely or impossible.

[20] Themistius *In de an*. 103,20–104,14 raises the question whether the productive intellect is one, and the more it is like the Sun the more it should be one for all humans. As totally separate, it lacks matter to individuate it. Most likely for him, then, the productive intellect, much as any form considered as such, is one, but when enmattered, as in humans, becomes many.

After all, he has used πέπονθεν (430a13) and πάσχοντος (430a19) as if in preparation for παθητικός in 430a24. He thus reinforces the point that only the agent mind, knowledge, is eternal. Mind capable of being affected at all, as by sometimes thinking, is vulnerable to perishing. The final words, "without this it thinks nothing," might mean either that without *pathetikos* mind the human mind in company with its agent intellect cannot be engaged in thinking, or that without the agent intellect the human mind or its *pathetikos* mind cannot engage in thinking. The chapter has emphasized that mind requires something to serve as agent and something upon which the agent acts, so without one or the other thinking should be impossible.

Yet thus to suppose that *pathetikos nous* refers to the mind capable of becoming all things has the obvious objection that the previous chapter argues that mind as such is unaffected (ἀπαθής, see 429a15, a29–b5, b23), and the use of ἀπαθής in 430a18 with regard to agent mind should extend as well to any other aspect of mind. It is somewhat surprising, then, to have it asserted that some mind is affected and destructible. Even if mind entering into thinking is in some way affected, this is not any sort of alteration that is the destruction of something but instead the alteration of a sort that is the saving of the capacity (see 429a29–30 and 417b2–16), and so perishability might still be in some question. Perhaps, then, *pathetikos nous* refers to something here newly introduced that connects with lack of memory in the separated mind and possibly even supports the case that knowledge alone is eternal. What this could be is *phantasia* since this is affected and destructible and necessary for memory and human thinking generally.[21] *Phantasia* is affected because of close links with bodily organs, and it was called a type of *noein* in 427b27–29 (cf. 433a9–10). *Phantasia* has also previously been indicated to be that without which there is no human thought (see 403a8–10 and 427b15–16). Hence Aristotle might speak of it as a kind of *nous*. Now if *phantasia* plays a vital role for thinking, the soul that may enter into thinking seems to have bodily involvement and is destructible. Thus even if this talk of *pathetikos nous* refers to *phantasia* rather than the mind capable of becoming all things, it may still give evidence for the perishability of such mind. The line "without this [i.e., *phantasia*] it thinks nothing" means that human thinking requires *phantasia*. The line could also be translated, "without this nothing thinks," if nothing is restricted to mortal thinking beings, that is, things only sometimes thinking. Divine thinking hardly requires *phantasmata* to get it operating. Perhaps the line about *pathetikos nous* has this interesting ambiguity to force consideration of what can think and what is presupposed for thinking. And if it is possible that νοεῖ in 430a25 refers to the operation of *phantasia*, then the passage 430a23–25 says that we do not remember because mind is unaffected and without *phantasia* nothing can engage in the operation of *phantasia* so as to remember anything.

[21] See Gerson 2005, 160 for a similar argument against identifying passive intellect with the intellect discussed in chapter 4, but Gerson instead suggests that passive intellect is "the manner in which intellect is accessed by the soul." See Blumenthal 1996, 157–160 and 163 for reference to some in antiquity that supposed *pathetikos* mind is *phantasia*. Philoponus is most prominent (see, e.g., *De intellectu* 13,2). Wedin 1988, 184 criticizes Brentano for embracing this view.

Whether *pathetikos nous* is *phantasia* or the mind capable of becoming all things, Aristotle may be saying that without this *pathetikos nous* the human mind and the agent mind, that is, knowledge, can think nothing. He has just said that we do not remember (430a23–24), but now it may be added that in any condition in which *pathetikos nous* is lacking thinking is also missing. Consequently, whatever aspect of human mind is eternal seems not only impersonal because it lacks memory but also unthinking and unaware. We expect that knowledge as such is incapable of itself doing any thinking. If the line 430a25 says that without the agent mind no thinking occurs, this may mean that prior to or without our knowing things we cannot really be thinking at all insofar as thinking occurs by means of knowledge.

On the interpretation proposed for iii 5, Aristotle explains the initiation of human thinking thus: dispositional knowledge already possessed illumines intelligible objects so that thinking in actuality takes place. But *phantasia* also has a role in originating human thought, in the initial development of knowledge (see *Meta*. i 1 and *Post. An*. ii 19) and more pertinently here for having knowledge cause actual thinking. This is what may be referred to in the chapter as *pathetikos nous*. Dispositional knowledge is always ready to illumine, and the intelligible objects are always available for thought, but actual thinking occurs when dispositional knowledge joins with *phantasia*. *Phantasia* is the occasion or the "proximity" of agent and patient that enables agent mind to have the intelligible objects get us thinking (see *Physics* vii 2 on the need for contact of mover and moved). Aristotle justifiably calls *phantasia* thinking (τὸ νοεῖν) in 427b27–29 since *phantasia* helps initiate thinking and intellect should have no principle ruling over it that is not somehow itself (see *Meta*. 982a17–19). Agent mind and *phantasia* jointly contribute much as the medium in sense perception so that intelligible objects in the soul become "illumined" with thinking arising (417b22–24 and 429b6–10). Notable too, this account of the initiation of thinking is quite analogous with the operation of the locomotive power of soul soon to be discussed (iii 9–11). Animals enter into progressive motion through a conjunction of cognition (typically *phantasia*) and desire. Desire can have the same dispositional status as knowledge. *Phantasia* in conjunction with dispositional desire occasions animal motion.[22] We think when *phantasia* and dispositional knowledge team up; it might be appropriate for Aristotle, however briefly, to allude here in iii 5 to this other important factor in initiating thinking.

Having knowledge is somehow possessing universals in the soul (see 417b22–24). Since these are within humans, humans can think when they wish. Yet universals as such are not the special objects of thought (see 417a28–29 and *Meta*. xiii 10.1087a10–25). Most strictly mind thinks essences, the principles of actuality that are neither merely particulars nor universals.[23] Form enmattered constitutes a particular; form

[22] Cf. Davidson 1980 on the factors leading to action.

[23] Essence most strictly pertains to substantial being (see *Meta*. 1030a2–b7). For the understanding of substantial being as neither universal nor particular, see Owens 1963. But this interpretation should be extended as well to all beings in any category. For example, red is neither particular nor universal, but enmattered it becomes particular and known dispositionally it is universal in soul. Much controversy about whether substantial being is particular or universal, and discussion of inherence in substance, seems not sufficiently to have appreciated Owens's interpretation.

known dispositionally in soul is universal; form as principle of being and what we are thinking is neither universal nor particular though this is what enables particulars and universals to be. Hence in the *Metaphysics* Aristotle primarily speaks of substantial being as "a this" (τόδε τι) and actuality (ἐνέργεια) rather than as universal or particular (see, e.g., 1017b24–26 and 1072b7–11). While a particular thing is also in a way "a this," it is so because of its cause, its form, which is even more fundamentally "a this."

Giving *phantasia* a role in initiating thinking need hardly restrict thought. The Platonic background suggests that thought is able to look upon images, such as a drawing of a triangle, and think of the essence of triangle rather than the particular triangle of the drawing, and *De memoria* 449b31–450a6 makes use of this scheme. Thought is not limited to the particulars presented by *phantasia* since particulars are not the primary intelligible objects. Though deriving from sense, *phantasia* does not have to have actual sense perception present. Our thinking is not bound to what is actually present since *phantasmata* can appear as we wish or merely seem to bubble up from within us. Hence Aristotle seems able to account for our experience of being able either to think when and as we wish or to have thoughts popping into our heads as gushing from a spring. The latter contributes to the sense that our thoughts may be due to divine inspiration. It seems likely in addition that our thinking initiated by *phantasmata* is not too closely bound by what is presented as in an image. As Plato in *Phaedo* 73c–e says we can go from the appearance of a lyre or horse to thought of a person or from seeing Simmias think of Cebes: a *phantasma* can lead us to thinking all sorts of things. Later thinkers speak of the "association of ideas," and Aristotle is sometimes credited with introducing this into consideration in his treatment of recollection in *De memoria et reminiscentia* (see 451b10–22).[24]

Aristotle has emphasized that humans are not always thinking (430a5–6). This brings home the need for something to cause us to think at particular times. Along with the distinction of aspects of mind, *phantasia* helps explain this. We may also recognize that humans, though capable of thinking all things, do not seem capable of thinking all things at once. We think one or perhaps a limited number of things at a moment or during a stretch of time.[25] Agent mind may provide light for all intelligible objects as all colors are visible in the light of day. Hence *phantasmata* also have some role in determining which we think as the direction of the eyes governs what we see. Yet, as indicated, we need hardly be restricted to thinking that of which we presently have the *phantasma*. The *phantasma* induces us to think now and gives some direction to what we think, but it does not limit what we think to merely what it presents. Here mind once again displays some separateness from the bodily apparatus.

[24] See, e.g., Ross 1955, 245–246, who observes that Aristotle expands somewhat on Plato's presentation in the *Phaedo* through having even "association by *contrast*."

[25] Wedin 1988, 175 states that the mind cannot actually think two objects of thought at one and the same time. But this is much too limiting, since if it is true, how could the mind compare and contrast its objects as sense must perceive more than one object at once to compare and contrast its objects?

In the context of iii 4 in which the proper objects of thought and knowledge are essences (429b10–22) and intellect has the potentiality to think these (429a21–22 and b8), iii 5 just has to clarify what serves as agent to cause this thinking of essence. Aristotle does not need to concern himself here with the way knowledge develops nor with the way there are thoughts more elaborate or convoluted than thinking of essence. Neither is a detailed account of the way knowledge and *phantasia* give rise to thinking required. Subsequent discussion in iii 6–8 will offer a little more on some of these points. The agent mind as knowledge and its principal intelligible objects are without matter, hence their kinship. The *phantasmata*, however, and the mind capable of learning and then thinking have greater linkage to the embodied person and tie mind to sense, soul, and the human.

6

The Sorts of Intelligible Objects

Having completed his general account of the nature of mind and the way this makes thinking possible, Aristotle considers in some detail the basic objects of thought: those about which we think truly as the special sensibles are those perceived truly. His treatment of intellect further resembles the inquiry into sense perception, since, after treating the nature of sense in ii 5, he discusses the various sensible objects in some detail in ii 6, and now after dealing with mind in iii 4–5, he takes up the objects of thought in iii 6. As in ii 5 there is some preliminary consideration of the sensible objects (see 417b19–28), so in iii 4.429b10–22 there is brief attention to the objects of intellection, though the fuller treatment occurs here in iii 6. Also the way thought draws its objects together as one will receive attention in iii 6, somewhat comparable to sense's drawing things together as he discusses in iii 2. Aristotle has been speaking rather as if all knowledge were the theoretical knowledge of essences. Thought may be about these primarily, but it also extends to more objects. Presumably he supposes all thinking explicable, much as all sense-perceiving, if he can account for its most basic kinds and objects. In addition, by showing the possible breadth of thought, he begins to justify his initial assumption from iii 4 that thought can think all things.[1]

430a26–b6 There can be thinking of indivisible things, and about these false thought does not occur (ἡ μὲν οὖν τῶν ἀδιαιρέτων νόησις ἐν τούτοις περὶ ἃ οὐκ ἔστι τὸ ψεῦδος, 430a26–27). If we must think truly about undivided things, then these seemingly are the primary objects of thought. Without bothering initially to clarify the undivided things about which no falsity occurs, Aristotle points out that falsity along with truth pertains to thought in which there has been some synthesis of thoughts (σύνθεσίς τις ἤδη νοημάτων), that is, the making of judgments such as '*A* is *B*' (a27–28). Thoughts thus put together may be true or false depending upon

[1] This chapter iii 6 has seemed messy to commentators. After several complaints about details of the text of the chapter, Ross 1961, 300 says, "The chapter appears to be a first sketch, which A. would undoubtedly have much improved if he had revised it." Because of his difficulties with interpretation, Ross presents a text of iii 6 littered with emendations.

the way the beings that are judged are together or not. With regard to something undivided, where a judgment does not have to take place, falsity is avoided. Thus Aristotle apparently allows thought of something like a term rather than just states of affairs. All thought does not have to be discursive. In Aristotle's discussion of *logos* in *De interpretatione* 4 and 5, it is clear that while assertive speech (λόγος ἀποφαντικός) is true or false and contains a verb (ἐκ ῥήματος), *logos* may be merely a phrase, such as biped animal.

Synthesis into unity in thought recalls the way in Empedocles' poem Love joins the parts of living things (430a28–30). As Love makes neckless faces grow (DK 31B57), thought can put together incommensurability and the diagonal of a square (430a30–31). This may be a true thought, but uniting commensurability with the diagonal would result in false judgment. Thought can also put time into the synthesis, that is, judgments that things were or will be (a31–b2). Of course this pertains to states of affairs other than mathematical relationships, such as that Cleon was pale or will be pale (b2–6).

Aristotle asserts that falsity always pertains to synthesis (τὸ γὰρ ψεῦδος ἐν συνθέσει ἀεί), as when we might say that the pale thing is nonpale (τὸ λευκὸν μὴ λευκόν, 430b2–3). Since "the pale" is ambiguous, this statement could be either the most obviously false, the pale is nonpale, or a more likely false assertion, such as Cleon is nonpale (430b2–3). "Synthesis" here seems to cover any assertive judgment. Since he goes ahead to allow that it is possible to assert division regarding all things (διαίρεσιν φάναι πάντα), that is, to make negative judgments, he can use forms of "synthesis" or "putting together" widely to cover any judgment and also more narrowly for positive judgment. Aristotle has a complex understanding of propositions in *De interpretatione* that is alluded to here: affirmative propositions can be '*A is B*' or '*A is* not-*B*', while negative propositions are '*A is not B*' or '*A is not* not-*B*.'[2] "The pale [Cleon] is non-pale" gives an instance of one of the affirmations. Temporality may enter by introducing *was* or *will be* (a31–b2 and b5).[3] Whether things are put together or disjoined by thought, and whether truly or falsely, thought may be said to make a single thought from the combination or separation of thoughts: "that which makes one, this is in each case the mind" (τὸ δὲ ἓν ποιοῦν, τοῦτο ὁ νοῦς ἕκαστον, b5–6). Mind, for Aristotle, is not constructing reality when it makes judgments, but it is capable of putting *thoughts* together in the effort to apprehend things or for whatever other purpose mind might have. What it is making one is the *complete thought*. It might seem that the thoughts put together are arbitrarily united, but while this can apply to speech or thoughts hypothetically entertained or in some such way, we cannot simply think against our beliefs (see 427b20–21).

Mind's putting thoughts together in judgment resembles the role of the central sense in iii 2. The senses join in something like a point so that the animal can discriminate, say, white and sweet. In thinking "The diagonal (of a square) is incommensurable (with the sides of the square)" (430a31) or "Cleon (who is pale)

[2] Propositions can be about all or some of a class, i.e., universal or particular, or as here indefinite.

[3] Use of ἀεί (always) in 430b2 and ἐνδέχεται (it is possible) in b3 may remind us also of the possibility of giving modality to the propositions, e.g., '*A* is necessarily *B*' or '*A* is possibly *B*'.

is nonpale" (b2–3), or "Cleon is pale" or was or will be pale (b5), mind creates unity through synthesis of thoughts. The component thoughts put together to form the unity are like the matter of the synthesis (συνθεσίς τις ἤδη νοημάτων, 430a27–28). The components can be called *noemata* of the *noesis* (cf. 431b7, 432a12). The resulting judgment can be true or false depending upon whether it says the way the things are or not. Even in negative judgments that separate or disjoin things, just as in the discriminations of sense, intellect still places different things together at once. Mind too must be something like a point able to unite things so as to think them at once, whether as being together or as being apart, and truly or falsely. Because sense is unified in a central sense, the various sorts of sensible objects, proper, common, and accidental sensibles, are perceived together to form a "world." Mind similarly develops unified experience through putting thoughts and temporality together. The different temporal possibilities for thought are alluded to to show the way mind attains a rich life and resembles and yet differs from sense. In iii 2.426b23–31 sense discriminates its objects *now* and determines that they are *now* different, but intellect can think *now* that things were, are, or will be different in the past, present, or future.

430b6–31 Aristotle has referred to indivisibles about which there is not false thought and syntheses that allow for falsity. He begins to reflect further about types of indivisible things. Things can be indivisible (τὸ δ' ἀδιαίρετον) or undivided in two ways, in potentiality and in actuality (430b6–7). Things undivided in actuality and thought indivisibly can be divisible in potentiality.[4] For example, a length (μῆκος) undivided in actuality can be thought of as undivided and in indivisible time (b7–9). Surely the length can be divided and the time during which it is thought, but so long as neither is divided, the thought does not deal with the parts of the length but with the undivided length through the whole time (b9–11). In fact, the division of the time depends upon division of the object of thought. So long as the length is undivided, it cannot be determined what is thought in any part of the time; thought indivisibly occupies the whole of the time, if the length and time are solely divisible in potentiality. Present division in actuality of the length, even just in thought, permits determination that such and such a part was thought in such and such a part of the time (b11–14). Consequently, the time of thought is divisible as the object of thought is divisible and depends upon its division. Indivisibility or divisibility of "time" here differs from the "time" considered earlier in 430b1. There at issue was past, present, future pertaining to the complete judgment and the states of affairs about which the judgment is made, whereas here it is the possible temporal division of parts of the thought itself that is in question. If thought deals with the line from both its sections, then it does so in the time composed of both the sections of time

[4] Of course it seems impossible that anything can be divided in actuality and indivisible in potentiality, though it could be divided in actuality but undivided in potentiality. The notion of indivisibility in potentiality is a most strange notion. We should hardly wish to say of something necessarily indivisible that it is indivisible in potentiality.

(b13–14). This could mean either thinking the line as divided or as undivided, and so either in time undivided or divided to correspond to this.

Aristotle's example of an undivided thing in actuality that is divisible in potentiality is a length (430b7–20). The length could be of various sorts, such as the length of a body or mathematical extension. Since it is divisible in potentiality, not the essence of length but an extended length, that is, a length somehow enmattered, is under consideration. Perceptible and intelligible lengths can be thought indivisibly and in an undivided time. What seems to underlie any length, whether of body or time, is continuity, and to this Aristotle turns for reflection:

> That which is indivisible not according to quantity but in form it [mind] thinks in indivisible time and by an indivisible capacity of soul; but according to accident, and not in which way those are divisible, by which it thinks and in which time [are divisible], but in which way they are indivisibles; for there is indeed in these [i.e., in perceptible lengths] something indivisible, but perhaps not separate, which makes the time and length one. And this similarly is in every continuous thing, both in time and in length. τὸ δὲ μὴ κατὰ τὸ ποσὸν ἀδιαίρετον ἀλλὰ τῷ εἴδει νοεῖ ἐν ἀδιαιρέτῳ χρόνῳ καὶ ἀδιαίρετῳ τῆς ψυχῆς· κατὰ συμβεβηκὸς δέ, καὶ οὐχ ᾗ ἐκεῖνα διαιρετὰ, ᾧ νοεῖ καὶ ἐν ᾧ χρόνῳ, ἀλλ' ᾗ ἀδιαίρετα· ἔνεστι γὰρ κἀν τούτοις τι ἀδιαίρετον, ἀλλ' ἴσως οὐ χωριστόν, ὃ ποιεῖ ἕνα τὸν χρόνον καὶ τὸ μῆκος. καὶ τοῦθ' ὁμοίως ἐν ἅπαντί ἐστι τῷ συνεχεῖ, καὶ χρόνῳ καὶ μήκει. (430b14–20)

The continuity of the continuous, when it is mathematical extension that is meant, is divisible in quantity but not in form. It is just the nature of the continuous to be infinitely divisible without ceasing to be continuous (see *Phys*. vi 1).[5] The continuity of the continuous can be thought in undivided time and by an undivided capacity of soul, that is, by mind (430b15). Since all soul is as such indivisible, the reason he here says that what is indivisible is thought by an indivisible part of soul is to reinforce the view that indivisibles are somehow the special objects of mind and to allow for speaking as he does of accidental division of mind. In thinking of continuity the mind and time are accidentally divisible because it is the very nature of the continuous to be divisible. The divisibility of the continuous extension differs from that of the divisible length, such as the length of a horse, since it is the very nature of the continuous to be divisible whereas concrete lengths such as a horse are not in virtue of themselves divisible. So a length such as a horse seems as such indivisible. Yet there is in such lengths something not separate, that is, their very continuity, that gives unity to the continuous thing and to time. This continuity will be indivisible so long as it is bestowing unity on the length or time, and this unifying continuity must be in any length or time that is continuous.

There is a further sort of indivisible connecting with those just discussed, that is, continuous magnitudes, the point and any dividing limit of the continuous (430b20–21). If Aristotle has been considering a length and its continuity, then a point, a line, a

[5] Hicks 1907, 518 instead supposes that Aristotle holds, "Any species incapable of further division into subspecies would answer to the description of the text, 'a whole not quantitatively indivisible.'" Philoponus *De intellectu* 78,14–79,24 gives a broader understanding of form. Both sorts of understanding make interpretation of the rest of the chapter unnecessarily difficult. Infinite divisibility is for Aristotle an essential accident of the continuous without being its definition (see esp. *Physics* 231b22).

plane, and the now in time seem dividing and limiting principles that are themselves somehow indivisible. Such limiting principles are in some respect so indivisible that they are only made clear as the privation (ἡ στέρησις) is clarified. A point is grasped by thinking the privation of extension, so that we think of something dimensionless but positioned. Similarly the line is the privation of width and the plane privation of depth. He suggests that we think such things as evil or black as the privation of the contrary good or white (b21–23). Though evil and black have their own essences, this may involve being the privations of good and white, respectively, where good and white have priority. To know the good suffices for knowing the bad because the good is a limit principle whereas there are indefinitely many ways to be bad (see *NE* 1106b28–35; cf. 411a5–7). Someone having art and a grasp of the form can also deliberately ruin the product through also thereby knowing the privation (see *Meta.* 1046b4–15 and 427b5–6). Where there are contraries with one having priority, the knower of that which has priority also already has within himself or herself the power to know the contrary: "What knows ought to be in potentiality [the contrary] and [the contraries] to be one in it" (δεῖ δὲ δυνάμει εἶναι τὸ γνωρίζον καὶ ἓν εἶναι ἐν αὐτῷ, 430b23–24). The contraries would be as one to the knower since the knowledge of one serves also for the other. Among the limit principles, the point and the now are completely indivisible, but they are thought privatively through opposition to their contraries.

In contrast to the limit principles just discussed that have contraries, Aristotle now mentions a sort of indivisible that lacks any sort of contrary: "If to something there is not a contrary of the causes, it knows itself and is in actuality and separate" (εἰ δέ τινι μή ἐστιν ἐναντίον τῶν αἰτίων, αὐτὸ ἑαυτὸ γινώσκει καὶ ἐνεργείᾳ ἐστὶ καὶ χωριστόν, 430b24–26). Several categories of being are said to lack contraries in the *Categories* (see 3b24–32, 5b11–15, 10b12–17), but Aristotle probably here has essences in any category of being in mind as the fundamental intelligible objects. These are the nonenmattered things discussed at the end of iii 4, and considered without matter any essence would lack a contrary of causes inasmuch as it is cause to itself of being what it is. Calling these things "separate" indicates merely that he deals with essences apart from any matter. These will be in actuality and cognizable on account of themselves as explained at the end of iii 4. When the knower has these indivisible intelligibles in soul, they are in actuality as knowledge is in actuality and these intelligibles can be thought at will, and so they thus cognize themselves.[6] If in quite terse fashion perhaps fitting the topic, Aristotle has arrived at the most indivisible sort of being that provides mind its special intelligible objects. Lacking any contrary causes, it could not be thought as a privation but only positively.

[6] Berti 1978, 146 rightly attacks those who, as does Philoponus *De intellectu* 84,60–85,81, suppose the unmoved mover, i.e., mind thinking itself, has to be referred to in 430b24–26, though he gives a quite different translation of the passage. His purpose of rejecting extreme intuitionism may succeed without the different translation and interpretation. The use of *energeia* possibly for the condition of knowledge supports the interpretation offered of iii 5. For Aristotle to be speaking of God is less pertinent here, and he would rather inappropriately say that God *knows* himself (ἑαυτὸ γινώσκει) rather than is thinking thinking of thinking (as in *Meta.* xii 9.1074b34–35).

The treatment of divisible and indivisible objects of thought ends this way:

Assertion is the saying of something about something, just as the affirmation, and is in every case either true or false; but this is not the case with all mind: the thought of what something is according to the essense is true, and is not something about something; but, just as the seeing of the proper sensible is true, whether the pale thing is a human or not is not always true, so it is for so many things as are without matter. ἔστι δ' ἡ μὲν φάσις τι κατά τινος, ὥσπερ ἡ κατάφασις, καὶ ἀληθὴς ἢ ψευδὴς πᾶσα· ὁ δὲ νοῦς οὐ πᾶς, ἀλλ' ὁ τοῦ τί ἐστι κατὰ τὸ τί ἦν εἶναι ἀληθής, καὶ οὐ τὶ κατά τινος· ἀλλ' ὥσπερ τὸ ὁρᾶν τοῦ ἰδίου ἀληθές, εἰ δ' ἄνθρωπος τὸ λευκὸν ἢ μή, οὐκ ἀληθὲς ἀεί, οὕτως ἔχει ὅσα ἄνευ ὕλης. (430b26–31)

Reference here to the essence and things without matter fits with the interpretation of the preceding lines (b24–26) as concerned with any essences separate from matter. Whereas the assertion (φάσις) of something about something is either true or false, such as "The pale thing is a human," thought of nonenmattered essence is not such assertion.[7] For Aristotle the essence can be indivisibly simple and not thought through propositions because a definition or account does not have to be an assertion. In *De interpretatione* 16b26–28 Aristotle defines *logos* as "significant spoken sound some part of which is significant in separation." While this surely includes declarative speech, it does not have to be statement, for he goes on to say that "not every *logos* is statement-making (ἀποφαντικός), but only those in which there is truth or falsity" (17a2–3). Hence a defining phrase, such as the exemplary definition "biped animal" employed in the *Metaphysics* for human being, is a *logos* (e.g., 1006a32). This is why, for him, the essence can be a simple, indivisible being and is not something said of something.[8] It needs to be a simple being to give unity to that of which it is the essence, else there is an infinite regress of unifying principles.[9] But though the essence for Aristotle is a simple being, it is nonetheless intelligible, and the primary intelligible being, because his account of actual cognition is apprehending the form or essence as it actually is in its simplicity. Thought of essence is thought of what is indivisible in actuality and potentiality, and without matter, so that such thought must be true, if really thinking the essence. Such thought of simple intelligibles parallels sense perception of proper sensibles.

[7] There is another appearance of φάσις in 432a10. Hicks 1907, 524 points out that φάσις ambiguously has a generic sense, in which it covers all assertion positive and negative, and a more specific sense meaning only positive assertion in contrast to ἀπόφασις, which is negative assertion. The term κατάφασις for positive assertion, which does not appear in Plato, was probably developed to prevent the ambiguity.

[8] Sorabji 1982, 298 says, "Aristotle's non-discursive thinking will then involve contemplating the definitions of incomposite subjects. But in that case, the thinking must be *propositional*; for it will involve thinking *that* such-and-such an essence belongs to such-and-such a subject." He also goes on to suggest that by considering definitions as statements of *identity* Aristotle gets around supposing that the definition is saying something of something. But Sorabji misses that for Aristotle a *logos* or definition need not be an assertion, i.e., apophantic *logos* (cf. Wedin 1988, 128–130).

[9] See *Meta*. vii 12 on the unity of definition and vii 17.1041b11–33 and viii 6 on the unity of the principle of being. Aristotle has carefully defined *logos* so that it does not have to be a statement and his view of cognition allows for cognition of simple beings. Thus he has prepared for getting around the Platonic problem of the way simple beings can be at all intelligible (see Plato *Theaetetus* 201c–206b).

That thought of essence is true and yet not saying something of something may recall a similar discussion in *Metaphysics* ix 10:

> With regard to incomposites (τὰ ἀσύνθετα), what is being or not being, and truth or falsity? A thing of this sort is not composite, so as to be when it is compounded, and not to be if it is separated, like the white wood or the incommensurability of the diagonal; nor will truth and falsity be still present in the same way as in the previous cases. In fact, as truth is not the same in these cases, so also being is not the same; but truth or falsity is as follows – contact and assertion (θιγεῖν καὶ φάναι) are truth (assertion [φάσις] not being the same as affirmation [κατάφασις]), and ignorance is non-contact. For it is not possible to be in error regarding the question what a thing is, save in an accidental sense; and the same holds good regarding non-composite substances (for it is not possible to be in error about them). And they all exist actually, not potentially; for otherwise they would come to be and cease to be; but, as it is, being itself does not come to be (nor cease to be): for if it did it would have to come out of something. About the things, then, which are essences (ὅπερ εἶναί τι) and exist in actuality, it is not possible to be in error, but only to think them or not to think them. (1051b17–32)

Thought of essences, or things without matter, does not seem to be propositional or discursive as is thought of other sorts of things. Since thought of essence occurs without combining or separating thoughts, it cannot be true or false as is discursive thought. In his highest conception of thought, Aristotle apparently has to shift from a conversational to a perceptual model of thought, calling it affirmation and even a kind of touch.[10] The role of essence, to give unity to that of which it is the essence, requires that it itself be a unity, or there would be some further unifier of it (cf. *Meta*. viii 6.1045a36–b7). The only thought appropriate to such a unity is that which apprehends it as a unity. Indivisible thought must think what is indivisible. Any thought of essence as what is undivided in potentiality or in actuality will be dealing with something truly undivided.

De anima iii 6 reflects the two rather obvious and perhaps inescapable models for thought. Thought is like perceiving an object: when we think we "see" or "touch" the essence of things. Or thought is like an internal conversation in which we ask ourselves questions and try to answer them. Both models are clearly in play in Plato, but Aristotle has done more work to keep the perceptual model from being merely metaphorical. Since the ultimate objects of thought must for him be simple beings inasmuch as the principle of any being must unify it, and what gives unity must itself be a unity, thought of such indivisible being must possibly itself be indivisible. But we also put thoughts together in discourse. Hence the view of thought as internal conversation also has force, and thus thought as synthesis and either true or false also enters this chapter.

There are three kinds of sensible objects: proper, common, and accidental sensibles (ii 6). Mind, this chapter discloses, has at least as many intelligible objects. Indivisible things are intelligible, especially (1) those lacking matter so that they are

[10] Aristotle uses τὸ θιγεῖν for "touching" by the mind (cf. *DA* 407a16–18, 427b4), rather than ἁφή, as is employed for touch in his discussion of contact sense in *De anima* ii 11–12, perhaps because θιγγάνω is a lighter touch.

indivisible both in actuality and in potentiality as are essences. These indivisibles most resemble the proper sensibles about which we cannot be in error. (2) There are then things that are one and indivisible in *actuality* in our thought, such as a length, but divisible in potentiality. This includes all enmattered substances and their attributes. We think these in time undivided in actuality, though the time is divisible in potentiality just as the object is. (3) There are indivisible things such as the continuity in the second class of indivisibles, and also their limit principles. These we know by abstraction or as privations. Perhaps these classes of intelligible, indivisible objects are generally quite analogous to the sensible objects: (1) resembles proper sensibles, (2) accidental sensibles, and (3) common sensibles.[11] In the case of (1), Aristotle announces the resemblance to proper sensibles, at least inasmuch as both are cognized truly (430b29–31). Any parallel of the other objects is left for the reader to surmise. A good reason for Aristotle not to make such comparison is that all undivided objects are thought without error, but this is not the case for all the kinds of sensible objects. In any case, existence of multiple intelligible objects indicates that mind is a faculty of subfaculties, as existence of multiple sensible objects has sense as a faculty of subfaculties.

[11] We might compare the comment that common sensibles are perceived by motion (in 425a16–18) to the claim that limits are thought as privations (430b20–21).

7

Phantasia Has a Role in All Thinking

Having traced mind's essence, operation, and objects, Aristotle needs to give more attention to thinking's initiation. Possession of knowledge puts universals in the soul that provide for thinking at wish. But what can provoke such wish, and in general how does dispositional knowledge lead to actual thinking? This is the role of *phantasmata*. This has been hinted at previously (see 403a8–10, 427b16, and perhaps 430a24–25), but he now needs to offer fuller consideration. He should not merely resort to *phantasmata* as a desperate assumption but argue for their role in thinking. In this chapter Aristotle begins with an obvious case, practical thinking and its initiation by *phantasia*, and then goes on to other types of intellect. His guide is the way sense perception of the pleasant or painful causes desire and pursuit or avoidance. As sense has desire and motion concatenated with it, so practical thinking has *phantasmata*, desire, and action linking with it. He then expands upon this case by further comparison of mind with sense. If sense is a unity, because (1) the action on the medium affects the sense and causes desire and pursuit or avoidance and (2) the five senses lead to a central sense and thus are subfaculties of the sense faculty, mind also is a unity requiring *phantasmata* along with its thinking and the mind is composed of subfaculties for practical thinking, theoretical thinking, and mathematical thinking. What applies to practical thinking will apply analogously to these other sorts of thinking. *Phantasmata* enter similarly into all cases of human thinking. The argumentation of this chapter thus sustains Aristotle's account of mind by disclosing the way it enters into operation. *Posterior Analytics* ii 19 and *Metaphysics* i 1 trace the task of *phantasia* in memory and experience giving rise to knowledge, that is, the acquiring of the disposition required for thinking; this chapter shows how *phantasia* has the further function of getting mind thinking in actuality by means of this dispositional knowledge.[1]

[1] Many have been unable to locate such unity of purpose in this chapter. Ross 1961, 303 comments, "Torstrik pointed out that this chapter is not a connected discussion, but a series of scraps put together by an early editor.... we must suppose that an early editor found these scraps in A.'s Nachlass, and simply strung them together in order that none of the Master's words should be lost to posterity" (cf. Hamlyn 1993, 145; Burnyeat 2001a, 72; and Burnyeat 2002, 68).

431a1–7 The opening of the chapter repeats the remark in iii 5 that knowledge according to actuality is the same as the matter known: in the individual person knowledge according to potentiality is prior but not generally in time (431a1–3; cf. 430a19–21).[2] In iii 5 these remarks concern what is agent mind, and their reappearance here puts us again in the context of the initiation of thinking. The knowledge according to actuality (ἡ κατ' ἐνέργειαν ἐπιστήμη) referred to here as there is dispositional knowledge. Such knowledge is the same as its object inasmuch as knowledge has possession of the essence and the essence is the intelligible object. The individual person first undergoes learning to acquire such knowledge, and hence potentiality precedes knowledge according to actuality in the individual. But since the individual obtains knowledge through being taught by others – beginning with learning to speak – knowledge according to actuality precedes knowledge according to potentiality in humankind generally. Aristotle now goes beyond what he said earlier when he explains, "For it is from being in actuality that all things come to be" (ἔστι γὰρ ἐξ ἐντελεχείᾳ ὄντος πάντα τὰ γιγνόμενα, 431a3–4). This remark refers to his physical argumentation that motion requires a mover and the metaphysical argumentation that actuality precedes potentiality (see *Physics* vii 1, viii 4, *Meta.* ix 8–9). Dispositional knowledge in the individual derives from being in actuality because others having knowledge in actuality teach the individual and because learning arises by putting to use some knowledge already possessed (see *Post. An.* i 1, *NE* ii 1).

Through illustrating how the sense power is put into actuality by its object, Aristotle reraises the issue of the way this occurs for intellect. He says, "It is evident that the sensible object leads into actuality that which has the sensitive power in potentiality" (φαίνεται δὲ τὸ μὲν αἰσθητὸν ἐκ δυνάμει ὄντος τοῦ αἰσθητικοῦ ἐνεργείᾳ ποιοῦν, 431a4–5). This perhaps is analogous to the way thinking arises and indicates that the transition from disposition to its exercise is not really change at all. He says regarding sense led into actuality, "it is not acted upon nor altered" (οὐ γὰρ πάσχει οὐδ' ἀλλοιοῦται, a5). It is not acted upon if this means undergoing change in quality. The transition from having the capacity to perceive to perceiving in actuality is not a change, and the occurrence of sense-perceiving is not strictly motion (*kinesis*) at all but activity (*energeia*). This was suggested in ii 5 and reemphasized here: "Therefore this is another form of (than) motion; for motion is actuality of the incomplete, but the actuality simply is other, it is actuality of that which has been completed" (διὸ ἄλλο εἶδος τοῦτο κινήσεως· ἡ γὰρ κίνησις τοῦ ἀτελοῦς ἐνέργεια, ἡ δ' ἁπλῶς ἐνέργεια ἑτέρα, ἡ τοῦ τετελεσμένου, a6–7). This passage is Aristotle's clearest acknowledgment in the *De anima* that psychical operations are really *energeiai* in the sense of activities contrasted with motions (*kineseis*).[3] Activities are complete at every moment and continuable, and hence actualities simply or absolutely, unlike motions – except eternal locomotion in a circle – that are only complete at their conclusion and then must cease. He has been coy about such activity, however,

[2] Evidence that the repetition existed in even the most ancient texts is in Philoponus *In de an.* 558,4–6, where Alexander is observed to have the text thus.

[3] See Aquinas *Physics Commentary* vi 839 p. 393 on Averroes's comments about *energeia* as opposed to motion. On the topic generally, see Polansky 1983.

since his *De anima* belongs so far as possible within physics that concentrates upon principles of motion rather than activity. If sense-perceiving is not motion and neither is the transition from the capacity to perceive to perceiving in actuality, then neither thinking nor its transition from disposition to thinking in actuality is motion. Aristotle here points out that sense perception is not really motion at all – in which case thought certainly is not – so that we should not look toward some obvious motion for initiating cognition.

Whereas for sense there is an external sensible object that at some definite time leads the capacity to perceiving in actuality, knowledge according to actuality present once learning has taken place always already possesses its object so that something further must provoke thinking. This is a role for *phantasmata*. Through comparison of mind to sense, Aristotle first motivates this role and then goes on to argue for casting *phantasmata* for it.

431a8–b1 He compares the way sense enters into animal motion to how mind becomes practical. This seems a most promising way to secure the place of *phantasmata* in thinking since practical life must deal with particular things. Sense-perceiving, Aristotle observes, is like mere asserting and thinking (τὸ μὲν οὖν αἰσθάνεσθαι ὅμοιον τῷ φάναι μόνον καὶ νοεῖν, 431a8). This means that sense-perceiving is discriminating that does not as such necessarily involve emotional response or desire. The animal just determines what things are present to it. Thus perceiving resembles mere asserting and thinking that can be quite divorced from practical interests. The "thinking" (νοεῖν) here could also refer to *phantasia* (see 427b27–29), in which case he has in mind the way we may imagine things without responding emotionally to them, as we might look at scenes unemotionally (427b21–24). Much sense perception has the animal solely registering and discriminating sensible objects. When the animal perceives something pleasant or painful, however, it tends to pursue or avoid it as if making a judgment that it should do so (431a9–10; cf. 413b21–24).[4] If much or all sense discrimination is a quasi-judgment, the perceptive response to what is pleasant or painful is even more like judgment. The most obvious sorts of pleasant and painful things are those having to do with safety or destruction, such as pleasures of food, drink, sex, and the pain of injurious things. Yet higher animals may also take delight or annoyance in mere sense-perceiving

[4] Aristotle's point of the lack of emotional and desiderative response in some sense perception but the emotional response in connection with other cases and the quasi-judgment of the need for pursuit or flight may be found in Hicks 1907, 527–528: "Sense does not really perform a synthesis such as was assigned to thought in 430a27–b4. What it does is to pursue or shun. But therein is implied an inchoate synthesis, viz. of τὸ αἰσθητὸν and τὸ ἡδὺ or of τὸ αἰσθητὸν and τὸ λυπηρόν, an implicit judgment asserting that the sensible causes pleasure, i.e. is relatively good, or that the sensible causes pain, i.e. is relatively evil. In short, pursuit or avoidance in the region of sense corresponds to a logical judgment of affirmation or denial, as is laid down [in] *Eth. Nic.* 1139a21 ἔστι δ' ὅπερ ἐν διανοίᾳ κατάφασις καὶ ἀπόφασις, τοῦτ' ἐν ὀρέξει δίωξις καὶ φυγή." There may be some contrast in the use of ἡ φάσις in 430b26 and φάναι in 431a8. Philoponus *De intellectu* 94,30–34 has the former speaking of judgment, whereas the latter merely names rather than judges. Yet perhaps all sensing as discriminating is making quasi-judgments, but to make the quasi-judgment about the pleasant or painful does more since it sets the animal in motion.

itself and pursue pleasant perceiving and avoid unpleasant perceiving itself.[5] But Aristotle's remark about sense resembling bare assertion (431a8) confirms that he does not wish to claim that *all* perceiving has to be pleasant or painful.[6]

"Being pleased and being pained," he says, "is to engage the sensitive mean with the good or bad as such sorts of things" (καὶ ἔστι τὸ ἡδεσθαι καὶ λυπεῖσθαι τὸ ἐνεργεῖν τῇ αἰσθητικῇ μεσότητι πρὸς τὸ ἀγαθὸν ἢ κακόν, ᾗ τοιαῦτα, 431a10–11). Talk of sense as a mean recalls 424a2–15, 424a24–b3, and 426a27–b7 (cf. 431a19). As a mean in relation to sensible objects the sense discriminates differences and is vulnerable to sensible objects that disrupt the mean. Those things that are concordant with the sensitive mean will presumably be among those that appear good and pleasant, while those discordant with the sensitive mean will appear bad and painful (cf. 426a27–b7). That the sense is a type of mean allows for variability in what seems good or bad and pleasant or painful. For example, when the animal is hot or hungry rather than cold or full different things are perceived as pleasant. Mention of good and bad may be a way to introduce this type of relativity into perception and to confirm that not all perceived things are pleasant or painful and hence give rise to pursuit or avoidance.[7] Those things good or bad *as such sorts of things*, that is, those that impact upon the animal as now good or bad for it, generate pleasant and painful perceptions. Not the perception of something merely as hot, cold, wet, or dry, but as good or bad in relation with the sensitive mean such that it causes pleasure or pain leads to pursuit or avoidance. When the animal is being pleased or pained it is pursuing or avoiding because it is sensing in actuality and its desiring is occurrent rather than merely dispositional (431a12). Avoidance and desire, Aristotle says, are the same, when according to actuality (καὶ ἡ φυγὴ δὲ καὶ ἡ ὄρεξις ταὐτό, ἡ κατ' ἐνέργειαν), inasmuch as the faculties from which they derive are the same. Desire, avoidance, and sense are not other capacities, though they differ in being (καὶ οὐχ ἕτερον τὸ ὀρεκτικὸν καὶ φευκτικόν, οὔτ' ἀλλήλων οὔτε τοῦ αἰσθητικοῦ· ἀλλὰ τὸ εἶναι ἄλλο, a13–14; cf. 424a24–26 and 425b26–27). A different application of the faculty of sense gives rise to desire and avoidance. The being of these faculties has to differ because not every occasion of sensing leads to pleasure or pain, desire, and pursuit or avoidance, but it is sensing that gives rise to these others. The purpose of telescoping all these in connection with perception is to prepare for a similar concatenation for practical thinking.

[5] The delight humans take in the senses even apart from practical projects is emphasized in *Metaphysics* i 1.980a21–27; surely other animals as well delight in the activity of perceiving itself. We speak of the curiosity and playfulness of some domestic animals. Fatigue at perceiving certain things leads an animal to go away or go to sleep.

[6] Though perceiving as an activity can itself be pleasant or painful, Aristotle and Plato are careful to avoid having all perceiving be either pleasant or painful. There is an intermediate condition between pleasure and pain (see, e.g., Plato *Republic* ix 583c–584a). Were this not the case, hedonism might be in a much stronger position. The Epicureans by contrast suppose that any time that we are not in pain we are having pleasure since there are kinetic and static pleasures (see, e.g., Diogenes Laertius x 131).

[7] Good and bad will clearly enter into the deliberation of animals with intellective capacities (see 431a14–16). In 431b10–12 Aristotle speaks of the true and the false absolutely rather than in relation to action and the good and the bad in relation to someone.

To be as inclusive as possible, Aristotle has been speaking of "pursuit" and "avoidance" in 431a9ff. rather than progressive animal motion. Even those animals that lack progressive motion, such as some shellfish, will have sense perception and therefore some sensible objects will be perceived as good or bad for the animal and pleasant and painful. Such animals pursue and avoid what they perceive, though without entering into progressive motion. They may pursue by taking something into their shell and avoid by closing the shell. They thus have voluntary animal motion if not progressive motion. That ἡ φυγή, which normally means flight, might better be translated in this context as avoidance is indicated in 431a12, where Aristotle says avoidance and desire are the same and then speaks in a13 of capacities of desire and avoidance. It appears that what he is doing here is suggesting that desire and avoidance can be used more widely or more narrowly. Desire widely is what causes pursuit or avoidance, but more narrowly desire might be taken as the faculty of pursuit as the opposite of the faculty of avoidance (cf. 432b16–17). Hence we should not construe ἡ φυγή merely as fleeing by running, swimming, or flying away. Having the desiderative capacity both the same as the capacity for avoidance but also opposed to it as pursuit to avoidance, while linking both these to the sensitive capacity (431a12–14), gives the most comprehensive account of voluntary animal motion. This prefigures the account in iii 9–11 of progressive animal motion.

Sense gives rise to pleasure and pain and pursuit and avoidance when perceiving certain of its objects as good or bad. There is here a tight chain. For the thinking soul *phantasmata* take the place of *aisthemata*, and whenever it affirms or denies good or bad, it avoids or pursues (τῇ δὲ διανοητικῇ ψυχῇ τὰ φαντάσματα οἷον αἰσθήματα ὑπάρχει, ὅταν δὲ ἀγαθὸν ἢ κακὸν φήσῃ ἢ ἀποφήσῃ, φεύγει ἢ διώκει, 431a14–16). The beast may feel pleasure or pain while sense-perceiving, and possibly in conjunction with remembering and anticipating as well, and this can immediately result in pursuit or avoidance; thinking beings can surely be provoked by *phantasmata* to affirm or deny things as good or bad so that they pursue or avoid them (a15–16). *Aisthemata* are the contents of sense-perceiving presently occurring, and if there are beasts with no memory or *phantasia*, these may be exclusively what stimulates pursuit or avoidance. Presentations made by *phantasmata* that do not have to be so connected with immediate sense-perceiving can awaken desires in thinking beings or beasts with memory. Aristotle remarks, "this is why the soul never thinks without a *phantasma*" (διὸ οὐδέποτε νοεῖ ἄνευ φαντάσματος ἡ ψυχή, a16–17). While this could be construed to cover all thinking generally, in context Aristotle speaks especially of practical thinking. Such thinking never takes place without a *phantasma* to stimulate and focus thought and desire.[8]

Why and how does Aristotle suppose that he has established the necessity of the *phantasma* for practical thinking? The fairly explicit argument is that as sense perception directed at practical action links perception, desire, and pursuit-avoidance, so *phantasmata*, practical thought, desire, and action are unified for humans. Perhaps also he has been assuming that pursuit and avoidance relate to particular

[8] Most narrowly, if *noein* can be *phantasia* itself (see 427b27–29), Aristotle might only be saying that soul never engages in *phantasia* without a *phantasma* (cf. 428a1–2).

things, whether enjoined by sense perception or thought. This is implicit in the talk of perceiving in actuality, pleasure or pain, and pursuing or avoiding. The beast pursues or avoids some particular item with which it is confronted. The practically minded being also will pursue or avoid some particular. This may also explain why *phantasmata* are needed. These either present some particular or some token of the type of entity desired or avoided. Knowledge is of universals, but voluntary animal motion must be directed ultimately at particulars or states of affairs involving particulars, either by sense perception or by *phantasmata*. Aristotle has introduced *phantasmata* parallel to *aisthemata* (431a14–15). Perhaps *noemata* might have been expected (see 430a28, 431b7, 432a12–14), but these would not so definitely put thought in relation to particulars. The term *aisthemata* appears only in 431a15 and 432a9. In *Metaphysics* 1010b32–33 the *aisthema* is said to be an affection of the perceiver, that is, it is the "material" for *aisthesis*, as the *noemata* were said to be the constituents of thought (in 430a27–28). If *phantasia* is motion arising from perception according to actuality (429a1–2), *aisthemata* seem to be what become *phantasmata*. *Phantasmata* serve perfectly to lead thinking beings to pursue or avoid.

Why *phantasmata* must enter into voluntary motion, in fact even of the beasts, is that desire requires some anticipation of a state of affairs: the animal has to envision itself in some as yet nonexistent relationship with the object of its desire. Moreover, many animals are capable of pursuing or avoiding things at some distance so that the pursuit or avoidance takes a significant amount of time. Pursuing or avoiding things at a distance requires some retention throughout the motion, and *phantasmata* are what is retained from sense. Hence if the pursuer blinks, or loses the scent or the prey hides, the pursuit may continue. Similarly avoidance may last for some time. For thinking beings all this applies as well, and any sort of weighing of possibilities or deliberation regarding the value of projects is explicable in terms of juggling *phantasmata*.[9] In humans thought provoked by and sustained by *phantasmata* may stimulate desire though the objects of desire are not presently being perceived at all. These objects for humans may be at a vast distance and require great lengths of time for realization. Since *phantasmata* can present particulars or tokens of some type, desire and deliberation need not be restricted to what is immediately present or to any definite particular.

Aristotle compares the sequence of cognition, desire, and pursuit or avoidance to the sequence involved in sense perception:

Just as the air made the eye jelly such a sort, and it another, and the hearing similarly, the ultimate thing [acted on] is one, and a single mean, but its being is manifold. ὥσπερ δὲ

[9] McGinn 1989, 186 suggests how conducive internal images are for conceiving possibilities of action: "recent experimental work on image-dependent tasks strongly encourages the idea that images are internal models on which experimental manipulations are performed by the subject (or some subpersonal system within him)" and in n23 (referring to Craik 1967), "there are psychological processes that involve the manipulation of analogue structures, where this manipulation is itself analogous to actually manipulating the imaged object; this is, indeed, precisely his notion of internal experiments performed on models in the head." This fits quite nicely with 431b7–8.

ὁ ἀὴρ τὴν κόρην τοιανδὶ ἐποίησεν, αὐτὴ δ᾽ ἕτερον, καὶ ἡ ἀκοὴ ὡσαύτως, τὸ δὲ ἔσχατον ἕν, καὶ μία μεσότης, τὸ δ᾽ εἶναι αὐτῇ πλείω. (431a17–20)[10]

Starting from the medium rather than the sensible object – probably because where practical intellect and *phantasmata* are in play no sensible object need be – the action of air upon the eye and that upon something further, and similarly for hearing, all leading to a single sensitive mean standing in different relations to the different senses resembles what happens in voluntary animal motion. Air can be viewed as the medium for each of the distance senses. That the medium, the air, acts upon the sense organ so that it is "made such a sort" (τοιανδὶ ἐποίησεν) indicates that there is some sort of qualitative change, even if of a quite unusual kind, undergone by the sense apparatus. The typical sequence of sense perception, the way the sense apparatus passes along the action of the sensible object and it all results just in perceiving, is intended to represent the way there can be a sequence of cognition-desire-pursuit or avoidance that can be telescoped into the resulting voluntary animal motion. The sequence in sense leads to the central sense that is a single mean composed of the means of the five senses and thereby capable of discriminating all the sensible differences. Thus the common sense is one mean but its being must be more than one to allow for perceiving the different sorts of sensible objects. Practical thought similarly involves a series of operations until voluntary motion eventuates. As Aristotle refers here to the five particular senses each contributing to the single ultimate sense faculty and mean, perhaps practical and theoretical mind differ like the several senses, yet they pertain to a single faculty of mind. If mind is a unified capacity, sometimes being theoretical and sometimes practical, then the requirement for *phantasmata* for practical intellect supports analogous use in theoretical intellect and all intellect. This argumentation aims to secure the position of *phantasia* in initiating all thinking, practical and theoretical. There are two primary reasons to liken mind's initiation of voluntary motion to the sequence of sense perception leading to the central sense: (1) to show that such sequences can be unified through their telescoping in their result and (2) to suggest that much as the five senses are subfaculties of a central sense faculty, so practical intellect and other sorts of intellect are subfaculties of the general capacity of mind. Point (1) helps the case that cognition and affectivity unite that has been the emphasis of 431a8–20, while point (2) is crucial for giving *phantasmata* a place in all thinking. If point (1) is further emphasized, that perception is a unity, thinking as engaged in by humans will also be a unity. The senses join in a central sense that is also the source of all *phantasmata* that enter into episodes of thinking.

Further attention to the unity of sense develops the theme of the unity of the various types of mind, both of the various subfaculties of mind and the linking of *phantasmata* with thinking and whatever derives from the thinking. The need for a central faculty to discriminate the sensible objects of the particular senses was

[10] This clause completes the sentence that extends from 431a14 to 431a20, as punctuated along the lines of Hicks 1907 and Jannone 1966. Ross 1955 and 1961 instead punctuates such that 431a17 begins a new sentence that is incomplete with a gap in the text. The interpretation offered should undermine Ross's case.

treated in iii 2.426b8–427a16; Aristotle now has more to say about this. Attention to objects of different senses calls for a unification of sense in a central sense. Sweet and white were his main examples in iii 2, but he here uses sweet and hot as the sensible objects discriminated. Immediately earlier in 431a17–19 he referred to two of the distance senses, sight and hearing, where the role of medium is more obvious; sweet and hot pertain to taste and touch, the contact senses. The contact sensibles of touch and taste might be closer together than contact and distance sensibles, and he now wishes to stress the unity of the discriminating sense. The elaboration upon the unity of sense aims to help with the unity of mind. The passage on the central sense power begins:

> What it is by which it discriminates that sweet and hot differ has been said before, but now one also ought to speak about it; for it is a kind of unity, and thus indeed it is the boundary limit. And these, being one by analogy and in number, it is with respect to each of these [sensible objects] as those are with respect to each other; for what does it differ to consider how it discriminates the non-heterogeneous [sensibles] or the contraries [in the same genus], e.g., white and black? τίνι δ' ἐπικρίνει τί διαφέρει γλυκὺ καὶ θερμόν, εἴρηται μὲν καὶ πρότερον, λεκτέον δὲ καὶ νῦν· ἔστι γὰρ ἕν τι, οὕτω δὲ καὶ ὁ ὅρος. καὶ ταῦτα, ἓν τῷ ἀνάλογον καὶ τῷ ἀριθμῷ ὄν, ἔχει πρὸς ἑκάτερον, ὡς ἐκεῖνα πρὸς ἄλληλα· τί γὰρ διαφέρει τὸ διαπορεῖν πῶς τὰ μὴ ὁμογενῆ κρίνει ἢ τὰ ἐναντία, οἷον λευκὸν καὶ μέλαν; (431a20–25)

The central faculty of sense is one (ἕν τι) like a limit or boundary (ὅρος, a21–22). An instance of a limiting boundary is a point, that, as indicated in 427a9–11, can serve as the limit of various lengths so that the point is one and more than one. This allows sense to be a single capacity with many subcapacities united within it. For discriminating sensible objects, not only must the sense that does the discriminating be somehow one but also the sensible objects that are discriminated, such as sweet and hot, should somehow join as one in order to be distinguished. These might be one by analogy, as sweet is to taste so hot is to touch, and by being in something one in number as when sweet and hot happen to belong to the same thing, such as a cake (431a22–23; see *Meta.* 1015b16–36 on accidental unity). The sense relates to each of the sensibles as these relate to each other (431a23–24). By this Aristotle may mean that as what is sweet is sweet compared to the hot and what is hot is hot compared to the sweet, these are, respectively, sweet and hot compared to the sense. The case works similarly for white and black: as each is to the other, so each is to the sense.[11] He emphasizes that sense is one in all its discriminations. The case of discriminating nonhomogeneous sensible objects of different senses, now usefully discrimination of objects of touch and taste, need not differ greatly from discriminating contrary sensible objects of the same sense, such as white and black (a24–25). If sense must be a unity to discriminate the sensible objects of different senses, it is a unity even to discriminate white and black belonging to the same sense. Hence sense generally is a unity for any of its discriminations, and so presumably mind too must be a unity to makes its various discriminations.

[11] The difficulties in this whole section are helpfully elucidated in Hicks 1907, 531ff. Yet Hicks surprisingly says regarding this section 431a17–b1 that "nothing is added to the explanation before given [in 426b12–427a14], nor is it easy to see why it should be summarised here" (p. 531).

Aristotle sets out the analogy involved in discriminating sensibles,

Let it be as *A*, the white, is with respect to *B*, the black, *C* is with respect to *D* as those are with respect to each other; so that also *alternando* [i.e., *A* is to *C* as *B* is to *D*]. If then *CD* belong in one thing, their case will be just as also *AB*, they are the same and one, but their being is not the same, and that similarly. The same argument is the case also if *A* is the sweet and *B* the white. ἔστω δὴ ὡς τὸ *A* τὸ λευκὸν πρὸς τὸ *B* τὸ μέλαν, τὸ *Γ* πρὸς τὸ *Δ* ὡς ἐκεῖνα πρὸς ἄλληλα· ὥστε καὶ ἐναλλάξ. εἰ δὴ τὰ *ΓΔ* ἑνὶ εἴη ὑπάρχοντα, οὕτως ἔξει ὥσπερ καὶ τὰ *AB*, τὸ αὐτὸ μὲν καὶ ἕν, τὸ δ' εἶναι οὐ τὸ αὐτό, κἀκεῖνο ὁμοίως. ὁ δ' αὐτὸς λόγος καὶ εἰ τὸ μὲν *A* τὸ γλυκὺ εἴη, τὸ δὲ *B* τὸ λευκόν. (431a25–b1)

The terms *A* and *B* are announced to represent, respectively, white and black, that is, contraries belonging to the same genus of sensible objects. What *C* and *D* stand for is not stated, but to be in proportion they should be some comparable sorts of sensible contraries, such as sweet and bitter or hot and cold. We readily accept that white is to black as sweet is to bitter. But then *alternando* we have that *A* is to *C* as *B* is to *D*, or white is to sweet as black is to bitter. Now if bitter and sweet can belong to one thing, and white and black can belong to one thing, though of course their being is different, we may suppose that white and sweet or black and bitter can belong to one thing. That these can belong to some one thing is the purpose of mentioning the *alternando* analogy. The obscure phrase "and that similarly" (431a29) may refer to the proportion that results from viewing the analogy *alternando*: the terms white and sweet might belong to some one thing (or might it possibly refer to the thinking soul of a14–15 with which the discussion began?). Thus Aristotle shows that a single sense faculty, a central sense, is needed for all the discriminations of sense, whether these are sensible objects belonging to the same genus or they are nonhomogeneous. Surely the same result would follow if he began with *A* as sweet and *B* as white. Then, presumably, *C* and *D* could be bitter and black, respectively, and *alternando* he gets the reverse of the previous case. Thus looking at the way the sensible objects must be with respect to each other tends to confirm that the sense will be with respect to them in the same way. While this is about the discrimination by sense, it is meant to apply to the discrimination by mind. Just as what is sensible arising through the five particular senses must be unified, so mind must be unified. As the senses lead into a central sense, *phantasmata* lead into thinking. All sense discriminations have to do with the unification of sense, and as *phantasmata* enter into practical thinking, they enter into play in all the types of thinking. For humans there is always the concatenation in thinking.

431b2–16 Aristotle proceeds immediately to proclaim that the power of mind thinks the forms in the *phantasmata* (431b2). This connects well with what went just before if the discussion of sense intends to argue that mind has to be one just as sense is one to make its discriminations. Mind deals with intelligible forms that it is provoked to think by *phantasmata*. It does so most obviously in practical thinking, and since mind is one as sense is one, in the rest of thinking as well. He says,

Now the forms the power of mind thinks in the *phantasmata* (τὰ μὲν οὖν εἴδη τὸ νοητικὸν ἐν τοῖς φαντάσμασι νοεῖ), and as in those cases [i.e., regarding sense] it is determined by it

what is pursuable and avoidable, even outside of sense, when it [mind] would be engaged with *phantasmata*, it is moved (κινεῖται); for instance, perceiving the beacon that is fire, seeing it moving it recognizes by the common (τῇ κοινῇ) [sense] that it is the enemy. Then by the *phantasmata* in the soul or by thoughts (νοήμασιν) just as if seeing it calculates and deliberates the future things in light of present things; and whenever it says as there pleasant or painful, here it flees or pursues, and generally in action. (ἐν πράξει, 431b2–10)[12]

This passage emphasizes the way mind's use of *phantasmata* parallels sense's usage of *aisthemata* to give rise to pleasure and pain and desire and pursuit or avoidance.[13] Seeing a beacon fire that is in motion, one may recognize that the enemy approaches and take appropriate action.[14] Even in this case of identifying the signal by perception, thought may join with the sense perception to cause action. Memory, *phantasia*, and calculation can enter into play as one sees the beacon and determines what to do. But even without the immediate sense perception of seeing a fiery beacon in motion, *phantasmata* can initiate thinking and serve it throughout the deliberative process. We frequently deliberate about courses of action having little relation to what we immediately perceive. Calculating the future, whether in regard to what is presently perceived or what is presented by *phantasmata*, will require reliance upon *phantasia* of what might be in the future. That dealing with the future is a calculation based on the present (and also the past) is perhaps suggested to Aristotle by Plato *Theaetetus* 186a9–b1 and *Republic* 516c–d. *Phantasmata* serve perfectly to allow the mind to foresee possible courses of action and to juggle the various possibilities in its deliberations. *Phantasmata* initiate practical thinking, facilitate its calculations, and allow it connection with particulars. Aristotle also mentions *noemata* in connection with *phantasmata* since in our already occurrent practical thinking mind puts together such thoughts with the images (cf. 430a27–28). If *phantasmata* tend to present particulars, practical thinking must also deal with universals, for example, that a person should be just.

Confrontation with *phantasmata* parallels seeing (431b7). When seeing occurs visible objects are moving the sense through the medium (a17–18); for thinking the

[12] Many interpreters do not comprehend that iii 2 argues that *all* sense perception takes place by a common sense; that the five senses are subfaculties of this faculty. We can say *either* that we perceive by vision, by hearing, and so on, *or* that we perceive by the sense faculty, which means the central power of sense. Hence in 431b5 the τῇ κοινῇ of the manuscripts should be retained and there is no need to rearrange the wording in the following line. Aristotle can be saying either that it is by the common sense faculty that we perceive along with sight that the beacon fire is in motion or that by this common sense we recognize that it is the enemy. Hence Hicks 1907, 539 utterly misleads by urging, "It is by sight alone, τῇ ὄψει, and not by the common meeting place of all the five senses, that the beacon in motion is perceived in the case before us."

[13] The disanalogy is that sense receives sensible forms through contact immediately or mediately with things whereas mind is only provoked by the *phantasmata* to think intelligible forms. The *phantasmata* are not as such intelligible. Mind "looks" at the *phantasmata* without thinking of them much as we may look at mathematical diagrams but think the intelligible entities that are represented.

[14] A stationary torch or beacon fire was the conventional military sign of friendly forces, whereas a beacon in motion signals the enemy (see Thucydides ii 94, iii 22, 80, viii 102). Might τῇ κοινῇ in 431b5, discussed earlier, refer not just to the common sense that might perceive the signal but also to the signal's being perceived in common by the whole army?

phantasmata induce the intelligible objects to move us to thinking. Whereas what moves us in sensing is the sensible object through the mediate action of the medium, what moves us in thinking is the intellible object through *phantasmata* acting rather as the medium. Speaking of the intellective power as thinking the forms *in* the *phantasmata* (b2) stresses the way *phantasmata* are intermediaries while the intelligible forms are the real moving cause of thought. The plural *forms* and *phantasmata* are used, "the forms the power of mind thinks in the *phantasmata*," perhaps because in deliberating about a course of action many considerations and *phantasmata* will be in play. Also, the plural helps prevent us from supposing that there need be too rigid a linkage of the *phantasma* and what we think. We think the forms *in* the *phantasmata* just because of some intermediary connection that stimulates us to think, as when picturing a lyre we think of a person. *Phantasmata* should be psychophysical in light of the definition of *phantasia* in iii 3.429a1–2 as motion arising from perception according to actuality. Recall that in 430a6–7 Aristotle said that in those things having matter each of the intelligible objects is in potentiality. As straddling the psychical and material, the *phantasmata* present things as ready to be thought. Since *phantasmata* can present things not merely as particulars but as typifications, they may seem especially ready for thought. Yet, as indicated, thinking is not rigidly restricted to what is depicted in the *phantasmata*. And in this practical context Aristotle will not restrict our thinking merely to the intelligible forms even if they are the essential objects of mind since we must somehow be able to think and deliberate about particulars.

That action and practical thinking depend upon *phantasmata* seems clear enough. The words "and generally in action" (431b10) probably ensure that all practical thinking, even that in the productive arts, involves *phantasmata*. The way Aristotle proceeds to generalize what he has said about practical mind confirms that his intention has been to argue that all mind depends upon *phantasmata*. He states, "And that which is unrelated to action, the true and the false, is in the same genus as the good and bad; but they differ by being absolutely or to something" (καὶ τὸ ἄνευ δὲ πράξεως, τὸ ἀληθὲς καὶ τὸ ψεῦδος, ἐν τῷ αὐτῷ γένει ἐστὶ τῷ ἀγαθῷ καὶ κακῷ· ἀλλὰ τῷ γε ἁπλῶς διαφέρει καὶ τινί, b10–12). Thinking apart from any concern with action may deal with the true and the false, as practical thinking deals with the good and the bad. The true and the false and the good and the bad are in the same genus or class inasmuch as they are the primary matters for thought and even the very goals (or what is to be avoided) of the different sorts of thought. The true and the false pertain to things simply or absolutely (ἁπλῶς) as what they are, that is, *A is truly B* or it *is false* that *A* is *B*, while the good and the bad are such in relation to the kind of thing for which they are the good and the bad (τινί), for example, *A* is good for *B* but bad for *C*. That true and false are somehow in the same class with good and bad secures the role of *phantasmata* in theoretical intellect as in practical intellect. As sense pertains to discriminations of white and black as well as sweet and hot (see 431a20–b2), so mind discriminates true and false as well as good and bad. The unification in sense is much like that in mind. *Phantasmata* provoke and enter into practical and theoretical thinking. Surely thinking of what is always true should not be bound to present sense perception; *phantasmata* helpfully, then, set

theoretical mind to thinking. Sense involves the unified chain leading to the central sense, and thinking is the unity including *phantasma*.

Having dealt with practical mind and theoretical mind generally, Aristotle reflects briefly on the case with mathematics to secure the role of *phantasmata* in all mind (431b12–16). He often pays attention to mathematical thought because the subject matter is unusual and the background of Platonism, which overemphasizes mathematics (see, e.g., *Meta*. 992a32–33), making it important for him to demonstrate that his own conception of mathematical entities suffices. In iii 6.430b14–24 mathematical entities enter as a peculiar class of intelligible objects. They are not separate from sensible things but thought by abstraction, that is, by ignoring all the sensible features other than quantity. While the snub is concavity in a nose and can be thought about as snub, geometry instead thinks the concavity apart from the flesh, not as constituting a snub nose, and as if separate (431b12–16). Mathematical mind concerns itself with concavity either as such or enmattered in intelligible matter rather than in flesh. In this way it can think the mathematical entities precisely. Without emphasizing the point, Aristotle indicates an obvious role for *phantasmata*, previously highlighted by Plato (see *Republic* 510b–511a). The mathematician treats perceptible things as images of the mathematical entities that are the concern of that science. Whether the geometer looks at a snub nose or has one in mind by *phantasia*, everything irrelevant about the particular nose or token of the type can be ignored, leaving concavity or concavity in intelligible matter. *Phantasmata* thus play an important role for mathematical mind as well as the other sorts of mind.

431b16–19 The discussion ends much as it began asserting that mind according to actuality is the matters (πράγματα) that it thinks (431b16–17; cf. 431a1–2). Only now he says that this is generally the case (ὅλως), meaning that it is intended to apply to the various sorts of mind considered, such as practical, theoretical, and mathematical, and he uses *pragmata* in the plural rather than as before in the singular to emphasize that mind's knowledge may extend to all matters. At this stage of his argument this confirms the whole account of mind as connecting with *phantasmata*. Mind is its object whether this is mind presently thinking or mind according to actuality as dispositional knowledge. Because the knowledgeable mind has the intelligible objects somehow within it, and this extends to all the possible objects of thought, and yet these need not be giving rise to thinking in actuality, something must help set the mind to thinking. What initiates thinking analogous to the initiating of sense-perceiving has been clarified, the *phantasmata*. These in conjunction with knowledge cause the intelligible objects to activate thinking. This applies to practical, theoretical, and mathematical thinking, and so to mind generally.

Aristotle mentions a further issue to be left until later deriving from what has been said, whether mind that is not separate from magnitude can think separate things or not (431b17–19). This question arises from the reflections upon *phantasmata* initiating thinking in embodied beings such as humans, and the comments about thinking mathematical entities that are not separate as if separate (b15–16) and speaking of mind as the same as things (τὰ πράγματα, b17). Clearly many things

that have essences are not separate from matter. *Pragmata* may mean enmattered things (see 432a3–5), and therefore we have *phantasmata* presenting these as enmattered things. Perceiving or imagining a horse, for example, or an attribute of a horse, we can think the essence of horse or the essence of its attribute. Or we can gain from the horse's features, by abstraction, mathematical entities. What analogously can get humans to think those things that just are their essence, for example, the divine beings simply separate from matter? What *phantasmata*, since *phantasia* results from sense, can give rise to thinking of such imperceptible beings? (And more generally if God is activity rather than a form, but we think by way of intelligible forms [see 429a13–18 and iii 8], how can we at all think of God?) Questions along these these lines are not pressing for the *De anima*, however, so Aristotle may leave them aside, yet since it is important that *phantasmata* play a role in *all* thinking, he must at least mention the issue here about *phantasmata* pertaining to imperceptible objects. Presumably the entire course of reasoning of the *Metaphysics* directed toward divine being explains what can initiate our thinking about imperceptible substances. Our mind can move from understanding sensible substance to supersensible substance. He alludes to the topic again in 432a3–5 and a12–14 in the next chapter because it is relevant to the issue about whether mind has access to all intelligible things. He may also wish by its mention here to discredit the supposition that the *phantasmata* need in all cases be straightforward representations of what they lead us to think. About some things, such as the gods, no such representations may be possible at all. Our *phantasma* may have only a slight connection to what it gets us thinking about, and a connection about which we need not be aware. Involving *phantasmata* in initiating thinking permits thought the required flexibility while avoiding having mind subordinate to something below itself.

8

That Mind Can Think All Things

431b20–432a3 This chapter completes the account of mind, and in conjunction with consideration of sense so that it seems to finish up the treatment of the cognitive faculties.[1] Aristotle says that he draws together what has been said about *soul* rather than just mind (431b20–21). He apparently means the cognitive soul including both thought and sense. He gathers together the line of reflection about cognition, one of the marks of the soul, before he enters discussion of the other, the causing of progressive animal motion (on the two differences of soul, see 427a17–22 and 432a15–17). Thus he concludes the train of thought that began at the start of iii 3, where these two key differences of soul were stated. He also completes the reflection upon mind by returning to justify the primary assumption for the account of what mind is in iii 4, namely, the assumption that thought thinks *all* things. It is this assumption that enables him to conclude that mind is unmixed and separate. His return to the initial assumption of the investigation, if it can defend the assumption, sustains and completes the whole inquiry into mind.

The soul is claimed to be somehow all the beings (431b21). We may recall that many of Aristotle's predecessors explain cognition by making the soul out of the same principles as it cognizes (see 404b8ff.). Here he expands what he has said in 425b25–27, 426a15–17, 429b6–7, 430a3–5, a19–20, 431a1–2, and 431b17. Both sense and mind have been identified with their objects. Now Aristotle supports the claim by observing that *all* the beings (τὰ ὄντα) are either sensibles (αἰσθητά) or intelligibles (νοητά); developed mind, knowledge (ἐπιστήμη), is somehow the knowable things (τὰ ἐπιστητά) and sense (αἴσθησις) the sensibles (τὰ αἰσθητά, 431b21–23).[2]

[1] Hamlyn 1993, 149 instead complains, "This brief chapter has acquired a certain reputation as summing up Aristotle's views. On closer examination, however, it appears, like the previous chapter, rather scrappy and perhaps crude. Certainly it is too early in the book to sum up, since the treatment of movement is still to come. It is reasonable to have doubts about its authenticity, at any rate as a chapter in this book."

[2] Use of "knowledge" rather than "mind" confirms points made previously: that supposition (ὑπόληψις), like sense, is dispositional, and that the thinking under consideration by Aristotle is usually ὑπόληψις in actuality rather than that which leads to such a disposition. The switch from intelligible objects (*noeta*) to knowable things (*episteta*) helps the argument that mind thinks all things since we surely seem capable of thinking what is knowable.

The distinction of sensible and intelligible objects links with the argument in iii 1 that there can be but five senses and these have access to all sensible beings. Since it was there contended that we can perceive all the sensible objects, it remains to determine whether beings besides the sensible beings are all intelligible and knowable beings. If besides sensible beings there are only knowable beings, knowledge in all its varieties, especially the major division into practical, theoretical, and mathematical knowledge, covers all the knowable things, and then mind thinks all things. And if mind is what it cognizes, then it also cognizes itself. A troubling sort of skepticism would be that allowing realms of being to which mind lacks access, thus undermining the present account of mind and demanding cognitive faculties of soul beyond mind. Aristotle tries to close off such prospects.

He first seeks the way knowledge can be the knowable things and sense the sensible things (431b23–24). If the matters to be cognized can be in potentiality or in actuality, it is appropriate that the cognitive capacities correspond. Knowledge can be the knowable and sense the sensible because these capacities, as do their objects, divide into potentiality and actuality (b24–26).[3] The capacity in its dispositional potentiality corresponds to the object in potentiality and the usage of the capacity to the object in actuality. Since the sense power in potentiality is the disposition ready for the full actuality, *entelecheia* is used for the actuality, perhaps less ambiguous than *energeia* (cf. 429a28–29). To prevent any supposition that knowledge itself becomes further actualized, Aristotle clearly indicates that it is the *soul*'s power of sense and power of knowledge (τῆς δὲ ψυχῆς τὸ αἰσθητικὸν καὶ ἐπιστημονικόν) that are the sensible and knowable objects in potentiality, respectively (431b26–28).[4] Hence what enters into actuality is the part of the soul that has knowledge rather than knowledge itself. Linking the faculty of soul to the object as it is in potentiality makes plausible the claim that all beings are either sensibles or intelligibles. The cognitive faculty in actuality should be the same as the object being cognized. Even someone who has not perceived all things or thought all things is capable of perceiving or thinking all. And Aristotle's further clarification strengthens the case. The power of sense and power of knowledge are the potentiality of the *forms* (τὰ εἴδη) of things rather than the things themselves (*ta pragmata*, b28–29). It is not the stone that is in the soul, but its cognizable form (b29–432a1). The example of stone in the soul can apply to sense or knowledge. Whether it is proper, common, or accidental perception of the stone or practical or theoretical knowledge of the stone that is under consideration, sensible form or intelligible form rather than an enmattered stone itself is in the soul in potentiality or in actuality (cf. 410a10–11).

[3] For the objects here under consideration Aristotle turns from "beings" (τὰ ὄντα, 431b21–22), the widest possible designation including anything that is, to "things" (τὰ πράγματα, b25), perhaps in the sense of ordinary perceptible things. Whereas even imperceptible divine beings would fall within the beings, *pragmata* may extend only to composites of form and matter and their attributes (see 431b17 and esp. 432a3–4). A reason for Aristotle to make this switch is that the divine beings are never merely in potentiality as are the other objects of knowledge.

[4] Some manuscripts have ταὐτόν in 431b27 rather than ταῦτά. This little changes the interpretation. The lines then say that the sense power and knowledge power of soul are in potentiality *the same*, i.e., the same as their respective objects in potentiality.

This strengthens the possibility that all beings can be sensibles or intelligibles, and therefore all in the soul. These beings need only be in the soul in the mode in which things cognitively are in soul rather than as enmattered beings. And since only the forms need be in soul, the soul can gain access to the indefinitely many things in the world by way of a limited set of forms.

Since cognizable forms are in the soul, Aristotle says, "so that the result is the soul is just as the hand; for indeed the hand is an instrument of instruments, and mind is form of forms and sense form of sensibles" (ὥστε ἡ ψυχὴ ὥσπερ ἡ χείρ ἐστιν· καὶ γὰρ ἡ χεὶρ ὄργανόν ἐστιν ὀργάνων, ὁ νοῦς δὲ εἶδος εἰδῶν καὶ ἡ αἴσθησις εἶδος αἰσθητῶν, 432a1–3; cf. *De juv.* 469b1–4, *PA* 687a7–23). A faculty of soul, such as mind, is like the hand utilized by the soul. The hand is an instrument of instruments because it can take up many instruments, enabling them to be instruments. The hand is an instrument employed by the soul to utilize various further instruments to accomplish all sorts of tasks.[5] The hand reaches out to touch and grasp many things, while the soul through its cognitive faculties embraces the whole world of things. The power of sense and the power of knowledge are forms put to use by soul for cognizing intelligible and sensible things by way of their cognizable forms. These cognitive faculties are forms since each is a definite capacity receptive of the cognitive forms in its domain. By means of these powers put over cognizable forms the soul cognizes all the things that are there to be sensed and known. There to be sensed are sensible things, while knowable are the intelligible forms of things. Aristotle thus confirms his account of cognition as apprehension through forms without the matter and its accompanying claim that all beings are cognizable. He says, "the mind is form of forms and the sense form of sensibles" (432a2–3). The singular "form" refers to the cognitive faculty, while the plural "forms" is what the mind cognizes, as the sense cognizes the sensible objects.

If in the case of mind it is the very intelligible forms that are the objects of thought whereas the sense perceives sensible objects by means of the sensible forms, then we wonder about the way "form of forms" relates to "instrument of instruments." Probably we are to understand that the knowable objects are in the soul of the learned person in potentiality, that is, as first actuality or developed potentiality. When this knowledge is put to use, the universals in the soul enable the soul to think intelligible things in their forms. The intelligible things are not then generally thought as universals but as they might be in actuality. There is thus a way, intriguingly, that mind after all has an organ or instrument, but a *nonbodily* organ (cf. 429a24–27). The universal introduced into the soul by knowledge, much as the sensible form in the sense organ, serves as instrument for cognition. By means of our knowledge we think the beings that are knowable. Knowledge does not change

[5] Hicks 1907, 544–545 observes that the hand is an exceptional instrument inasmuch as it even serves in creating other instruments. Xenophon has Socrates in *Memorabilia* i 4.11 and 4.14 suggest that hands and intelligence are the two greatest gifts the gods have given humans. Aristotle himself had linked human intelligence to our having the finest sense of touch, and humans touch especially with the hands (421a18–26). Anaxagoras attributed human intelligence to our having hands, but for Aristotle these clearly are merely instruments of soul.

or itself enter into actuality, but *we* think by means of knowledge according to actuality. That the soul thus seems composed of instruments prepared to use all further instruments suggests that mind can think *all* things. All the necessary instruments become available to mind through knowledge and sense (and *phantasmata*) so that all can be thought.

Previously in 429a27–29 Aristotle expressed qualified approval of the Platonic view that the soul is a "place of forms" (τόπον εἰδῶν). He qualified by saying that this applies to its intellective faculty (ἡ νοητική), and it is only the place of forms in potentiality. There he was speaking of mind and wishing to keep it unmixed with body and what it knows. He has just said in 432a2–3 that "the mind is form of forms and the sense form of sensible objects." This formulation may clarify the instrumental role of the cognitive faculty. It puts emphasis upon mind and sense as somehow the same as what they cognize. Were he to mean, as previously in iii 4, the having of all the forms in potentiality as the knowing mind does or as the sense in good condition, these faculties can comprehend all things, as the hand ready to grasp all that is graspable. Or if as is more likely he means the "forms" to be the genuine objects for thinking mind, then the potentiality of these already in the knowledgeable soul is the instrument through which we can think these.

432a3–14 Aristotle still has to complete the case for mind's thinking all things and reconsider the role of *phantasia*. At the conclusion of the previous chapter Aristotle mentioned the difficulty about how thought initiated by *phantasmata* could attain to divine, separate beings (431b17–19). He now alludes to this difficulty by conspicuously ignoring it. He says,

> Since, as it seems, there is not anything separate besides perceptible magnitudes, in the sensible forms are the intelligible objects, both those being said in abstraction and so many as are states and affections of the sensible things. ἐπεὶ δὲ οὐδὲ πρᾶγμα οὐθὲν ἔστι παρὰ τὰ μεγέθη, ὡς δοκεῖ, τὰ αἰσθητὰ κεχωρισμένον, ἐν τοῖς εἴδεσι τοῖς αἰσθητοῖς τὰ νοητά ἐστι, τά τε ἐν ἀφαιρέσει λεγόμενα, καὶ ὅσα τῶν αἰσθητῶν ἕξεις καὶ πάθη. (432a3–6)

For Aristotle the intelligible things, apart from those divine things that are completely separate from matter and are their own essences (see 429b11–12), will all be in sensible substances. Even mathematical entities are somehow in sensible magnitudes. Sensible substances are "separate" (κεχωρισμένον) as existing independently and not being predicated of another substratum (see, e.g., *Meta.* 1017b23–24). But when he asserts that "as it seems" (ὡς δοκεῖ) there is nothing besides sensible magnitudes, he indicates that this is the way others see things, and he perhaps allows for separate, divine nonsensible substances. What is important for this discussion is that were there only sensible magnitudes, all of which are of course accessible to sense, it would be easy to conclude that mind thinks *all* things. The intelligible objects connected with sensible substances are either the essences of such substances – which those who deny anything besides sensible magnitudes probably also deny – or attributes of them. "States and affections" of the sensible things may be taken to cover whatever intelligibles pertain to the sensible magnitudes, so all the intelligibles are thinkable. The "states" (*hexeis*) will be more lasting attributes,

and "affections" (*pathe*) those that are more temporary. Even mathematical entities are the quantitative aspects of sensible substances considered apart from any other aspects, that is, by abstraction. All the intelligible forms thus seem to be in the sensible forms when these are taken apart from any matter. For example, vision perceives red and straight, and mind thinks redness and straightness. Since such intelligibles connect with sensible forms, mind should have access to all intelligible objects. Hence, without sense perception, nothing, that is, no mortal being, could learn or understand anything (432a7–8). All animals have sense perception, and this alone provides cognitive access to things. For those beings that have to develop knowledge to put mind into actuality, there is no access to intelligible things without sense perception.[6] This is Aristotle's basic "empiricism."

Though not presently discussed, and only alluded to, human theoretical understanding of gods must develop from first considering sensible substances and concluding from them the need for necessary and eternal beings. All human knowledge for Aristotle presupposes and derives from sense perception: there are but five senses, all of which humans possess, from which all the *aistheta* are discerned, and since all the *noeta* required for practical, theoretical, and mathematical knowledge can be generated from this sense experience, it is therefore compelling that humans can think all things.

Not only is sense perception requisite for development of mind, but also thinking is by means of *phantasmata* (432a8–9). If all the intelligibles are contained within the sensible forms (a4–5), either sensing or something akin to it must have close connection with thinking. Back in iii 3 *phantasia* was determined to be motion arising from perception according to actuality and in 431a14–15 *phantasmata* are like *aisthemata* for practical thinking, so if all intelligibles are in sensible forms, it seems either actual sensing or *phantasmata* are needed for thinking. Aristotle states, "And whenever it contemplates, it is necessary at the same time to contemplate a *phantasma*; for the *phantasmata* are just as *aisthemata*, except without matter" (ὅταν τε θεωρῇ, ἀνάγκη ἅμα φαντάσμά τι θεωρεῖν· τὰ γὰρ φαντάσματα ὥσπερ αἰσθήματά ἐστι, πλὴν ἄνευ ὕλης, 432a8–10). *Phantasmata* are like *aisthemata* except that they are "without matter." All "without matter" need mean here is that *phantasmata* are not restricted to present perceiving as are *aisthemata*. *Aisthemata* are the correlates to sense-perceiving in actuality. Their connection with matter is that the enmattered perceptible object is immediately involved in generating them in the sense organ. In the case of *phantasmata*, however, the sensible object need no longer be present at all. Both *phantasma* and *aisthema* are ambiguous between purely cognitive things and enmattered things. They may be forms in the soul through which awareness occurs, and they may be motions in bodily parts correlated with these. It nonetheless

[6] The ever-thinking gods may think the essence without sense-perceiving and learning. Hicks 1907, 546 indicates regarding μάθοι οὐδὲ ξυνίοι (learn nor understand) that "from *Eth. Nic.* 1143a11–18 it would appear that the special meaning of συνιέναι is to understand what is said to one, and that by means of knowledge which one already possesses, while from *Top*. IX. 3, 165b32 it appears that μανθάνειν itself might bear this meaning as well as the more obvious meaning of acquiring fresh knowledge. Thus under the disabilities imposed by the defect of a sense we can neither learn for ourselves nor be instructed by the conversation of a teacher."

serves Aristotle to say that *phantasmata* are without matter because they are not so linked to the direct presence of sensible objects acting upon the sense organs.

Phantasia and *phantasmata* are more appropriate than sense and *aisthemata* to initiate thinking because the *phantasmata* can be "without the matter" – that is, they can be present without perceiving at the same moment – and intelligibles as such are separate from matter. Even if sense-perceiving is going on while *phantasia* is in play, the *phantasma* as such, deriving from sense according to actuality, is not itself perceiving the sensible object but only doing something similar, presenting something like a sensible object. And because the item provoking the *phantasma* may not be in play, *phantasmata* may only present a token of a type and so need not be as particular as *aisthemata*. Since the *phantasmata* can be without presently perceiving, thought need not be restricted to what is immediately perceived. Moreover, because *phantasia* unlike sense is not a discriminative faculty, this removes further limits to thought. When we are contemplating some *phantasma* that is provoking us to further contemplation, there need not be any strict link of what the *phantasma* presents to what we are thinking. The picture before our minds may be of Simmias while we think of Cebes (Plato's *Phaedo* 73c–74a). Hence Aristotle only says that when we contemplate, that is, employ our minds, we must also contemplate some *phantasma*, without urging any strict isomorphism of their content. A loose connection supports mind's ability to think all things. That he can speak of contemplating (θεωρεῖν) a *phantasma* when mind contemplates (θεωρῇ) puts *phantasia* in close proximity with mind's operation and avoids having mind overseen by something lower than it.

That *phantasia* can be removed in content from what we primarily are thinking appears to occupy Aristotle when he argues that in no way can *phantasmata* be *noemata*,

> *Phantasia* is other than assertion and denial; for the true or false involves a weaving together of thoughts. Why will the primary thoughts differ from *phantasmata*? Or neither our other thoughts are *phantasmata*, though they are not without *phantasmata*. ἔστι δ' ἡ φαντασία ἕτερον φάσεως καὶ ἀποφάσεως· συμπλοκὴ γὰρ νοημάτων ἐστὶ τὸ ἀληθὲς ἢ ψεῦδος. τὰ δὲ πρῶτα νοήματα τί διοίσει τοῦ μὴ φαντάσματα εἶναι; ἢ οὐδὲ τἆλλα φαντάσματα, ἀλλ' οὐκ ἄνευ φαντασμάτων. (432a10–14)[7]

Being merely presentational rather than discriminative, *phantasia* is not true or false in the way judgments are (cf. 428a1–5 and a18–24). This seems to preclude such thoughts from being *phantasmata* and it allows for more flexibility of thought than would thinking based directly upon sense perception. *Phantasmata* are always somewhat removed from sense perception and less like judgment than sense. Thoughts that can be put together in various ways in assertions and denials, true and false, must get away from even the way that the *phantasmata* are (see 428b2–4). When *phantasmata* themselves are joined in constructive imagination,

[7] Jannone 1966 in 432a13 has ταῦτα that appears in his favored manuscript rather than τἆλλα of all the other manuscripts. Either reading can give the same sense, but use of "the others," by referring to either the first thoughts or to the assertions and denials, helps make an argument from division: if synthesized thoughts are not *phantasmata*, neither are their components.

the presentation might be of something merely imaginary or somehow counterfactual, but it is not true or false as judgments are, and thought need not have just this in mind. In no way can *phantasmata* as merely presentational be judgments or the same in kind as them.

Not only are thoughts as judgments not *phantasmata*, or at all the same in kind as them, but even the primary thought contents, that is, the thoughts of simple essences or any simple thoughts without synthesis, are not *phantasmata* (432a12–14). If judgments, such as "This tree is green," are not *phantasmata*, yet they are syntheses of *noemata*, as just argued, then should we suppose that they have *phantasmata* as their components? Aristotle's argument seems simply that if compound thoughts are not *phantasmata*, then they cannot be made of *phantasmata*. Here this is not a fallacy of division because thought must be composed of thoughts. Otherwise different faculties might be involved with simple intelligibles and complex thoughts so that we could not discriminate all that can be thought and think all things. While *phantasmata* are "without the matter" (a10) with regard to the direct presence of the sensible object, they are more linked with bodily motions and with matter than is mind. They are much more like *aisthemata*. Hence they could not be *noemata* that have no bodily involvement whatsoever. Knowable objects and indivisible essences are hardly like divisible magnitudes presented by *phantasmata*. It seems unlikely that we merely "think in pictures" of the simplest beings that are without matter or of any of the things that enter our thought. Were all thoughts of simple things just *phantasmata*, all our thought might seem little more than picture thinking, or the account of the origination of thinking by *phantasmata* becomes circular when *phantasmata* are themselves thoughts.[8] If even the simple thoughts are not *phantasmata*, then mind in spite of requiring *phantasmata* to start it thinking, and even to think its simplest thoughts, will not be unduly restricted by *phantasmata* and can quite reasonably think all things. If thinking even the simplest thoughts, presumably including thinking of supersensible beings, requires *phantasia* in humans, then all beings are thinkable by us, and the issue in iii 7.431b17–19 is sufficiently settled. Aristotle seems to have secured his whole account of mind by ensuring that by means of it we can think all things and that starting thinking does not jeopardize mind as separate.

[8] Descartes's *Meditations* vi distinguishes thought and imagination with the argument that the image we have of a 1,000-sided regular polygon differs not at all from that of one of 10,000 sides, yet the thoughts have to differ. This interestingly resists the standard empiricist claim that images are always particular. It also pertains to the freedom of thought from images. It can be objected to images as analogues of things that these could not possibly be thought inasmuch as thought involves *logos* and is like sentences or discourse, rather than a picture. McGinn 1989, 182–184, wishing to uphold a "mental modelling theory" rather than a "sentential theory" of mental apparatus, explains the way "indexing" propositions to the model, as a thermometer is indexed for temperatures, would explain the way mental models could give rise to thoughts in the form of sentences. Unlike Aristotle, however, who has the *phantasmata*, or cognitive models, accompanying and provoking thought, McGinn has them as the very machinery underlying thought as its basis. For McGinn they are the *noemata*.

9

There Is a Capacity for Progressive Motion

Aristotle might have spoken of the faculty of soul that moves an animal in respect to its location after he dealt with sense perception, and in ii 3 it was seen that progressive motion extends to more animals than does intellection (consider the order of powers of soul in 414a31–32). But presumably since humans also have thought entering into their desire and locomotion, he has treated all the cognitive capacities before taking up those that cause voluntary motion. It would be clumsy to deal early with the voluntary motion of animals only to have to return to human voluntary motion later after the treatment of mind. And to treat *phantasia* first would also seem important, if this is central to the life of many animals (415a11) and even human practical thinking depends upon it (431a14–17, b6–10). *Phantasia*, it may be recalled, only became a topic in iii 3 in the midst of distinguishing thought from sense. Hence, the position in the text of this inquiry into capacity for progressive motion seems appropriate. Treatment of the cognitive capacities of ensouled beings is thus surrounded by inquiry into capacities for motion, that is, the nutritive capacity and the faculty for progressive motion. Moreover, this locomotive faculty may straddle faculties already considered more than is the case with the others considered. This allows Aristotle to raise some issues that lead well into the concluding chapters of the book.

432a15–b7 In book i (403b25–27) he said that his predecessors especially distinguish ensouled from unensouled things by motion and perception, and at the start of the investigation of thought in iii 3 (427a17–19) he returned to the point of what distinguishes soul. Now he announces that the soul of *animals* (ἡ τῶν ζώων) is distinguished by two powers (δυνάμεις): by critical power (κριτικῷ), the function of thought (διανοίας ἔργον) and sense perception, and by the power of causing motion according to place (τὴν κατὰ τόπον κίνησιν, 432a15–17). All ensouled beings have some motion, at least the motion due to nutrition, but animals alone have a critical faculty and most have a capacity for progressive motion. Listing the critical faculties as thought and sense (διάνοια, αἴσθησις) confirms that these two main cognitive powers are discriminative; that *phantasia* is not listed accords with its not being a critical faculty. Having completed his account of the discriminative cognitive capacities of

soul, which he lists as sense and mind (αἰσθήσεως καὶ νοῦ), he must now consider the second mark of animal soul, the locomotive power (a17–19). The switch from the critical function of *dianoia* in a16 to *nous* in a18 may be explained by the extensiveness of *dianoia* or by the focus in the previous chapters on *nous*, but it is more obvious to speak of *dianoia*, possibly the discursive aspect of intellect, as the clear critical power (see the conjunction of *nous* and *dianoia* in 433a1–2, where *dianoia* seems more discursively argumentative).

Aristotle will consider *what is* this power of locomotion (τί ποτέ ἐστι τῆς ψυχῆς), but this presupposes initial determination whether it is some part of the soul separate from the rest in magnitude or in account (χωριστὸν ὂν μεγέθει ἢ λόγῳ), or whether it is somehow the entire soul (πᾶσα ἡ ψυχή, 432a19–20; cf. 429a11–12). This amounts to determining *if* or *that* there is some capacity of progressive motion to investigate. Is the locomotive capacity a distinct part of soul differing in location, as the different senses seem to have different locations, or differing just in account through having a different function (cf. 433b23–25 on how the bones together at a joint are not separate in magnitude but only in account)? Perhaps the entire soul alternative means all the functions so far considered, or at least the cognitive faculties if not nutrition, enter into and account for locomotive functioning. If instead there is some part devoted to animal motion, is this some peculiar part besides those usually named and already treated, or is it some one of these employed in a new capacity (432a20–22)? If what moves the animal is nothing more than a power or powers already treated, then there may be little need for a new investigation of what the locomotive capacity is. Hence this initial discussion is inquiry *if there is* a particular faculty of soul for locomotion.[1] Aristotle need not dwell upon what it means for a faculty of soul to be separate in magnitude or in account, a topic that may quickly enter into metaphysical issues, but by mentioning these possibilities he indicates that a rather searching exploration is required for finding the locomotive faculty.

This chapter confronts the difficulties with supposing that there is a special locomotive faculty. First there is the issue whether division of soul into parts has plausibility. This opens the question of the very possibility of a comprehensive analysis of soul and hence scientific treatment of soul. Then he eliminates from consideration as the locomotive power the principal faculties so far investigated, nutritive, sensitive, and intellective. Consequently, there must be a locomotive faculty other than these, and the way is cleared for determining in the subsequent chapter what this locomotive capacity is.

The question whether the locomotive power of soul is a distinct faculty takes Aristotle to the general issue of how soul should be divided into capacities. This topic arose already in the *De anima* (e.g., 402b1–10, 411a24–b30, 413b11–414a3),

[1] This may seem necessary because 414b1–19 and 431a8–14 suggest that the locomotive power could be simply a special application of the sense power. Richardson 1995, 383 says with regard to locomotive capacity of soul, "if the functional co-operation extends as far as it does, for example, in the case of a human's deliberate movement, in which the object of desire is the starting-point of practical *nous* (433a15–16; cf. *MA*, 700b23–4), then the postulated distinction among capacities threatens to disappear."

but it was not so pressing previously because there was not so much question whether a distinct faculty was needed and available to explain some function. Yet in the case of locomotion there is much uncertainty about this, that is, whether a distinct faculty causes progressive motion or perhaps several faculties jointly do so, and hence he takes up the issue. Also, Plato's division of the parts of the soul may seem more pertinent now than before. Aristotle asserts, "There is perplexity (ἀπορίαν) straightaway both how one ought to say there are parts of the soul and how many" (432a22–23). It might be supposed that there is an easy resolution of the perplexity, but there is not. He immediately points out that in some way there "appear unlimitedly many" (ἄπειρα φαίνεται) parts of soul or ways of dividing the soul (432a24). This is no casual comment. Since the operations of ensouled beings seem limitless, the division into parts of soul pertaining to these operations could be quite varied. Consider the number of emotions that are possible for animals, and especially humans. There are the potentiality for anger, potentiality for envy, potentiality for fear, and so on, perhaps endlessly (see Plato *Theaetetus* 156b). And if there is a potentiality for locomotion, might this not divide into potentialities for all the various sorts of locomotions: walking, running, skipping, jumping, swimming, flying, and so on? For someone seeking to make such divisions, even just the potentiality for walking becomes unlimited since it embraces the potentiality to walk unlimitedly many magnitudes, such as an inch, two inches, and so on. Any potentiality selected, say potentiality for *X* (where *X* is some activity or motion), may be further divided into potentiality for *X* in this, that, and the other respect endlessly.[2] Soul has multiple functions interrelated in many ways divisible in various ways for different purposes. Surely Plato's scheme has some utility. Is there any definitive scientific division of soul?

Aristotle declares about dividing the soul into parts,

> For in some way they [the parts or divisions of soul] appear unlimited (ἄπειρα φαίνεται), and not only what some say distinguishing calculative (λογιστικόν), spirited (θυμικόν), and appetitive (ἐπιθυμητικόν), others distinguishing that which has reason (τὸ λόγον ἔχον) and the irrational (τὸ ἄλογον); for according to differences by which they demarcate these, also other parts appear having a greater distinctness than these, concerning those which even now have been discussed: the nutritive power, which belongs both to the plants and to all the animals, and the sensitive power, which someone might readily put neither among the irrational nor as having reason. Still the *phantastikon*, which in its being in one way is other than all of these, but in another way the same as some or other than some, has much perplexity if someone will set up separate parts of the soul. In addition to these the desiderative power, which both in account and power would seem to be other than all the others. It is absurd to scatter this, for both in the calculative part wish arises and in the irrational part appetite and spiritedness; but if the soul is tripartite, in each will be desire. (432a24–b7)

Division of soul into calculative, spirited, and appetitive parts is prominent in Plato's *Republic*, *Phaedrus*, and *Timaeus*, while Aristotle tells us in *Nicomachean Ethics*

[2] In Plato's *Theaetetus* 165d there is observation of this point by sophists who refer to knowing in all different ways: clearly, dimly, near at hand, intensely, slightly, and so on. In the dialogue in which Plato most energetically divides the soul, the *Republic*, he expresses considerable reservation about his approach to dividing the soul (see 435b-d).

i 13.1102a26–28 that the division of soul into rational and irrational parts arises from "exoteric discourses" (ἐν τοῖς ἐξωτερικοῖς λόγοις). He himself uses these other divisions in practical contexts. His division of intellectual and moral virtue (*NE* i 13) follows the scheme of rational and irrational parts. And in dealing with the moral virtues, he starts with courage pertaining to spiritedness and moderation (*sophrosune*) pertaining to appetite (see 1116b23–1117a9, 1117b23–24, 1119b15–16). Which scheme of soul division Aristotle employs in different treatises need have little to do with revisions in his thought or the chronology of his authorship but instead with the context of the discussion and the sort of audience presupposed. Practical sciences should not assume theoretical premises and a theoretically sophisticated audience, though much or all of what is said there may well be compatible with theoretical science. For example, in *NE* i 13 the division into rational and irrational with the desiring part straddling these accords with the division in the *De anima* into intellective, perceptive, and nutritive functions. In the present context of a general treatment of soul that includes plants and animals, he rightly critiques these other divisions as inadequate because they evidently pertain too much to humans. The value of these divisions for reflection upon human action, however, is one reason they enter here and receive attention now that Aristotle is starting to consider voluntary animal motion. Also, on such schemes progressive motion seems inevitably distributed to several parts.

The way Plato and those dividing the soul into the rational and irrational justify their divisions better supports division into nutritive and perceptive parts, the former belonging to all ensouled beings and the latter to all animals (432a26–31). For all Plato's comparisons of humans to beasts, as the soldiers in the *Republic* are like guard dogs, and his attention to diversity of function, the division of soul arrived at is far less widely applicable than Aristotle's into nutritive and perceptive powers. And while the division into rational and irrational might seem to fit the nutritive within the irrational part, the power of sense fits comfortably neither within the rational nor irrational division. Of course it fits better into Aristotle's modification of this strict scheme in *NE* i 13. Thus neither of these other divisions seems a complete and workable analysis of soul. Moreover, to which division to assign the imaginative power (τὸ φανταστικόν) is perplexing (432a31–b3).[3] *Phantasia* has close connection to the sensitive part without being simply the same as it, and *phantasia* differs from the calculative, spirited, appetitive, rational, and irrational parts of his predecessors, being a distinctive faculty itself. Yet if *phantasia* is made too separate from the other faculties, especially sense perception, it would not exist at all and could hardly do its functions; hence the perplexity regarding it. The desiderative power (τὸ ὀρεκτικόν) is an addition to all these other parts and might be kept together as having a distinct account and power (b3–7). But the other divisions of soul scatter desire. The division of soul into rational and irrational assigns some

[3] This is the only appearance of *phantastikon* in the treatise. Perhaps the term, the *-ikon* ending of which indicates capacity for some operation, is used to emphasize that *phantasia* is a genuine faculty in its own right, in spite of its connection with sense. We may also recall that only in the treatment of *phantasia* in iii 3 is there such a vigorous effort as here to distinguish a faculty from several other faculties.

desire, wish (βούλησις), to the rational part, and the rest of desire, appetite (ἐπιθυμία) and spirit (θυμός), to the irrational part. Wish seems a rational desire because it is for a nonimmediate end (see *NE* 1111b19–30 and *Rhet.* 1368b37–1369a4). But Plato's division into three parts, calculative, spirited, and appetitive, distributes a part of the genus desire to each of these divisions.[4] If desire is a recognizable faculty, it seems strange to allocate its subfaculties to different parts of soul on the basis of something other than a division of desire itself. Aristotle's comments here about desire as a single faculty rather than a multitude of disconnected faculties becomes crucial for the next chapter, in which the locomotive power of the soul turns out to be primarily the desiderative power. Were desire not merely distinguished into species but divided among other parts of the soul, progressive animal motion could hardly have a unified source.

If the soul truly were to have indeterminately many possible divisions, then it might seem unknowable since what is infinite is unknowable (see, e.g., *Meta.* ii 2.994b20–31). Aristotle does not attempt to defend psychology as a science or his division of soul beyond arguing for its superiority over the other proposals. His division much better respects the separateness of parts as they appear in all ensouled beings, whereas the other two sorts of division seem based primarily on humans. His division better respects the natural articulations of soul pertinent for investigation attempting to remain largely within natural science and to be as comprehensive as possible. His division greatly assists the present project of understanding progressive animal motion. He rather forthrightly indicates that division of soul for different aims may give rise to different divisions. It is inappropriate here to take up such metaphysical issues as the way a form, in this case the soul, that unifies the unlimitedly divisible matter, might itself have parts. As having parts, it may seem in need of a further form to unify it, and an infinite regress could begin (cf. 411b5–14).

432b7–14 Aristotle's discussion of the difficulty of dividing soul should have defended his supposing that there may be a locomotive power despite its fitting problematically into either Plato's division of calculative, spirited, and appetitive parts or the division into parts having or lacking reason. The concern is to determine *what* faculty this locomotive power is (432b7–8). What is sought is that which causes motion *according to place* (τὸ κινοῦν κατὰ τόπον) since various other sorts of motions also derive from soul. Change through growth or diminution pertains to all animals (and plants as well), and this seems attributable to what belongs to all of them, the generative and nutritive power (τὸ γεννητικὸν καὶ θρεπτικόν, b8–11). Mention of generative and nutritive power allows for growth and decline of the

[4] While it might appear that desire is restricted to the appetitive part, Plato himself makes it clear in *Republic* ix 580d–581b that each of his three parts of the soul has its own kind of desire. Aristotle frequently (e.g., 414b2, *NE* 1111b10–12, *Pol.* 1334b17–25, and *Rhet.* 1368b37–1369a4) lists the three kinds of desire (ὄρεξις) as wish (βούλησις), anger-spirit (θυμός), and appetite (ἐπιθυμία). Clearly Aristotle's division is inspired by Plato's. Since Plato has distributed these divisions to different bodily locations, there would have been little point for Aristotle to say in 432b3–4 that desire differs in magnitude from the other parts of soul.

animal or its offspring. Thus change with respect to both quantity and substance may pertain to animals (and all mortal living beings). Also, taking in and expelling breath and sleeping and waking, which will be discussed in the *Parva Naturalia*, are sorts of motions in which animals engage (b11–13). These motions are perplexing inasmuch as they might have to do with either nutrition or sense perception. Respiration for those animals that have it is for the sake of cooling the animal to maintain its vital heat (*De somno* 456a1–24, *De juv*. 5, *De resp*. 8), and waking and sleeping are activation or shutting down of the sensitive power. Clearly the soul can produce changes other than those now pertinent. Aristotle reassserts that the investigation seeks what causes motion according to place (περὶ τῆς κατὰ τόπον κινήσεως) and more specifically still, progressive motion (τὴν πορευτικὴν κίνησιν, 432b13–14). Perhaps even growth and decline and inhaling and exhaling are somehow motions according to place, but they are not progressive motions.

Explicit mention of *progressive* motion in 432b14 is crucial since motion according to place, even if restricted to locomotion (cf. *Physics* 213b4–5), includes rectilinear motion, circular motion of revolution around a center, and a mixture of these (see *Physics* 261b28–29 and *DC* 268b17–24). The simple bodies have locomotion that is either rectilinear or rotational: the sublunary elemental bodies have straight motion and the heavenly element rotational motion. Perhaps treatment of the locomotive capacity of soul will even explain heavenly rotation? Yet, because the heavenly spheres rotate without leaving their place, their motion should not be called progressive. Thus the specification of the locomotion at issue as progressive motion excludes from consideration the motion of the heavens and the class of animals, such as some shellfish, that lack progressive motion. By directing the inquiry to what causes progressive motion, the passage 432b7–14 offers some answer to the opening question whether motion could be due to the entire soul (see 432a20). If the motions of growth and diminution, generation and perishing, inhaling and exhaling, sleep and waking, were being explained along with progressive motion, then the entire soul would be that which gives rise to motion. Keeping to progressive motion, however, some special part or parts of soul and body seem requisite since stationary animals and plants lack this motion, while having nutritive capacity and even sense capacity and desire.

Having made clear what sort of motion is at issue, Aristotle in the remainder of the chapter eliminates all the likely candidates for the locomotive faculty of soul. The nutritive, sensitive, intellective, or desiderative capacity is each shown insufficient. If none of these just as such accounts for locomotion, the case seems strengthened *that* there is some special explanation required for locomotion. In fact the desiderative faculty is quite crucial for local motion along with cognitional faculties, but there are animals possessing these while lacking progressive motion. Aristotle's process of elimination indicates the difficulty of finding an obvious faculty for locomotion. The situation resembles that for *phantasia*, as seen in iii 3, where too it was difficult to pin down the faculty. After it was disclosed that *phantasia* is none of the likely faculties, Aristotle develops his account of it in relation particularly to sense. Though Aristotle argues against various prospective faculties for locomotion, this faculty will be primarily the desiderative capacity. Of course

desire already involves cognition, whether from sense, *phantasia*, or thought, and hence some sort of desire and cognition enter into the production of the progressive motions of animals. All animals have desire, but only those capable of progressive motion can have desire give rise to such motion.

432b14–19 That it is not the nutritive power that is sufficient for progressive motion of animals might be evident from what has just been said in 432b7–14. All the argument needed might be merely this: all animals (and plants) have nutritive capacity but some animals (and all plants) lack progressive motion.[5] Yet, this only sets out facts without the reasons. Aristotle offers two arguments deeply embedded in additional assumptions that may advance the discussion of progressive motion by providing reasons why nutritive capacity is not enough for progressive motion. Someone might well still urge that nutritive soul could be enough soul capacity to cause progressive motion, but what plants and some animals lack is the necessary body parts to support local motion. Aristotle still needs to show, then, that nutritive soul is not sufficient as a type of soul to cause locomotion, and that the missing body parts would not have empowered those living beings to enter into locomotion. He takes up the two arguments in this order, apparently, because he counters the first about the adequacy of nutritive soul with rather obvious considerations, but the second about bodily organs requires an appeal going outside this treatise.

Progressive animal motion clearly cannot be on account of nutritive power, he says, since progressive motion is always for the sake of something (ἀεί τε γὰρ ἕνεκά του) and is with *phantasia* or desire (ἢ μετὰ φαντασίας ἢ ὀρέξεώς, 432b14–16). While all nature works for the sake of an end, and surely the nutritive power does as well, he is not presently making this larger sort of claim, as he soon will (b21–23), but merely asserting that progressive motion, that is, voluntary animal motion, must have some awareness of its end, as is shown if nothing that is not seeking or avoiding is in motion except as a result of compulsion (βίᾳ, b16–17; cf. b27–29). For the claim in b16–17 to be true, it must be restricted to voluntary progressive motion since it is strictly true that nothing (οὐθέν) capable of progressive motion enters into such motion without desiring to except by compulsion, though this would not hold of nonliving things such as the elemental bodies that have their motion by nature. Desire and *phantasia* play a role in voluntary progressive motion because the animal must be cognizant of that toward which or away from which it is in motion, or there is nothing noncompulsory about the motion, that is, voluntary.[6]

[5] Heliotropism or phototropism, as the turning of sunflowers to light, is no more than growth and decline the progressive motion of interest because it is rotational and merely motion of a part of the body.

[6] Aristotle is touching on themes of his account of the voluntary and involuntary in *NE* iii 1–5. The involuntary is what comes about by force (βίᾳ) or through ignorance (δι᾽ ἄγνοιαν, 1109b35–1110a1). Involuntariness due to compulsion means the real cause is completely outside us or the animal because we and animals are natural *bodily* beings and circumstances have more or less impact on our bodies or our concern for the safety of our bodies or the safety of those with whom we are related. Involuntariness due to ignorance has to do with our and animals' being natural *ensouled* beings and hence in greater or lesser awareness of what the situation is and what we are doing. Both compulsion and ignorance interfere with the causal responsibility for motions and actions.

This part of the argument shows that nutritive soul by itself lacks capacity of soul essential to progressive motion, namely, cognition and desire.

Moreover, it should not be supposed that nutritive soul would suffice if only plants and stationary animals had suitable body parts to support progressive motion. Were plants capable of motion (κινετικά) – here meaning progressive motion – they would have some instrumental body part (τι μόριον ὀργανικόν) for such motion (432b17–19). This argument takes for granted that plants have nutritive capacity without progressive motion. But it introduces, if most succinctly, the further justifying assumption useful subsequently and made more explicit that nature is purposive, supplying soul with requisite body parts for its operations. If nature is thus providential, absence of bodily parts for locomotion proves the lack of soul capacity requiring them (cf. b21–26). Were someone to object that plant seeds undergo locomotion for dispersal and that they have suitable instrumental parts for facilitating this, Aristotle might respond that they do not have instruments for motion under their own power, but wind, animals, and so on, carry them. The argument can and will be extended to those animals that lack progressive motion and body parts to support it (cf. *Phys*. 261a15–17). The point about instrumental parts here usefully introduced reappears immediately afterward.

432b19–26 The nutritive power could not be locomotive since progressive motion requires cognition, desire, and bodily instruments, but then is the sense power the locomotive power? Sense cannot be it because many animals possessing sense are nonetheless stationary (μόνιμα) and motionless (ἀκίνητα) until the end of their lives (432b19–21). Perhaps Aristotle conjoins motionless with stationary to emphasize total motionlessness. Testacea that as a genus are generally by nature stationary still have some members that are not altogether motionless (see *PA* 683b4–9). His argument pertains, however, to those animals with sense power but entirely lacking any progressive motion. He here again has given facts showing that a part of the soul cannot be the locomotive part and then goes on to offer reasons. Those water animals lacking progressive motion, such as certain shellfish (see *HA* 487b6–15), are stationary by an incapacity natural to them rather than any failure of their nature to supply what is needed. To make his case Aristotle now has to appeal explicitly to his principle so far merely hinted at:

> If nature neither makes anything in vain (μάτην) nor leaves out any of the necessary things, except in the maimed and in the incomplete; but such sorts of animals [i.e., those that are stationary] are complete and not maimed; a sign is that they can reproduce and have maturity and decline; so that they would have had the intrumental parts for progressive motion. (432b21–26; cf. 415b16–21)

The same argument used immediately before for plants (432b17–19) can be applied to those animals lacking local motion and the instrumental body parts to support it. Nature, which is the form of a natural being serving as its inner principle of rest and motion, directs that of which it is the nature toward a natural end (see *Physics* ii 8). All natural things, having such a nature as their principle, are due to nature rather than accident or spontaneity (*automaton*). The parts natural to a kind of animal, then, cannot be in vain (*matên*), purposeless, or missing; they must contribute to

its natural end. If the animal accomplishes its natural end in a natural way, as it will except in those individual animals that happen to be maimed or malformed, it lacks no parts natural to it.[7] The stationary animals, in spite of incapacity for locomotion, can reproduce themselves, reach maturity, and attain old age, so they lead a complete life and lack nothing natural to them. Thus locomotive power must not be natural to them, or they would have instrumental parts to support it.

This argumentation has been designed to answer anyone who might suppose such animals as certain shellfish lack locomotion through bodily rather than psychical incapacity, or who denies that Aristotle has yet shown sufficiently that this is not the case. Could legs, fins, or wings somehow be attached, they might imagine or suggest, these animals should walk, swim, or fly as other animals do. Were this the case, no additional faculty of soul is needed for locomotion, but sensitive power shared by all animals would suffice for locomotive power; stationary animals are merely shortchanged in bodily endowment. The case would resemble that of an animal with defective or old eyes. Replacement of the sense organ with youthful and healthy eyes results in perfect vision (see 408b21–22). Now is every animal soul all prepared to function for locomotion and only bodily limitation impedes it? Can horses fly with wings added? Aristotle contends that the lack of natural bodily instruments in a complete and unmaimed animal means that they are not natural to it, and not the source of immobility. The animal remains stationary because the very nature of the animal, its soul, though possessing sense, does not share in locomotive power. Thus, in arguing that nature has not by leaving out some requisite body parts deprived the soul of the stationary animals its chance to cause progressive motion, Aristotle also makes the case like that earlier with nutritive soul that the lack is a lack of soul power.

432b26–433a6 Nutritive and sensitive powers having been eliminated as the locomotive capacity, Aristotle shows why the intellective power does not move the animal. He cannot adduce kinds of animals with intellectual capacity but no progressive motion, but he can show that and why intellect need not directly cause motion and why it need not: "But yet neither is the intellective capacity, i.e., what is called mind, the moving force" (ἀλλὰ μὴν οὐδὲ τὸ νοητικὸν καὶ ὁ καλούμενος νοῦς ἐστιν ὁ κινῶν, 432b26–27).[8] Some may suppose that for humans the intellective part *should be* the locomotive part. Aristotle responds that theoretical intellect considers nothing

[7] Aristotle could hardly express more strongly his "top-down" approach to causation: animals have the body parts they have because of soul and the sort of life it allows rather than soul and its sort of life's being determined by the natural body.

[8] The καί in 432b26 seems explicative, as Hicks 1907, 554 suggests, because otherwise "nor" (οὐδέ) would be expected. It will be epexegetical whether λογιστικόν as found in most manuscripts is retained rather than νοητικόν, for which Jannone 1966 opts. Jannone's reading may be preferable if Aristotle has no special reason, after going through the nutritive and sensitive capacities, to refer to the perhaps Platonic *logistikon*, and his use of "what is called mind" reminds us of earlier passages (407a4–5 and 429a22) in which this phrase seems to mean what Aristotle himself calls *nous*. This phrase emphasizes the variety of things called by this name, and that Aristotle is now using it as he does himself for the capacity of human thinking rather than inappropriately for the deity. He wishes to speak here of *nous* also because it reappears prominently in 433a9–10.

practical since it says nothing about any object of avoidance or pursuit, at least as objects of avoidance or pursuit, but progressive animal motion is *always* either avoiding something or pursuing something (432b27–29; cf. b15–17).[9] Of course, theoretical mind might consider practical things, as when it counts them or treats their being, but not as such, that is, practically as things concerning it to be pursued or avoided. He comments that even when mind occupies itself with possible objects of pursuit or avoidance it does not necessarily order pursuit or avoidance (b29–31).[10] We may compare the suggestion of iii 3.427b21–24 that *phantasia* can look at fearful or pleasant things as in pictures while when we opine that something is terrible or confidence inspiring we are moved. Aristotle's suggestion that mind does not command us, but the heart responds to what is fearful and some other part to what is pleasant (432b31–433a1), could be the point that the theoretician looks on dispassionately, while fear grips us viscerally or something pleasant moves another part as food causes the mouth to water. Or perhaps he recalls to us Plato's tripartition, the reasoning part remaining calm or resisting while the spirited part located in the chest reacts with fear or the appetitive part located lower in the body reacts to the pleasant. His point seems to be that mind as such, whether theoretical or practical, is hardly completely determinative of progressive motion.

Aristotle has called into question that intellect commands progressive motion in humans, and he proceeds to argue that it cannot cause this motion without cooperation from other parts of soul. Were we to suppose that intellect should be completely in control of progressive motion, at least when it seeks to take charge, he observes that when mind commands (ἐπιτάττοντος τοῦ νοῦ) and thought says (λεγούσης τῆς διανοίας) to avoid or pursue a person may not be thus moved but instead do as appetite (ἐπιθυμίαν) bids, as happens with the incontinent (οἱ ἀκρατεῖς, 433a1–3). Conjunction here of mind and thought, the latter of which is likely deliberative and discursive, intends to cover any practical mind or all intellect. Without backing by desire, and especially the shaping of dispositional desire by character, intellect can be ineffective in causing human action. Mind on its own in the incontinent could not cause progressive motion.

[9] Even when animals engage in what may seem frivolous motions they are pursuing or avoiding something. Human sports and games involve pursuing or avoiding. Desire as such seeks or resists things or states of affairs (cf. Hobbes *Leviathan* I VI: "This Endeavour, when it is toward something which causes it, is called APPETITE, or DESIRE; the later, being the generall name; and the other, oftentimes restrayned to signifie the Desire of Food, namely *Hunger* and *Thirst*. And when the Endeavour is fromward something, it is generally called AVERSION"). The desire just to maintain possession must be conceived as a pursuit of some future condition.

[10] Hicks 1907, 555 says that Aristotle here "passes to the intellect which does concern itself with action" so "the subject of θεωρῇ here must be ὁ νοῦς without qualification, and not ὁ θεωρητικὸς νοῦς, as in the last sentence." This need not be the case, however. Aristotle leaves it ambiguous as to whether he still considers theoretical mind or widens the reflection to any mind. Even when we are engaged in theoretical thinking, we might have some bodily reaction to fearful or pleasant items of contemplation, e.g., some frightful or attractive animals, though the theoretical thinking does not lead to pursuit or avoidance.

That generally (ὅλως) for all cases of human progressive motion desire is also necessary for thought to become effective can be readily shown by the productive arts (433a4–6). Someone may have the medical art, dispositional knowledge, but only employ this knowledge through desiring and choosing to do so (cf. *Meta.* ix 5.1048a5–11). The form in the soul of the artist is the principle of motion, the moving cause (see *Meta*. vii 7.1032a32–b14, b21–23), but this only becomes operative through desire since such rational powers are dispositions for opposites and something must decide when and how it operates. Desire determines whether the doctor works to heal or the opposite and when. Hence he says that "since some other is determinative of acting according to knowledge, but not of the knowledge" (ὡς ἑτέρου τινὸς κυρίου ὄντος τοῦ ποιεῖν κατὰ τὴν ἐπιστήμην, ἀλλ᾽ οὐ τῆς ἐπιστήμης, 433a4–6), which is carefully worded to say both that something has to determine the way the knowledge is used because the knowledge is not determinative of this itself, and also that this other factor only controls the *action according to knowledge* but it is not in command *of knowledge* (cf. *NE* vi 13.1145a7–12). The role of something to begin the operation according to knowledge may recall the treatment in iii 5 and 7 of the initiation of thinking starting from dispositional knowledge. Knowledge itself does not enter into any other state, and we are not always thinking or the doctor always healing. Possession of knowledge in conjunction with *phantasma* or desire allows the known intelligible object to move us to thinking or acting. Knowledge by itself never is sufficient for action.

Why, we may wonder, does Aristotle not eliminate mind as the locomotive power simply by urging that only humans among animals have intellect? Since other animals also have progressive motion, intellect cannot be the requisite power for locomotion.[11] Such argument would not prove that reason is not the special locomotive power of humans, whereas the argumentation used does: if intellect cannot itself cause motion even in humans, then it will not be the locomotive power for any animals. Moreover, his line of argument usefully points to the need for something beyond cognition, that is, some sort of desire, to enter into animal motion and even to have the most prominent role. Soon Aristotle will, in fact, utilize the argument that intellect cannot be the locomotive power because the other animals lack intellect (10.433a10–12), but he employs the argument to substitute *phantasia* for intellect as the primary cognitive capacity involved in locomotion rather than to establish that intellect by itself is insufficient.

433a6–9 Aristotle's reflection so far has eliminated the nutritive, sensitive, and intellective powers as the locomotive capacity. In the course of eliminating these he suggests that progressive animal motion occurs only with desire (432b15–17). And in attacking mind as determinative of such motion, Aristotle observes that incontinent persons act according to their appetites rather than their intellect, and those with art need something else, that is, desire, to put the art into play (433a1–6). Therefore it seems likely that desire is the locomotive faculty. In a very few lines,

[11] This argument is presented straightforwardly in *PA* i 1.641b7–9.

however, Aristotle calls this into question.[12] That desire is not simply dominant over or determinative of motion (ταύτης κυρία τῆς κινήσεως), despite the immediately preceding lines a4–6, can be shown by the continent (οἱ ἐγκρατεῖς), who fight off their desires and appetites to act in line with their mind (τῷ *νῷ*, a6–8). Here one sort of desire, appetite, loses in the struggle with intellect because, as we soon learn (see a23–25), intellect fights in company with another sort of desire, that is, wish.[13] Hence, since it is one sort of desire mastering another, desire is always involved in animal motion, yet with possible conflict of desires due to their split into different types.

Aristotle provides only a brief argument against desire as the locomotive power because there is not too much argument available for this purpose. Desire is fundamental to animal locomotion. Desire appears not always decisive, or determinative (κυρία), since at least continent persons resist appetite and desire, while the incontinent act against their wishes. To allow that intellect may resist desire gives pause about simply equating the desiderative with the locomotive power, at least in humans. Human reason *may* be determinative of action; the previous argumentation, nevertheless, has shown that mind could not be the locomotive power.[14] The purpose for making some objection to the desiderative power is to complete the challenge to other faculties and to suggest that no single faculty of soul solely on its own causes voluntary animal motion but a combination of the cognitive, that is, *phantasia* or thought, and the desiderative leads to animal motion. In previous discussion in iii 7.431a8–14 it was indicated that sensitive and desiderative powers are somehow the same, though their being is different. Desire thus already presupposes cognition and has a cognitive component. For most animals the desiderative capacity is therefore the locomotive faculty. Yet there may be a further conjunction of cognition and desire to occasion animal motion. This will be the case at least for humans and perhaps some higher animals. Since desire takes several forms, and cognition as well, the cause of animal motion may have some complexity. Aristotle has to appeal especially to reason in humans to counter desire as the mover of the animal, showing clearly enough that desire is the primary factor in animal locomotion. It just needs to be clarified how this is so.

It may be surprising that Aristotle does not explicitly eliminate *phantasia* as the locomotive power, as he eliminates the others. He may not need to because the arguments against the sense power work straightforwardly for *phantasia* as well,

[12] The words ἀλλὰ μὴν οὐδὲ (but yet neither) commence the discussions both of *nous* in 432b26 and of *orexis* in 433a6. Yet in the case of *nous*, Aristotle denies that it is the moving faculty whereas in that of desire he just denies that it is determinative (κυρία) of motion. Thus desire may have a great role in animal locomotion.

[13] Hicks 1907, 555 supposes that Aristotle here only means to deny that irrational desire, i.e., appetite and spirit, is the locomotive faculty (since he claims in iii 10 the κινητικὸν κατὰ τόπον is replaced by ὀρεκτικόν). But any sort of desire, even wish, may be ineffective in causing motion. The incontinent act against their wishes.

[14] Even if mind can be determinative of human action, this will not make it the locomotive power. Still it is important for Aristotle to allow that mind can be determinative in order to secure his understanding of human action and the possibility of good action.

at least if there are animals that have *phantasia* but lack any progressive motion. And if only those animals with progressive motion have *phantasia*, he might argue, as with mind, that animals can imagine without being much moved and that desire has to enter as well to cause progressive motion (see 432b29–31 and 433a20–21). Perhaps he leaves the reader to raise the issue and hence to be prepared for the coming discussion in which *phantasia* is subsumed within desire.

10

The Desiderative Capacity Is the Primary Cause of Progressive Motion

433a9–30 In the previous chapter Aristotle offered arguments against all the obvious candidates to serve as the locomotive power. He ended up contending that mind is not the locomotive power because thought without desire does not cause motion and desire dominates intellect in incontinent persons. Yet neither is desire always determinative of motion because mind overcomes it in the continent person (433a1–8). But he begins this chapter suggesting that it appears that both desire and mind move animals according to place. He states, "It is apparent to be sure that these two are movers, either desire or mind, if someone would place *phantasia* as some sort of intellection" (φαίνεται δέ γε δύο ταῦτα κινοῦντα, ἢ ὄρεξις ἢ νοῦς, εἴ τις τὴν φαντασίαν τιθείη ὡς νόησίν τινα, 433a9–10). *Both* desire and mind can be in play, since he says "two" (and see a13 immediately afterward), though he may use the disjunction inclusively to allow for either . . . or, or both together, since one or the other might cause motion or both together, and even if these always somehow work together, they often seem to be in opposition. That *phantasia* can be called some sort of *noesis* was already suggested in iii 3.427b16–17 and b27–29. If *nous* includes *phantasia*, and beasts are moved by *phantasiai*, then *nous* may have a clear role in animal motion. The emphasis on φαίνεται (it is apparent) prefacing his claim about the two faculties being involved in locomotion, however, cautions against embracing too quickly that desire and mind are the locomotive faculty. This may allow some remaining doubt or suggest that on the basis of the reflections of the previous discussion in chapter 9 it is evident that one or the other or both of these faculties cause(s) progressive motion.

That *phantasia* is prominent in progressive motion is shown by the way even humans follow *phantasiai* in opposition to their knowledge, and the other animals lack intellection (*noesis*) and calculation (*logismos*) but have *phantasia* (433a10–12). *Phantasia* can be the cognitive aspect of the appetite that opposes human knowledge or governs the lower animals. Animals without intellect have little to oppose the presentation by *phantasia*, so with the appearance of something as pleasant or painful (except when there is another *phantasia* of something more pleasant or painful), the animal acts on what appears to it. Since *phantasia* can be called a kind of *noesis*, and *phantasia* sometimes controls humans and largely

controls the rest of the animals, Aristotle referring to desire and mind determines that "both these therefore have power to move according to place, mind and desire" (ἄμφω ἄρα ταῦτα κινητικὰ κατὰ τόπον, νοῦς καὶ ὄρεξις, a13). The previous disjunction (in a9), either desire or mind moves the animal, gives way to the conjunction, mind and desire move the animal. This still might mean that one or the other does it, but Aristotle starts to indicate that cognition and desire together cause animal motion.

The *nous* involved in motion, however, must be practical, that is, that which calculates for the sake of bringing something about (433a14). This practical sort of *nous* differs in its end from the theoretical sort since the theoretical aims just for truth or knowledge and not to bring anything further into being (a14–15; cf. 431b10–12). Whereas only some types of employment of mind are practical and for the sake of an end to be brought about through action, *all* desire is for the sake of something:

> Indeed every desire is for the sake of something; for that which is the aim of desire, this is the principle of practical mind; the last [result of mind's calculation] is the beginning of the action. καὶ ἡ ὄρεξις ἕνεκά του πᾶσα· οὗ γὰρ ἡ ὄρεξις, αὕτη ἀρχὴ τοῦ πρακτικοῦ νοῦ· τὸ δ' ἔσχατον ἀρχὴ τῆς πράξεως. (433a15–17)

Each and every desire has some aim and this is the principle of practical mind. Desire is said to be for the sake of something, as in 432b15–16 progressive motion was said to be for the sake of something and involving *phantasia* or desire. Aristotle focuses on the way human desire connects with some cognition. The link of practical intellect with desire is clear because desire's aim is the end in terms of which calculation seeks the means. Once practical reasoning starting from the end takes its calculations around to what is in its own immediate power, the last result of the deliberative process is reached, and that is probably what is referred to as τὸ ἔσχατον, and the course of action can begin (cf. *NE* iii 3.1112b11–34 and *Meta*. vii 7.1032b6–31).[1] Aristotle is making the case that desire always enters into play for human practical intellect.[2] It remains to confirm that neither human practical reasoning nor *phantasia* can move the animal without desire.

Both desire and mind are movers, but while his remarks acknowledge both, he is already bestowing primacy upon desire. He declares,

> So that it is reasonably said that these two are apparent as the movers, desire and practical thought; for the object of desire moves, and on account of this thought moves, because the object of desire is principle of it. And *phantasia* whenever it moves does not move without desire. ὥστε εὐλόγως ταῦτα δύο φαίνεται τὰ κινοῦντα, ὄρεξις καὶ διάνοια ἡ πρακτική· τὸ ὀρεκτὸν

[1] This accords with the view that moral virtue (character) provides the end to *phronesis* (or more generally, cleverness [δεινότης]), inasmuch as character is a shaping of the desire and desire has an end (*NE* vi 12.1144a20–b1).

[2] We may suppose that even the desire to engage in theoretical activity, that is not itself for the sake of something beyond itself, is part of practical life (for humans practical intellect is involved in preparing for the exercise of theoretical intellect: see *NE* vi 13.1145a6–11). Since practical intellect is required to determine humans to engage in theorizing or contemplative activity, philosophers should not be indifferent to practical wisdom.

γὰρ κινεῖ, καὶ διὰ τοῦτο ἡ διάνοια κινεῖ, ὅτι ἀρχὴ αὐτῆς ἐστι τὸ ὀρεκτόν. καὶ ἡ φαντασία δὲ ὅταν κινῇ, οὐ κινεῖ ἄνευ ὀρέξεως. (433a17–21)[3]

Rather than conjoining mind and desire as in a13, he conjoins desire and practical thought. Mind was extended to include all animals, but practical thought that is calculative might just apply to humans. Both desire and practical thought are in play in human action. But since the object of desire is the principle of practical intellect inasmuch as deliberation sets this object before it as its goal and calculates means toward it, thought only seems to move as a result of desire, and hence desire takes the most prominent role even in human action. And for the rest of the animals, in which *phantasia* typically plays a major role in motion, *phantasia* can only move the animal as a result of desire. Animals can be unmoved by *phantasiai*, as in dreams, since without desire they do not occasion action. Surely desire thus emerges as key in animal motion generally because neither practical intellect nor *phantasia* moves the animal without desire.

Aristotle is not here much interested in the point that some cognition may precede or must be involved in an object's becoming the object of desire; the interest is rather that only once there is an object of desire might the locomotion of the animal begin. For humans this desired object may serve further as the principle or aim of practical intellect and its deliberations, while for the beasts the object of desire simply originates motion. If the object of desire is thus the principle of practical intellect, and *phantasia* only moves an animal in conjunction with desire, Aristotle can assert, "Some one thing then is the mover, the object of desire" (ἓν δή τι τὸ κινοῦν τὸ ὀρεκτόν, 433a21).[4] He has arrived at the object of desire as principal mover and the desiderative faculty therefore as most especially the locomotive faculty. This explains his somewhat guarded use of "are apparent" (*phainetai*) when in a17 speaking of both mind and desire as movers. Were there really two movers, mind and desire (νοῦς καὶ ὄρεξις), they would have to do so by virtue of some common form (κατὰ κοινὸν ἄν τι εἶδος ἐκίνουν, a21–22). This might mean just that could each by itself be capable of moving the animal, there would be a shared generic capability, being a mover, that they both have and by means of which each originates motion.[5] But perhaps he also has the thought that completely independent origins of voluntary motion would have the animal impossibly divided so that it is completely unclear what moving under its own power means. Voluntary motion

[3] Many manuscripts have ὀρεκτικόν (the faculty of desire) rather than ὀρεκτόν (the object of desire) in 433a18. This would be the first appearance of the term *orektikon* in the chapter. Whichever should appear does not much change the interpretation. But if *orekton* rightly appears here and in a21, then *orektikon* appears initially rather strikingly where Aristotle is setting out the major faculties of the soul in 433b2–3.

[4] Some manuscripts have τὸ ὀρεκτόν in 433a21 and others have τὸ ὀρεκτικόν. Probably the former fits the context slightly better, if Aristotle has just spoken of the object of desire as principle of practical mind (a19–20) and what can join mind and desire together. So though he goes right on to deny that two faculties can be mover, which might support *orektikon* as faculty in a21, he uses *orexis* in a22 as the faculty. Probably by using *orekton* he gets in the point about the moving object of desire as principle of mind and as being one this implies that the faculty of desire is also one. Thus *orekton* does some more work here, but the use of either term leads to the same position.

[5] This is the interpretation of Themistius *In de an*. 119,9–12.

demands a unified mover (as perception a unified perceiver). Hence Aristotle pertinently observes that *nous* is not apparent (οὐ φαίνεται) causing motion without desire, for in cases where a person acts according to calculation (*logismon*), even if the person overcomes appetite (ἐπιθυμία), mind works in conjunction with wish (βούλησις), a type of desire (a22–25).[6] This fits with the object of desire as the principle of practical mind (a19–20). Wish seems the most appropriate human desire to conjoin with mind because wish is for a less immediate end that may involve a lengthy course of action to achieve (cf. 432b5). And desire can move the animal apart from or in opposition to any calculation (τὸν λογισμόν), since appetite is desire (433a25–26). Thus, because desire can move even apart from reasoning and reason never moves except with desire, desire is the single locomotive power even for humans, as surely it is for the rest of the animals. There need be no divided or even shared capability for moving the animal held by both mind and desire since desire by way of the object of desire enters into all animal progressive motion and plays the key role in causing such motion.

Of course this argumentation hardly suggests that cognition has no role in animal motion. Desire always already involves some cognition – some awareness of the object of desire is required – so no additional cognition need be added to produce motion. Where additional effort of intellect intervenes, appetite might overcome it, but even when reason determines what is done, reason is working in conjunction with wish, a desire, to govern the action. Thus desire always enters into animal progressive motion, and the sole objection from the previous chapter to supposing that desire causes motion (see 433a6–8) – mind overcomes desire in continent persons – receives the answer here that one kind of desire (wish) overrides another kind (appetite). Aristotle has established the fundamental place of the faculty of desire in animal locomotion, but *nous* and *phantasia* may also enter, though not in separation from desire.

Having begun to show that mind cannot by itself be mover, Aristotle can supplement the case while clarifying what is the ultimate mover and how error enters progressive motion. He asserts, "All *nous* is correct, but desire and *phantasia* are both correct and not correct" (νοῦς μὲν οὖν πᾶς ὀρθός ἐστιν· ὄρεξις δὲ καὶ φαντασία καὶ ὀρθὴ καὶ οὐκ ὀρθή, 433a26–27). In calling all *nous* correct, he must be excluding *phantasia* from *nous*. Theoretical or practical *nous* puts humans into the truth about theoretical or practical matters (see *NE* 1139b12). Were all action appropriate, it might seem that *nous* guides all human action. But in contrast to such correct *nous*, desire and *phantasia* may be correct or not correct (on *phantasia*, see 428a11–12). Hence these are the more general causes of progressive motion in humans. Desire will be correct either when *nous* discloses the true good to it or *phantasia* presents something truly good for the animal. If desire is not guided by *nous*, or *phantasia* presents merely the apparent but not truly good, desire has the apparent good as its object and so may be incorrect. Thus the object of desire (τὸ ὀρεκτόν) is always what

[6] Since reason only moves with desire, wish especially, the reservation in 433a6–8 that the continent act with reason against their desire is seen to fail to disqualify desire as the locomotive power. Aristotle adds "now" (νῦν) in 433a22 to indicate that his arguments have been showing that mind does not cause motion without desire.

moves the animal when it moves under its own power, further confirming what is the locomotive faculty. The object of desire may be the good or the apparent good (433a27–29).[7] Aristotle speaks of both desire and *phantasia* as possibly correct or not correct, but desire is correct or not based upon whether the *phantasia* is correct or not or whether the desire connects with *nous*. Any of the sorts of desire, wish, spiritedness, or appetite, may have inappropriate objects if something inappropriate appears good. Aristotle has established that what moves the animal in *every* case of progressive motion is the object of desire, that is, the good or the apparent good (ἢ τὸ ἀγαθὸν ἢ τὸ φαινόμενον ἀγαθόν). Thus the locomotive faculty has an object similarly to the other faculties of soul.

What can be the object of desire, the good or the apparent good, is only the practical good (τὸ πρακτὸν ἀγαθόν) that does not cover the whole of the good (433a29). The practical good, that is, that which is practicable or in the power of an animal to bring about, is limited to that which may be otherwise (πρακτὸν δ' ἐστὶ τὸ ἐνδεχόμενον καὶ ἄλλως ἔχειν, a29–30). For Aristotle, for example, that the world is always here, that the species of dog has a stomach, and that $2 + 3 = 5$ are good things, but not practically good since they cannot be otherwise, though we can have aims involving these, as when we feed our dog or seek five Olympic victories. Aristotle perhaps shares with Plato the view that a being may be good in itself and good of its kind rather than merely good as serving the interests of animate beings and especially humans.[8] If there can be good beyond that which is an object of desire, desire's object will be limited to the practical good, that capable of being otherwise. If a good is practicable, then an animal previously lacking it but desiring it may attain its desire, and hence the object of desire must be capable of being otherwise, if only in the sense that animals may have it or not. Thus even if the ultimate goal for humans, happiness, taken in widest generality is fixed, still what humans seek as means for being happy is changeable and happiness can be otherwise inasmuch as they attain it or not. Though objects of desire are in a way *unmoved* movers (see 433b11–12), whether ultimate happiness or the immediate aim of obtaining a drink, that the object may be secured or not makes it somehow capable of being otherwise.[9]

[7] In *NE* iii 4.1113a22–24 Aristotle refers to some who hold that while the good is the universal object of wish (βουλητόν), to each person the apparent good is the object of wish. Yet he goes on to suggest that his own view is that good persons wish for the truly good while those of inferior character wish for the apparent good, primarily deceived by pleasure (see 1113a25–b2, 1114a31–b25; cf. *Meta*. xii 7.1072a26–28).

[8] See, e.g., *NE* i 6.1096a19–34. In *Metaphysics* xiii 3.1078a31–32 Aristotle says, "Now since the good and the beautiful (τὸ καλόν) are different (for the former always implies conduct as its subject [ἐν πράξει], while the beautiful is found also in motionless things)". In this context he limits the good to the practical sphere while extending the beautiful more widely: to wherever there is order (τάξις), symmetry (συμμετρία), or definiteness (τὸ ὡρισμένον, 1078a36–b1). Here in the *De anima* he seems to allow the good to be as broad as the beautiful and only restricts the *practical good* to possible objects of desire.

[9] Plato's *Symposium* 200a–e stresses that desire is always for what is not now possessed. But Diotima there doubtfully concludes that if the lover desires the beautiful and good, then the lover is neither beautiful nor good. Yet she has indicated that desire may be for possession in the future, so the *presently* beautiful and good might seemingly desire retention of these for the future.

Aristotle here hardly considers in detail what may be objects of desire, but he is well aware that in spite of our often speaking of desiring *X*, where *X* is some item such as food, money, honor, knowledge, or happiness, we also often speak of desiring to *Y X*, where *Y* is some active engagement with *X*, such as eating it, possessing it, or attaining it (see Plato *Philebus* 35a), or we even speak of desiring for some other person, animal, or group that they *YX*, as when we wish the Athenians to have a good harvest. Complicated objects of desire are possible, such as desiring to win a prize fairly or wishing that a friend gains money honestly. That states of affairs and relationships with them can thus be objects of desire rather than merely isolated items enters into talk of the good's being practical and in relation to what is capable of being otherwise. That it is some non–currently existing engagement with an item that the animal desires and that governs its motion over a period makes the role of *phantasia* in desire plausible as envisioning this relationship. *Phantasia* as presenting the object of desire fits with Aristotle's talk of the apparent good (τὸ φαινόμενον ἀγαθόν, 433a28–29).

433a30–b27 The argument has made it manifest (φανερόν) that desire (ὄρεξις) is the power of soul that moves the animal (433a30–31). Aristotle refers to that which is "being called desire" (ἡ καλουμένη ὄρεξις, a31), either by himself or by others, because he has yet to establish that there is a single faculty of desire, because it was not such common usage to have *orexis* refer to any desire, and because he uses "desire" to stand for the "capacity of desire" (*orektikon*).[10] His predecessors questionably see desire as a single faculty since they divide the soul into rational and irrational parts or appetitive, spirited, and rational parts. Previously Aristotle took up the question of division of the soul (432a22–b7) and complained about scattering desire among different parts of the soul (432b3–7). Those ready to follow Aristotle and to divide the soul into parts according to capacities (*dunameis*), such as nutritive (θρεπτικόν), sensitive (αἰσθητικόν), intellective (νοητικόν), and deliberative (βουλευτικόν), should also recognize the desiderative (ὀρεκτικόν, 433a31–b3). This division gets at the powers and major differences of the whole soul better than Plato's division into appetitive (ἐπιθυμητικόν) and spirited (θυμικόν), which just seems to be a division within the desiderative capacity (b3–4). Desire might be considered a single faculty, on the same level as the nutritive, sensitive, intellective parts, while the further division into the appetitive and spirited parts along with wish gives the subfaculties of the united capacity of desire, as nutritive, sensitive, and intellective faculties divide into subfaculties. Of course Aristotle has left out the locomotive faculty included in 414a31–32 because this is what the desiderative faculty turns out to be, though the desiderative faculty is wider inasmuch as all animals have desire while not all have progressive motion. Perhaps surprising in the list here is the inclusion of both the intellective and the deliberative, that is, the distinction of practical mind from the rest of mind. Listing both of these intellectual

[10] Hicks 1907, 560 suggests that the phrase "being called desire" is used to indicate the "wider sense" of the term ὄρεξις, i.e., the desiderative power (τὸ ὀρεκτικόν). It was and is common to speak of desire when one actually means the desiderative faculty.

parts of the soul questions Plato's division all the more. Into which of these does Plato put his third part, here left unnamed? These different intellectual capacities seem at least as important as the different desiderative capacities that Plato names. Moreover, wish as a desire clearly belongs with the desiderative capacity rather than intellect, but Plato has no obvious place to put it.

Plato bases his divisions of the soul upon different functions disclosed by oppositions (see *Republic* 353d, 436a–c). Aristotle acknowledges that desires can be contrary to each other (433b5). They can oppose each other through conflict of *logos* and appetites in those having a sense of time (ἐν τοῖς χρόνου αἴσθησιν ἔχουσιν, b5–7).[11] Humans possessing *logos* and time perception have a lengthy time frame that foresees future consequences; mind therefore resists appetite for something immediately pleasant (b7–10). Appetite, unable to see the future, rushes greedily for what appears already pleasant since this seems absolutely pleasant and good absolutely (φαίνεται γὰρ τὸ ἥδη ἡδὺ καὶ ἁπλῶς ἡδὺ καὶ ἀγαθὸν ἁπλῶς), while mind that envisions the future can prohibit just what appetite seeks.[12] Therefore a human may have desires to seek and avoid the *same* object on the assumption that wish, a kind of desire, goes along with mind. Plato allows appetite and spiritedness to oppose each other, as in the case of Leontius, who longs to look at the corpses in spite of his angry resistance to doing so (*Rep*. 439e–440a); yet Plato admits that spiritedness only thus opposes appetite in concert with calculation (440a–b). Aristotle suggests that direct opposition within the desires is most evident in humans with *logos* confronting appetite. The division of appetite and spiritedness may or may not have

[11] Themistius *In de an*. 120,10–15 observes that animals besides humans have perception of time, but they only perceive it accidentally rather than in itself. The other animals are aware of suffering they underwent in the past and they seek to avoid future suffering; thus they have some indirect sense of time rather than considering the time itself. Humans, however, can consider the past and future as such because they have mind and can count. For Aristotle "time is the number of motion with respect to before and after" (see *Physics* iv 10.219b1–2), so that only those animals that become fairly explicit about number can consider time itself. Time is what is numbered or counted rather than the number by which it is counted. The "before" and "after" that are counted are the before and after of *motion* rather than time, or the definition of time is circular (see Roark 2003). Motion, for Aristotle, has priority and posteriority (see *Meta*. v 11.1018b19–21). Though the other animals have some sense of time, they lack *logos*, and therefore may not have desires that explicitly, directly oppose each other, but they only oppose each other as the bales of hay drawing Buridan's ass in different directions.

[12] For the beasts what is now pleasant is typically absolutely good for them since they delight in what is naturally pleasant and good for them. Humans may delight in less natural pleasures and because of this what immediately appears pleasant may not be absolutely pleasant or good. Only the good person (ὁ σπουδαῖος) serves as the measure of pleasures to determine which are absolutely pleasant (see *NE* x 5.1176a15–19 and iii 4.1113a29–b2). There is the further question whether the things that are absolutely pleasant are also absolutely good. "Absolutely" (ἁπλῶς) means nonrelatively, but the relativity could be with reference to the animal or with reference to the end of the animal. What is good or pleasant absolutely is so for the *kind* of animal or as the *end* that is good in itself for that kind of animal. Something can seem pleasant or good to the individual animal that is not appropriate to the kind, or it could be pleasant or good only for the sake of some further end rather than absolutely. Hicks 1907, 561 points out that absolute good is absolutely pleasant, but the reverse need not be the case. He does not observe, however, that when what appears pleasant to the individual is absolutely pleasant it will also be absolutely good in the sense of being good for the kind, but it may not be absolutely good in the sense of being an end and good in itself.

the prominence bestowed upon it in the *Republic*. In any case desire should be conceived as a unified faculty, since for humans displaying the most direct opposition of desires, desires are opposing desires. It is a single faculty with perhaps three subfaculties or types of desire that can come into some conflict.

Even though desires may be contrary to each other, the desiderative capacity that moves the animal is unified:

> Now one in form is the mover, the desiderative power as desiderative power, and first of all the object of desire (not being moved this moves by being thought or imagined), but in number the movers are more. εἴδει μὲν οὖν ἓν ἂν εἴη τὸ κινοῦν τὸ ὀρεκτικόν, ᾗ ὀρεκτικόν, πρῶτον δὲ πάντων τὸ ὀρεκτόν (τοῦτο γὰρ κινεῖ οὐ κινούμενον τῷ νοηθῆναι ἢ φαντασθῆναι), ἀριθμῷ δὲ πλείω τὰ κινοῦντα. (433b10–13)

The first part of this passage emphasizes that the desiderative power, which is that which moves the animal, is one in form or in kind. Though desires can oppose each other, as a result of additional faculties of the soul, what moves the animal voluntarily will still always be the desiderative power. This responds to the Platonic tripartite scheme that appears to have several different possible motive faculties including even reason. For Aristotle the desiderative faculty as such is the single moving faculty. The desiderative faculty *as desiderative faculty* means the whole generic kind perhaps having further subfaculties, such as appetite, spiritedness, and wish. This desiderative faculty must always be the mover in the case of voluntary progressive motion. Yet this entails that it is the object of desire that ultimately moves the animal since the desiderative power is moved by the object of desire. The object of desire is the unmoved mover, the faculty being moved by it. Consequently, one might say that there are a number of movers. Movers of the animal include at least the object of desire and the desiderative power. Because the object of desire is thought or imagined, it is possible also to consider thinking or imagining somehow movers of the animal.[13] Aristotle does not determine whether *phantasia* enters into every desire or whether thought might be the cognitive aspect of some desire. Inasmuch as *phantasia* plays a role in all thinking (see iii 7), this is not an important question. Since the object of desire, what cognizes it, and the desiderative power, which breaks into three species, may all enter into causing motion, the movers turn out to be many in number.

Having indicated that the moving principle might be many in number, Aristotle elaborates upon the several factors involved in progressive animal motion. There are three types of factors, the mover (τὸ κινοῦν), that by which it moves (ᾧ κινεῖ), and what is moved (τὸ κινούμενον, 433b13–14). This analysis might be compared with the three factors in nutrition in 416b20–21 and similar analyses in other places in the corpus. This three-factor analysis derives from the *Physics*, where motion requires an unmoved mover, a moved mover, and that which is moved (256b14–15;

[13] Frede 1995, 279n1 comments on φαντασθῆναι in 433b12: "Aristotle often treats *phantasia* as the noun corresponding to *phainesthai* (cf. *DA* 428a7, 14; 428b1, 3; 433a28). Where there is no question of simple appearance but intentional imagining is meant he uses *phantasthênai* (433b12)." Since desiring may require some projection of the still non-existent future, it seems to be a case of imagining.

cf. 434b29–435a1). Such analysis also appears in the argument for eternal substantial being as unmoved mover in *Metaphysics* xii 7. In contexts outside the *De anima*, Aristotle is typically concerned to distinguish the first, unmoved mover from any intermediates that are moved movers and the last thing that is moved without moving anything else. Here in *De anima* iii 10 there are these three sorts of factors as well, but he aims to be more explicit about the moved movers, so he distributes responsibilities differently. The mover is of two sorts, that which is itself unmoved, that is, the practical good or object of desire, and that which is a moved mover, that is, the desiderative power (433b14–17). The desiderative power or what desires is a moved mover because it is acted upon by the object of desire (cf. *Meta.* 1072a26–30). What desires is moved to desire and it moves in turn through its operating desire, which is some sort of motion or actuality (ἡ ὄρεξις κίνησίς τίς ἐστιν ἢ ἐνέργεια, 433b17–18). In calling occurrent desire motion of a sort or even actuality, if this is the correct text, Aristotle indicates here as elsewhere (see 431a4–7), that a psychical operation is perhaps really an activity complete at every moment rather than a motion. Desire, then, is only moved in a manner of speaking. What is moved by desire is the animal (433b18–19). That by which desire moves the animal is some bodily part (σωματικόν) as organ or instrument (b19–22). Hence, here in the *De anima* Aristotle has as mover either the object of desire – the practical good that moves as an unmoved mover – or the desiderative power – that moves as a moved mover. It moves through desiring. What is moved is the animal, and that by which the moved mover, the desiderative power or desire, moves the animal is a bodily instrument. Aristotle is careful not to speak of the bodily parts that serve as instruments as moved movers, reserving the role of mover of the *animal* for the object of desire and the psychical capacity. As in turn moving other parts of the body, the bodily instruments are of course moved movers, only not so much of the entire animal, as is the case for desire, as merely of other *parts* of the animal.

Since desire moves the animal through a bodily instrument, this is the subject of other works, such as *Parts of Animals*, *De motu animalium*, and *Progression of Animals*, that treat functions common to body and soul (433b19–21). The present work keeps more to functions of the soul, or the soul's role in common functions, but Aristotle recaps the result of those other investigations of the body's instrumental contribution to progressive motion (ὡς ἐν κεφαλαίῳ εἰπεῖν, b21). Where there are a beginning and an end together and the same (ὅπου ἀρχὴ καὶ τελευτὴ τὸ αὐτό), as at a joint in the body, desire can produce motion (b21–22). At a joint such as the hip, a ball and socket joint, the convex and concave join as a beginning and an end so that there can be something unmoved and something moved. Beginning and end are separate in account but inseparable in magnitude because they are in contact (b22–25; cf. 429a10–12 and 432a18–20 on separation in magnitude or account). The joint acts as might a point at which line segments have contact, allowing the point to be at rest while one or both the line segments leading away from it enter into motion (cf. 427a9–14, *PA* ii 9.654a33–b2, *De motu* 1.698a15–b6, 4.700a7–11, 702a22–33, *Meta.* v 6.1016a12–17). Since moved movers move other things by pushing or pulling – that locomotion arises through pushing or pulling is argued in *Physics* vii 2.243a15–244a14 – and pushing or pulling requires a stable base against which the

pushing and pulling can take place (see *De motu* 2), there must be something stable in the joint to allow for pushing or pulling of the other parts of the body (433b25–26). The situation may be compared to the way circular motion has something at rest, such as the center point of a wheel or the tip of its axis of a spinning top, and it is also from this point at rest that the circular motion can begin (b26–27). The joint provides a point relatively at rest from which other body parts can be set in motion. Desire here finds a stable base to use for pushing or pulling to cause motion. The joint serves as the beginning point for the origination of motion within a portion of the body as the heart serves as the beginning for the origination of progressive animal motion of the whole animal (see *De motu* 9–10).

Aristotle has wished to be somewhat explicit about the role of bodily parts as organs and instruments of the desiderative capacity in order to fill out the analogy with the other functional parts of the soul, where there obviously also is a bodily organ. The obviousness of the sense organs, but the obscurity regarding the sorts of processes that occur within them, limit what he can say about these, much as he is limited in what he relates about the further processes involved in animal motions. In the fuller treatments in other works, Aristotle speaks of the ultimate intermediary through which desire moves the animal at the joint. This is connate *pneuma* (e.g., *De motu* 10). *Pneuma* is a subtle warm air especially capable of responding to the slightest influences – heating and cooling and contracting and expanding – thereby pushing and pulling in such a way as to produce in turn large changes. That Aristotle does not mention this at all here warrants his calling the present treatment merely summary (433b21).

433b27–30 The desiderative power's role as soul faculty engendering locomotion of the animal has been the contention of the chapter. Aristotle adds that desiderative power makes the animal capable of moving itself, in the way in which the animal has desiderative power (ᾗ ὀρεκτικὸν τὸ ζῷον, ταύτῃ αὑτοῦ κινητικόν, 433b27–28). Living beings as such should be self-movers (see *Phys*. 259b1ff.): plants grow and decline because of nutritive capacity, and most animals have locomotion because of the desiderative capacity. If soul can desire as in animals, then the animal can move itself to seek to satisfy its desire, or desire would be in vain. But the motion of the animal may either be nonprogressive or progressive and of various sorts, such as walking, swimming, flying. What sort of capacity of desire the animal has determines the sort of capacity for self-motion that it has.

In order to have desire, the animal requires some cognition to provide it its object. Aristotle hardly wants to have affectivity precede cognition; ultimately cognition should have priority, and so he states, "capacity for desire is not without *phantasia*" (ὀρεκτικὸν δὲ οὐκ ἄνευ φαντασίας, 433b28–29). This recalls earlier passages in which thought was said not to be without *phantasia* or *phantasmata* (403a7–10, 427b14–16, 431a16–17, 432a10–14). The desiderative faculty depends upon cognition. But when Aristotle says that there is no desiderative capacity without *phantasia*, does he mean simply that no kind of animal lacking *phantasia* can have the desiderative power, or does he mean that every case of desiring requires *phantasia* to present the object of desire? The earlier passages that connect perception and desire (413b22–24 and

414b1–6) are not fully explicit about whether *phantasia* always has to enter, but they make it likely that it typically does. The animal might just have its succession of present perceptions if *phantasia* did not take it beyond what is immediately present to a possible object of desire. Yet because there are quite rapid responses to some pains and pleasures, a role for *phantasia* may not be clear in all cases. But generally *phantasia* provides the cognition initiating desire and directing it at an object, since even thought, another possibility, presupposes some *phantasma*. *Phantasia* stands for the faculty as well as particular *phantasiai* to which it gives rise. Since animals are only capable of *phantasia* because they have sense perception and hence pleasure and pain, Aristotle's statement broadly recognizes the dependence of desire upon cognition while specifying *phantasia* as crucial.

Though the chapter has emphasized that the desiderative power is the one locomotive power, Aristotle has repeatedly indicated that desire connects with cognition so that cognition plays a vital role in animal motion. The dependence of desire upon *phantasia* is essential to what he presents here and elsewhere. In *Metaphysics* xii 7.1072a29–30 he says, "we desire because it seems [good] rather than it seems because we desire, for intellection is the beginning" (ὀρεγόμεθα δὲ διότι δοκεῖ μᾶλλον ἢ δοκεῖ διότι ὀρεγόμεθα· ἀρχὴ γὰρ ἡ νόησις). This accords with Plato's *Euthyphro*, where things seem loved by the gods because they are pious rather than pious because they are loved by the gods. Cognition is given priority over affectivity. Does Aristotle have argument to establish this? In *De anima* 414b1–6 and b14–16 he contends that sense perception is a sufficient condition for desire. Where there is sense there is feeling of pleasure and pain, and consequently there is appetite. But does he argue for the reverse implication, that is, that desire implies cognition, especially *phantasia*, so cognition is a necessary condition for desire? If only animals have desire and are self-movers in respect to progressive locomotion, then he has completed the argument. In 432b14–17 Aristotle supposes that progressive motion such as undertaken by animals is all for the sake of something and due to *phantasia* and desire. Sense perception itself may give pleasure and pain (see 431a10–11 and 436b15–16). Still *phantasia* occasions desire inasmuch as the animal desires some not-yet-present engagement with the pleasant or painful, to pursue or avoid it, and this engagement must be presented to desire by *phantasia*. Even when *nous* moves someone, *phantasia* initiates the practical thinking. *Phantasia* is thus the necessary and sufficient condition for desire. This means that having *phantasia* as a faculty suffices for the ability to desire rather than that each occasion of *phantasia* causes desire.

Phantasia is required for desire. Aristotle adds that every *phantasia* is either calculative or sensitive (φαντασία δὲ πᾶσα ἢ λογιστικὴ ἢ αἰσθητική, 433b29). This might be taken to be a distinction of species of *phantasia*, some arise from sense perception and some from thought.[14] He has not, however, prepared us for any

[14] Hicks 1907, 565 says ambiguously, "We have been prepared for an extension of the meaning formerly given to φαντασία. In III. 3, § 13 it was connected with sensation. Now it seems as if high mental operations, such as λογισμός, imply pictorial images." It is unclear whether Hicks takes Aristotle to be introducing another sort of *phantasia* or merely to be noting that thought involves *phantasmata*. Sub-

definite subfaculties of *phantasia*, and especially subfaculties based on further faculties beyond *phantasia*, such as reason. We expect him to hold to his general account of *phantasia* of iii 3 as some sort of motion arising from perception according to actuality. Any other use of *phantasia* should be merely metaphorical (cf. 428a1–2). Rather than speaking metaphorically here, he seems to be noting that while all *phantasia* arises from sense perception, some of it is just applied to sensitive life while some of it can be applied to thought and calculation. *Phantasia* as participated in by the beasts can account for their desire and motion, while *phantasia* possessed by humans further gives rise to thinking, deliberation, and higher-level desires. He speaks of the *phantasia* as λογιστική (calculative) rather than νοητική (intellective), which might be the expected contrast to αἰσθητική (sensitive), because of the special linkage of humans with *logos*, referred to earlier in 433a11–12 and b5–10, that enables them to engage in calculation and deliberation. (See also 434a7, where Aristotle substitutes βουλευτική for λογιστική, perhaps indicating that *logistike* is wider than merely practical calculation.) If when he says desire is not without *phantasia* in 433b28–29 the *phantasia* may refer to the faculty or to particular *phantasiai*, then right afterward when he refers to "every *phantasia*" (φαντασία δὲ πᾶσα, b29) he likely says that each *act* of *phantasia* is either calculative or sensitive. The employment of particular *phantasiai* rather than different types of *phantasia* is expected.

Humans can employ *phantasia* with their sensitive operations, as can the beasts, but humans can also employ it with calculation. When Aristotle comments, "Then in this also the other animals participate" (ταύτης μὲν οὖν καὶ τὰ ἄλλα ζῷα μετέχει, 433b29–30), he could just be affirming that the beasts have *phantasia* as well as humans, so that *phantasia* clearly enters into all animal motion. If he is affirming that the beasts only have sensitive *phantasia*, as do we, then this can account for their progressive motion. Sensitive *phantasia* suffices for animal motion since beasts have progressive motion without thought or calculation (cf. 433a10–12).[15] We may well wonder whether any human *phantasia* can be unaffected by our having *logos*. Yet, just as humans continue to have sense perception though they also have mind, so humans can have both sensitive and calculative *phantasia*. That humans also have sensitive *phantasia* is confirmed by 434a5–7. Were Aristotle assigning sensitive *phantasia* exclusively to the beasts and calculative *phantasia* exclusively

sequently, on p. 567 he first says, "Deliberation is confined to man and, like other modes of discursive thought, employs pictorial images," but then adds, "The lower animals seem, at first sight, to be destitute of 'judgment' (δόξα) because incapable of ratiocination (συλλογισμός), and therefore unable to form images following on ratiocinations."

[15] Aristotle seems to restrict deliberation (βούλευσις) and inference (συλλογισμός) and inquiry (ζήτησις) to humans inasmuch as they alone have *logos* (see *De memoria* 453a6–14). Others grant to the other animals some sort of inquiry or "train of thoughts" (see Hobbes *Leviathan* ch. 3). Using "thought" as equivalent to "imagination," Hobbes speaks of train of imaginations and train of thoughts. He distinguishes the "mental discourse" that can be without words and in which the beasts can share from the "discourse of words" peculiar to humans. Perhaps Aristotle too can allow to beasts a series of *phantasiai*, since surely passions such as appetite and fear set up a series of appearances, yet he will deny to them the making of inferences. The animal having something appearing pleasant and something appearing painful to it will have to opt to pursue or avoid; there is some estimation, at the level of sense, implied even in desire of the other animals.

to humans, it is even more evident that calculative *phantasia* has to fall under the general account of *phantasia* in iii 3, or it destroys the definition. Though it enters into our deliberations and occasions them, calculative *phantasia* arises from sense perception according to actuality.

It is plausible to speak of calculative *phantasia* either because of its employment in calculation or because of its greater complexity than the *phantasia* of the beasts. Whereas the beasts may engage in low-level estimation of greater apparent goods because they have merely limited time sense, that is, they have very limited sequences of *phantasiai*, humans have elaborate reflection upon temporality and can calculate complex sequences (see 433b5–10). Hence, though all *phantasia* arises from sense perception, the use of *phantasia* by humans and the complexity of association of *phantasiai* put it in close relationship with the calculative faculty.

11

Even the Simplest Animals Have Indefinite *Phantasia*, and Calculative *Phantasia* Fits the Account of Progressive Motion

The desiderative power has been established as that which moves animals. The cognition pertaining to progressive animal motion needs further attention since some animals are extremely simple while others are quite complex. Aristotle has just emphasized that there can be no desiderative power without *phantasia* and referred to calculative and sensitive *phantasia* (433b28–30). What if there are animals so simple that they completely lack *phantasia*, as was suggested in iii 3.428a9–11? What would be the implications for desire and animal motion? And what is calculative *phantasia*? Does the distinction of sensitive and calculative *phantasia* call into question the way *phantasia* was defined in iii 3? Aristotle must confirm that calculative *phantasia* does not interfere with that earlier account. Moreover, he should show that calculative *phantasia* fits with the view that desiderative power moves the animal: such *phantasia* is not moving the animal without involvement of desire.

433b31–434a5 What is it that moves the incomplete animals (τῶν ἀτελῶν), where by "incomplete" is meant lacking the full range of senses (433b31–434a2)? The animals under consideration have merely the contact senses, touch and taste (ἁφή in 434a1 may apply to both), but none of the distance senses that complete the possible sensitive component of animals. Such animals without distance senses, it will be seen in 434b24–27, do not have progressive motion. Might these animals also lack *phantasia*, and if so can they have appetite? Were the ant, the bee, and the grub to lack *phantasia*, a possibility held out in 428a11, then appetite might be lacking and another mover of the animal demanded besides the desiderative power. Earlier in 414b14–16 Aristotle said, "at present it may be enough to say that all animals that have the sense of touch also possess desire. Concerning *phantasia* it is unclear; later it ought to be considered." Besides the treatment of *phantasia* in iii 3, this chapter seems to be the promised clarification of the way *phantasia* pertains even to the simplest animals and to animal motion generally. Perhaps only through this additional reflection upon *phantasia* can the role of the desiderative faculty in all animal motion, and the place of cognition within it, be secured.

The argument showing that even the incomplete animals possess *phantasia* and desire is this: it is evident such animals feel pain and pleasure (φαίνεται γὰρ λύπη καὶ ἡδονὴ ἐνοῦσα), and if this is the case, then they necessarily have appetite (ἐπιθυμίαν, 434a2–3).[1] Since they possess appetite, and the possession of desire presupposes *phantasia* (see 433b28–29), they must have *phantasia* as well. Now what justifies the points in this argumentation? The premise about such animals' feeling pain and pleasure can only be established for us by our observations. We notice simple animals avoiding painful things, as a shellfish responds to being struck, and the animal pursues only some things as food because they seem pleasant. So it is evident *to us* that they feel pain and pleasure. If they feel pain and pleasure, then they must have appetite since this is just the desire set up by painful and pleasant things (see 413b22–24, 414b1–16, and 431a8–14). Why have perception of pain and pleasure if there is no ability to respond to such perception? The requirement of *phantasia* for desire was raised in the previous chapter. Now Aristotle need only explain what sort of *phantasia* can be present in such simple animals to make it quite plausible that even the simplest animals must have *phantasia* and that this enters into their capacity for desire.

The incomplete animals should have *phantasia* appropriate to their sort of motion. Just as they are in motion only indeterminately or indefinitely or vaguely (κινεῖται ἀορίστως), as befits their being incomplete in sense capacity, they have *phantasia* but merely indeterminately or indefinitely or vaguely (434a4–5). Aristotle does not bother to elucidate. Such animals are observed to engage in motion that appears rather helter-skelter. This can be explained because they have only contact sense, and therefore very limited perception of common and accidental sensibles. They also lack memory and perception of time (see *Post. An.* 99b36–100a1 and *Meta.* 980a27–b2). Their *phantasia* will therefore be fleeting and merely depicting tangibles and flavors. Such animals can only be directing their motion toward or away from what feels and/or tastes pleasing or painful or they anticipate to be so from moment to moment. Restricted to apprehension of the object of desire through touch and taste, they have indeterminate *phantasia*, that is, *phantasia* fixing merely upon tangibles and flavors, and their motion provoked by desire can only be very short lived, followed by other short-lived motions. Since they typically desire just that with which they are in contact, and they may be in contact with food in various directions, or they fleetingly have *phantasiai* of pleasant objects, the overall pattern of their motions over time seems close to random.[2] Such indeterminate motion is

[1] As at 413b23 and 414b4–5, Aristotle goes in the order pain and pleasure since response to pain may be most obvious and may most give rise to desire. That this is not the standard order in Greek speech is clearly shown in the *Ethics*, where Aristotle frequently speaks of pleasure and pain, e.g., *NE* 1104b8–9.

[2] This random motion will not be progressive motion. That the very simplest beasts have *phantasia* indeterminately or indefinitely or vaguely (ἀορίστως) means that the presentation is limited in its definiteness and guides the animal's motion for the briefest time in contrast with the *phantasia* of higher beasts, which gives a fuller presentation of the object and guides a larger pattern of motion. Aristotle's use of ἀορίστως, from "without boundaries," indicates that he is emphasizing the indefiniteness and brevity of the *phantasia* as a presentation rather than suggesting that some other *phantasia* is discriminative or determinative of motion, i.e. making decisions. Richardson 1995, 386n16 suggests that we might deny

furthest removed from the continuous pattern of cyclical motion of the heavens. The heavens provide the paradigm of determinate, orderly, free life of motion (see *Meta*. xii 10.1075a19–25). The lowest beasts lead the most slavish and least eudaemonistic sorts of lives, buffeted by sensations to many of which they must respond by motion.[3]

That Aristotle attributes indeterminate *phantasia* to these simple animals accords with desire's presupposing *phantasia*. Sense enables the animal to perceive sensible objects, some of which are painful or pleasant. Therefore it has appetite. But also the object of desire is what is pleasant or painful as presented by *phantasia* in some relationship with the animal. *Phantasia* as a presentational rather than a discriminative capacity displays something as pleasant or painful *for the animal*. Desire responds to this presentation. As a power that makes a determination of what is sought, desire more resembles sense as discriminative than *phantasia* as presentational.[4] Just below Aristotle indicates that humans pursue the greater good (434a9). Humans have intellect to oppose *phantasiai*. Animals lacking reason have various appearances of the pleasant and painful but nothing outside *phantasia* can oppose it. Their various desires are all based upon *phantasmata*. Those animals with merely contact sense and indeterminate *phantasia* have very limited possibility of conflicting appearances to be weighed relative to each other. Desire just goes along with immediate, indeterminate *phantasia* closely linked with sense from moment to moment.

434a5–15 Having considered the *phantasia* of the simplest animals, Aristotle expands the reflection on *phantasia* to clarify and ensure its place in every desiderative operation. The beasts all have sensitive *phantasia* (αἰσθητικὴ φαντασία, 434a5–7). It has been said in 433b29–30 that the animals other than humans also have such *phantasia*. Deliberative *phantasia* belongs, then, only in animals having reasoning capacity (ἡ δὲ βουλευτικὴ ἐν τοῖς λογικοῖς), presumably humans. "Deliberative" (βουλευτική), substituted for "calculative" (λογιστική, see 433b29), perhaps narrows *phantasia* to that involved in practical calculation. Aristotle argues for this limitation of deliberative *phantasia* to animals with reasoning, "for whether it will do this or this is already a work of calculation" (πότερον γὰρ πράξει τόδε ἢ τόδε, λογισμοῦ ἤδη ἐστὶν ἔργον, 434a7–8). To determine whether humans do one action

a "full-blown *phantasia* to the imperfect animals," but we hardly deny these animals full-blown sense perception. Rather, they have touch and taste fine enough, but since they have just these senses, and *phantasia* arises from sense perception according to actuality, the *phantasia* has parallel limitation. The indeterminacy of their motion and *phantasia* may remind us of the indeterminate names and verbs in *De interpretatione*, the indeterminacy of accidental causes in *Physics* 196b27–28, and the indeterminacy of matter in 209b9. Some predecessors suppose that all motion is indeterminate (see *Phys*. 201b24–202a3).

[3] We might compare the thought here to Plato's mention in dialogues such as the *Theaetetus* of the two patterns of life, the divine and the godless (see 176e–177a), or the paradigm of the heavens' motions in *Timaeus* 90c–d.

[4] In iii 7.431a12–14 Aristotle says the power of sense and power of desire are not other than each other, though their being is other. Desire is a discriminative faculty based on sense perception and *phantasia*. He never similarly says that the power of sense and *phantasia* are the same.

or another is a task of calculation. Use of *praxis* and the option of "this or this" suggest the sort of choice restricted to humans rather than mere animal preferences for one pleasure over another (see *NE* 1111b8–10). The human being calculates what to do. This calculation can be viewed as placing the various options under a single measure so that the person may pursue whichever is greater (434a8–9). Practical calculation is "able to make one from more *phantasmata*" (δύναται ἓν ἐκ πλειόνων φαντασμάτων ποιεῖν, a9–10).[5] This may mean that calculation juggles the various *phantasmata* to arrive at that one that it prefers (the other *phantasmata* are rejected) or calculation devises a scheme of means to achieve an end (thus it puts together various *phantasmata* into a single large project) or it does both of these. Since *phantasmata* enter into the deliberation, *phantasia* will still be required for such thought.

Does this sort of *phantasia* go against what was said of *phantasia* in iii 3? Though *phantasia* may be called deliberative or calculative, and *phantasia* enters into deliberation, *phantasia* is not what decides what the human does and it may be limited to what can be sensed. The decision whether this or that will be done, Aristotle insists, "is already a work of calculation" (434a7–8). Calculation employs *phantasia*. Calculation is a unifying capacity that brings together the various inputs, measures them, and determines what will be done. In this way it is able to make one thing from several *phantasmata* (a8–10).[6] This is confirming that *phantasia* is not itself a discriminative faculty. Another faculty, the calculative intellect, uses it in making its determinations. *Phantasia* is "calculative" or "deliberative" merely inasmuch as the sensible sort of content it presents enters into calculation or deliberation and the *phantasma* that results may go well beyond what the other animals can manage. But the process of juggling, weighing, or measuring the presentations of *phantasia* to arrive at a final determination is something other than *phantasia*.[7] This seems to

[5] Aristotle's argumentation here should be compared with Plato's *Protagoras* 356dff. Whereas Plato contrasts the measuring art (ἡ μετρητικὴ τέχνη) and the power of appearance (ἡ τοῦ φαινομένου δύναμις), Aristotle is speaking of measuring in relation to *phantasmata*. It might be wondered whether the beasts "measure" and opt for the greater. It might depend upon how strict we are with measuring: surely the beasts lack art. Medieval interpreters bestow some ability at comparisons determining motion to the beasts. Avicenna, followed by Aquinas (*Summa Theologica* i 78 art. 4), includes "the estimative" as one of the "interior sensitive powers," which are at least common sense, *phantasia*, the estimative, and the memorative. Aquinas's announced purpose for the estimative internal sense power is to explain the way the beasts are moved not just by sensibly pleasant or painful things but by things of advantage or disadvantage, e.g., the twigs that the bird desires for its nest or the horror of the wolf to the sheep.

[6] The possible resemblance to *Meta*. 980b29–981a1 and *Post. An*. 100a3–6, where it is a single experience that derives from many memories, should help us recognize that the one being made from the *phantasmata* is likely to be something beyond *phantasia* rather than simply a creative imagination. The most helpful passages to have in mind are iii 2.427a2–14, where the central sense joins disparate perceptions as white and sweet to discriminate them, and iii 6.430b5–6, where mind joins notions for making a judgment. Something analogously joins the *phantasmata* to compare them.

[7] The passage in *De motu animalium* that might seem to suggest otherwise need not. In 700b17–22 Aristotle says, "We see that the movers of the animal are intellect and *phantasia* and choice and wish and appetite. And these all reduce to thought and desire. For *phantasia* and sense-perception have the same position as thought, since all are discriminative, though they differ in ways discussed in other works" (ὁρῶμεν δὲ τὰ κινοῦντα τὸ ζῷον διάνοιαν καὶ φαντασίαν καὶ προαίρεσιν καὶ βούλησιν καὶ

be what Aristotle proceeds to explain. He states, "And the reason for this, that it does not seem to have opinion, is that it does not have the opinion resulting from syllogism, but this has that" (a10–12). These lines are difficult because they do not make explicit what they concern, so many interpreters take them to return to those animals lacking reasoning (in a6–7) and to explain why they do not have opinion. Yet it fits the context much better to take the point to be that *phantasia*, even deliberative *phantasia*, lacks opinion because it is not what is doing the syllogistic calculation by means of the *phantasmata*, but instead another faculty is doing the calculation. Then the words "this has that" (αὕτη δὲ ἐκείνην, a11–12), which some editors propose deleting or amending, may be taken to say something like "this (calculative capacity) has that (opinion)." That Aristotle has been denying that *phantasia* by itself has opinion or makes determinations seems confirmed when he goes ahead, on the basis of his reflection in a10–12 (note the use of διό), to deny as well that desire (ἡ ὄρεξις) just as such has the power of deliberation (τὸ βουλευτικόν, a12). Many desires simply built upon *phantasia*, such as immediate appetites, need hardly be deliberative or require deliberative power. And that desires may or may not involve deliberation allows them to conflict or to accord with the reasoning of humans.

Desire without deliberation – and Aristotle might have appetite (*epithumia*) or anger (*thumos*) in mind – can overcome wish (*boulesis*), that is, desire only possible for animals with deliberation (434a12–13). The lower desire, such as appetite, may overcome the higher, wish, though sometimes the reverse happens and wish wins (a13). This contest can be compared to one sphere's dominating another (a13–14). Commentators have suggested that Aristotle might be thinking of the way the outer heavenly spheres move the inner ones or one ball redirects another in some ancient ball game.[8] When appetite wins out, this is called incontinence or it is due to incontinence (a14).[9] That incontinence and continence may be characterized as one desire's overtaking another, rather than just as reason or appetite's winning, confirms that *desire* has the primary role in animal motion. Cognition by itself does not move the animal. Some desire has to occur to cause the animal to enter into

ἐπιθυμίαν. ταῦτα δὲ πάντα ἀνάγεται εἰς νοῦν καὶ ὄρεξιν. καὶ γὰρ ἡ φαντασία καὶ ἡ αἴσθησις τὴν αὐτὴν τῷ νῷ χώραν ἔχουσιν · κριτικὰ γὰρ πάντα, διαφέρουσι δὲ κατὰ τὰς εἰρημένας ἐν ἄλλοις διαφοράς.). *Phantasia* might fall under *nous* since the *De anima* suggests it is a sort of *noesis* (see 427b27–28, 432a12–13, 433a10, and a26) and *phantasia* need only be *kritika* as presenting the materials that some other faculty uses: i.e., it enters into applications in which discriminations are made, much as calculative *phantasia* merely means that *phantasia* enters into calculative applications.

[8] Ross 1961, 305 reports Simplicius reporting Alexander and Plutarch of Athens suggesting the heavenly spheres, whereas Simplicius himself recommends the game. Ross comments that the idea of contest indicated by the use of νικᾷ (wins) supports Simplicius, which, if this means that either may win out, clinches the case. Recall, as noted previously, that the regular motions of the heavens are the model of orderly motion. Aristotle's indication later in 434a14–15 that "by nature the upper is always more ruling" might again intimate that humans are supposed to be imitating the order of the heavenly spheres.

[9] If 434a14 reads ἀκρασία γενήταῃ, then *akrasia* results from the victory of appetite, whereas if the text reads ἀκρασία ἐνῇ, then *akrasia* causes the victory. Simplicius *In de an*. 310,28–30 takes ἀκρασία here in the wide sense of desire opposing desire rather than the stricter sense of appetite for immediate pleasures of touch overcoming wish or reason.

progressive motion. Even practical reason can only be effective in human action through enlisting desire. By nature the higher desire, wish, which is possibly guided by reason, should dominate, but it may not (a14–15). Therefore, Aristotle observes that there are three sorts of locomotions (ὥστε τρεῖς φορὰς ἤδη κινεῖσθαι, a15). He could be thinking of three modes of human action: (a) incontinent, when the lower appetite defeats the higher wish; (b) continent, when the high conquers the low; and (c) action according to virtue or vice, when wish either good or wicked has the cooperation of appetite. Or he might be thinking of the three types of desire that could move us: appetite, anger, and wish. Or when one or another of the irrational or rational desires moves human or beast or there is a conflict. Or to represent some of these he could be thinking of the way apparent planetary motions combine the diurnal circular motion of the fixed stars, an inclined circular motion through the zodiac, and additional motions.

434a16–21 Aristotle can continue to show that intellectual cognition does not by itself move the animal. In contexts in which he discusses deliberation in human action, he often puts forward the "practical syllogism" as an account or heuristic model of what takes place (see, e.g., *De motu* 7, *NE* 1146b35–1147a10). Such a syllogism has a more universal first premise and a more particular second premise so that there can be a particular conclusion or action resulting. The less the more universal premise moves the animal, the less knowledge does anything on its own without desire. The syllogism tends to be viewed either as a means-end calculation – One should aim to achieve *X*, doing *Y* is a means for me to attain *X*, so I do *Y* – or as general-particular (instantiation) reflection – one ought to do *X* sorts of deeds, *Y* is an *X* sort of deed and I am (or aspire to be) an *X* sort of person, so I do *Y*. At present Aristotle has the latter especially in mind (see 434a17–19). Is such calculation consistent with the role of desire in causing progressive motion?

Where the person has knowledge, Aristotle maintains, this neither is mover nor is it movable: "The knowledgeable faculty does not move something, but it remains" (τὸ δ' ἐπιστημονικὸν οὐ κινεῖ τι, ἀλλὰ μένει, 434a16).[10] The first premise that should derive from knowledge is universal: "the one is universal supposition and *logos*" (ἡ μὲν καθόλου ὑπόληψις καὶ λόγος, a16–17; see 427b24–26 on "supposition"), and the other premise is particular (καθ' ἕκαστα). Aristotle illustrates the universal premise "One ought to do such a sort of thing" (434a17–18). This universal premise, as a thought, is provoked by *phantasia*, but as supposition and *logos* it is not merely *phantasia*. The other particular premise might be "This is such a sort of thing and I am such a sort of person" (a18–19). This particular premise is also an opinion but the more occurrent opinion that moves me (a19–20). No universal premise

[10] The textual alternative for κινεῖ τι in 434a16, κινεῖται, says that knowledgeable faculty is not moved. It may work a little better with the text in its own line, i.e., the contrast with "it remains," but not as nicely with a19 about the way the particular premise moves. As given here, 434a16 intriguingly echoes *DA* iii 5. In iii 5 knowledge is itself unmoved but has the role of initiating thinking, but it can do so only along with *phantasia*. Now the knowledgeable faculty similarly teams up with something more particular to cause human voluntary motion.

can move us without some cooperative second premise since all action is particular (see *NE* 1143a32–33). The universal premise, he says, does not move, or both premises conjoined move, but the universal seems to be more at rest (ἡ μὲν ἠρεμοῦσα μᾶλλον), because it does not adjust so much to particular circumstances as the other (a20–21). The universal premise is something of an unmoved mover, while the second premise is a moved mover. Though both premises compose the syllogism, the particular premise plays a crucial role in moving us. What is significant about this for Aristotle is that it confirms the primacy of desire in locomotion. The second premise, though an opinion, is more removed from knowledge and closer to cognition directly involved in desire. Since this is a more particular opinion, it is easy to hold that *phantasia* is closely bound up with it. Hence the chapter confirms that desire moves all animals and *phantasia* connects with all desire, whether the desire of the simplest beasts or even human desire. Moreover, even calculative *phantasia* fits with the account of *phantasia* and progressive motion.

It is always possible to elaborate a practical syllogism with the premises together leading to action. Suppose that we have the knowledge that temperate persons do temperate actions, and we have the opinion that some particular action is a temperate action. We may go ahead to choose to do it (so the two original premises in conjunction with desire lead to our action), or instead an appetite for cakes intervenes, and we instead succumb to overindulging in cakes. In this latter case we seem to substitute a different syllogism such as this: Delicious foods are to be eaten by me, these cakes are delicious foods that I greatly delight in, so I eat them. Again some premises jointly contribute to the action, though one or the other of these premises may not be the original and may present apparent rather than true good. Regarding Socrates' notorious denial of the possibility of incontinence, that is, the paradox that no one desires or deliberately does evil, we might allow that since any action can be explained in terms of some or another practical syllogism, it may look as if incontinence is impossible. There are always premises realized in the action, so that the apparent good always seems to prevail. Yet if we admit that there could and should have been another practical syllogism leading to a different action, and the person in fact wished at some time to engage in such a different course of action and this would have been a truly good action, then it seems that incontinence arises.

12

The Necessary Order of the Faculties of Soul

Two main tasks remain to complete in the treatment of soul. Near the beginning of the *De anima* it was announced that the investigation of soul is to disclose its nature and essence along with its accidents (402a7–8). These accidents are especially the operations of living things: nourishing themselves, perceiving, walking, swimming, flying, thinking, and so on. Presumably these somehow have to be demonstrated as following from the accounts of the soul and its capacities (see 402b16–403a2). Moreover, in book 2 in 413b9–10, 413b33–414a1, and 414b33–415a1 Aristotle announced that additional discussion is forthcoming about why the soul has certain capacities in succession. Why does nutritive capacity have priority over all other capacities of soul, and similarly all the other capacities presuppose the capacity for sense perception, while touch is the most fundamental sense? Now the anticipated treatment appears in confirmation of his whole approach to the soul and the soul's relation to body. If certain faculties of soul are necessary in succession, then their operations, the main accidents of the soul, are demonstrated as necessary. Achievement of this demonstration supports the definitions upon which it is based.

The argumentation here is teleological and hypothetical; that is, certain parts must be present if certain functions are to be performed and natural ends to be attained. The ends at issue are life and the good life that entered into the very definition of soul in ii 1. The various powers of soul are requisite to sustain the life of the organism and/or to allow for living a good life. Life and the good life are composed of the very operations of these faculties of soul, that is, nourishing itself, perceiving, thinking, doing, and so on, and hence these accidents of the soul and the ensouled being, that is, what goes along with them and follows from them, seem demonstrated in terms of the definition of soul and its parts. The faculties of soul in succession necessarily give rise to certain operations in connection with the different kinds of life. We may see that Aristotle's teleology is rather austere, because it is only *after* he has discussed *what* the various soul faculties are that he considers them in terms of their ends rather than having their ends explain what they are. Yet it is essential to show that the accounts he has provided accord with the demand of his physics that nature be for the sake of something. We can see this discussion as circling back to the issues at the start of the *De anima* and the start of book 2, that is,

the accidents of soul and the succession of the types of life. So this ending takes up principal issues of the whole treatise. The investigative demands provide Aristotle the prospect for literary closure: the treatise reaches its end through justifying all that goes before by showing that it all must be the case for the soul to achieve its end.

Aristotle speaks primarily of nutrition and sense perception because the further powers of soul develop out of sense perception and may get outside natural science where natural things have been argued to work for ends. The argumentation justifying the five distance and contact senses might be seen as linked with that of iii 1, where it was demonstrated that in the world as it is there are but five senses. Book 3 seems to achieve a kind of unity because it starts off determining why there can only be five senses and ends up arguing for the necessity of the senses.[1]

434a22–30 Every living being, that is, every mortal living thing, necessarily has nutritive power of soul, and it must have such soul from its generation to its perishing, that is, during the entire span of life (434a22–23). Aristotle now argues for this necessity. Living things, since they come to be (τὸ γενόμενον), necessarily have periods of growth, of maturity, and of decline that make necessary nutritive capacity to support growing and declining things (ἐν πᾶσι τοῖς φυομένοις καὶ φθίνουσιν, a24–27; cf. 412a14–15 and 413a22–31).[2] Might nonliving things also have nutritive soul and might heavenly bodies be alive and ensouled without nutritive capacity? Aristotle seems to handle these difficulties by speaking of things that come into being and have a natural pattern of thriving and declining. This eliminates nonliving things such as fire and crystals that might seem to grow but without any real natural pattern of maturity and decline, and the heavenly beings do not, for Aristotle, come into being. This argumentation about patterns of growth, maturity, and decline abbreviates the argumentation of 415b28–416a18. The argument is this: if living things come into being, then they necessarily have the pattern of growth, maturity, and decline, and therefore they necessarily have nutritive soul for bringing all this about. Necessity emerges from understanding how the coming into being and perishing of living things relate to general coming into being and perishing: all that comes into being must also perish, and living beings that come into being must have growth, maturity, and decline. Thus he has established the *necessity* of nutrition for generated living things to explain their pattern of operations in connection with coming into being and perishing. He now must argue for the *sufficiency* of nutritive soul for life. Among those living beings (τοῖς ζῶσιν) requiring the nutritive power, not all need to have the power of sense perception (434a27). If sense is not necessary for life, and whatever has mortal life must have nutritive power, then nutrition is not

[1] The case in Hutchinson 1987 for relocating iii 12–13 between ii 4 and ii 5 ruins the arrangement of book 3 as well as book 2. Aristotle surely should not give the argumentation in 434a32–434b8 about progressive motion before he has even considered this faculty, as the rearrangement would entail. See Burnyeat 2002, 30n6 for additional criticism.

[2] Τοῖς φυομένοις in 434a26 can mean the things being born, growing, and naturally thriving. In 434a24 Aristotle speaks of coming into being as involving increase in size (αὔξησιν), while in a26 referring to τοῖς φυομένοις broadens the notion considerably.

only necessary but also sufficient. This argument presupposes that any sort of life beyond nutritive life requires sense perception, a presupposition that is plausible given previous discussion and that will soon also be demonstrated.

Those things that have too simple bodies, namely, plants, cannot have the sense of touch, the minimal requirement for animal life, because touch requires a suitable sense organ (434a27–29). Hair, bone, and such merely earthy parts are unlikely to feel (see 410a30–b1; cf. 435a24–b1) since the medium and organ for touch – flesh in higher animals – must have some blending of the elements, or else it could not be receptive to all tangibles. Presumably the parts of plants are similarly too simple for touch. By a "simple body" (τὸ σῶμα ἁπλοῦν) Aristotle might mean that made of little more than a single element or lacking suitable organs. In *De caelo* 268b26–269a2 the simple bodies are the elemental bodies having a single motion, and back in *DA* 412b1–3 the instrumental parts of plants are said to be entirely simple (παντελῶς ἁπλᾶ) as only capable of simple functions. Anything insufficiently elaborated cannot serve to support the sense of touch (cf. 423a11–17, 425a3–8). Without even the basic sense of touch, the living thing will have none of the other senses (414b3, 415a3–6). But it should not be supposed that mere lack of suitable body parts fully explains lack of perceptive power, for Aristotle also adds that touch and perception are missing from "so many [living things] as are not receptive of forms without the matter" (ὅσα μὴ δεκτικὰ τῶν εἰδῶν ἄνευ τῆς ὕλης, 434a29–30; cf. 424a32–b3). The primary explanation of incapacity to perceive is absence of the requisite power of soul that permits being receptive of forms without the matter, as discussed in ii 12. As in 424a18–19 and 424b2–3 (but unlike 425b23–24) what there is receptivity toward is put in the plural and they are forms, so as in ii 12 it is soul capacity that is at issue. Evidently, then, there can be life of generated living things without sense perception: plants that are too simple in body and without soul faculty to have perception. This discussion thus establishes the nutritive power of soul as both necessary and sufficient, that is, the indispensable condition, for explaining the life of perishable living things, a life that must involve self-directed growth, maturity, and decline.

434a30–b8 Next in order after nutritive capacity is the power of soul essential for *animal* life, namely, sense perception. Aristotle might be expected to argue directly that animals have at least the contact senses, the most basic sense powers. Instead, he considers progressive motion, which includes the distance senses as well. This line is pursued because it is far from evident that sense perception distinguishes animals. Some may suppose that plants perceive, as Plato's *Timaeus* 77a–c attributes limited sense perception to plants; or it might be doubted that all animals, especially the simplest, have sense power. What most obviously differentiates animals is progressive motion, clearly lacked by plants. He can then make his case initially by contending that progressive motion in animals requires sense perception. For the animals stationary through all or most of their lives, he needs additional proof that animal life requires sense perception; this he provides, beginning in 434b8.

Animals, Aristotle urges, must have sense perception if nature is not to have made something in vain (434a30–31). The capacity for progressive motion would

have been bestowed in vain without sense perception. All things that are by nature are for the sake of something, or they are what has befallen or are by-products of (συμπτώματα) things that are for the sake of something, such as the various colors of human eyes or hair (a31–32).[3] Regarding any natural body capable of progressive motion (πᾶν σῶμα πορευτικόν), if it lacked sense perception it would just perish (φθείροιτο) and not achieve its end (τέλος), and so fail at its natural function (φύσεως ἔργον, a32–b1). We might suppose that collisions destructive to the body are the main objection to progressive motion in animals lacking sense perception, but Aristotle instead focuses upon their inability to secure their goal of food for nourishing themselves (b1–2). Perhaps animal bodies could have been sufficiently hard that collisions would be unproblematic. But without cognizance of food to pursue, assuming only certain items serve suitably for food, progressive motion might do little good for nutritive preservation of life. Thus this argumentation for sense builds upon that for nutrition. Progressive motion can hardly be natural to animals and for the sake of something without sense perception, and hence such motion implies sense perception. Even if sense is ultimately for the sake of a good life, it must also help secure life itself (see 434b26–27).

This argument might not work for those animals that remain stationary, such as plants that can do without progressive motion because they have their nutriment right around them (434b2). And the argument might not work for any animals that have mind since perhaps this could lead them to their nourishment. Moreover, in the context of natural ends, the argument so far presented troublingly justifies the higher faculty, sense perception, as subserving nutrition, a lower faculty. Can Aristotle argue that even animals with intelligence and progressive motion must still have sense perception and that sense is not merely for the sake of nutritive life? His argumentation takes up these challenges:

> For on the one hand this [nourishment] is present where the stationary animals have grown. And on the other hand a body is unable to have soul and critical intellect but not to have sense perception, not being stationary but generated (but yet even ungenerated); for on account of what will this be the case? For either it is better for the soul or for the body. But now [it is better] for neither, for on the one hand the soul will not more readily think, nor on the other will the body exist more on account of that; hence no body that is moved has soul without sense perception. τοῖς μὲν γὰρ μονίμοις ὑπάρχει τοῦτο ὅθι πεφύκασιν. οὐχ οἷον τε δὲ σῶμα ἔχειν μὲν ψυχὴν καὶ νοῦν κριτικόν, αἴσθησιν δὲ μὴ ἔχειν, μὴ μόνιμον ὄν, γεννητὸν δέ· ἀλλὰ μὴν οὐδὲ ἀγέννητον· διὰ τί γὰρ ἕξει; ἢ γὰρ τῇ ψυχῇ βέλτιον ἢ τῷ σώματι. νῦν δ' οὐδέτερον· ἡ μὲν γὰρ οὐ μᾶλλον νοήσει, τὸ δ' οὐθὲν ἔσται μᾶλλον δι' ἐκεῖνο· οὐθὲν ἄρα ἔχει ψυχὴν σῶμα κινούμενον ἄνευ αἰσθήσεως. (434b2–8)[4]

[3] That natural beings are for the sake of something is argued in *Physics* ii. Because natural things have matter and so are only for the most part as they are, things that are neither necessary nor for the most part the case, i.e., accidental beings, may occur. E.g., some cats have an extra paw, and some humans have blue eyes. Even if such results are not for the sake of something, they arise in natural beings due to accidental conjunctions of what is natural in them.

[4] There is dispute about whether there is an οὐχ (not) in 434b5 before ἕξει, and whether b8 should read κινούμενον as given or μὴ μόνιμον. Neither of these alternatives changes the meaning. Whether the question "for on account of what will this be the case?" is asked positively or negatively, the same question is being asked. And "body that is moved" and "body that is not stationary" are the same thing.

The central claim is that a generated, that is, mortal, ensouled body with progressive motion must have sense perception to have critical intellect. It could hardly be better for soul or body to lack such perception, and therefore it has sense perception. Since nature works for an end, were animals with progressive motion to lack sense perception, this must be to the natural advantage of the soul or the body. But the intellect could not think more without sense perception, because *phantasia* deriving from sense perception is necessary to lead the human mind to think. And the body would no more be able to exist through the absence of sense perception even were it to have critical intelligence so long as this intelligence cannot operate without sense perception and sense is needed to direct the animal to those particular items that will be its food. Mind as such does not think particular sensible objects. Elemental bodies may be in motion without sense perception, but no ensouled body with local motion could be better off without sense. Hence such animals must naturally have sense perception.

Disturbing commentators is the phrase ἀλλὰ μὴν οὐδὲ ἀγέννητον (but yet even ungenerated) in 434b4–5, which some manuscripts, even in antiquity, have and some do not. For some ancient interpreters accepting the phrase the rest of b5–8 argues about whether heavenly, ungenerated beings have sense perception or not.[5] Having mentioned "generated" to specify mortal animals with progressive motion in b4, Aristotle may think as an aside that the heavenly bodies, were they to have progressive motion, would require sense perception, but since the heavenly spheres only have rotatory motion in the same place, they lack progressive motion requiring senses. Or he may have an argument regarding the heavens running concurrently with the principal argument of the passage. As a concurrent argument he asks not just how it could be beneficial to mortal animals with progressive motion to lack sense but how it could benefit the heavens to have sense. The heavens can operate fine without sense perception; sensing will likely disturb their activity as it can interfere with human thinking. The main argument still concerns those generated animals having progressive motion. These must have sense perception because it is not better for their achieving their natural end that they be without senses.

434b8–24 In compact argumentation, Aristotle has established that generated animals can only have progressive motion naturally for the sake of something if they have sense perception. This argumentation excludes nonliving things, plants, stationary animals, and heavenly bodies. The others may be rightly excluded, but what about the stationary animals? He needs to include such animals with the rest as having sense perception. For this there is a new line of reflection concentrating upon the contact senses. This supplements the previous argument while also giving

[5] Alexander Aphrodisias apparently rejected senses in the heavenly bodies whereas Plutarch of Athens accepted them (see Hicks 1907, 577–578). A difficulty for allowing that they have such senses is that right before and after this passage Aristotle suggests that animals having too simple bodies cannot possess the basic sense of touch. The heavenly bodies are presumably simply or nearly entirely the fifth element, aether. Should they be denied touch, then, yet allowed distance senses? There is, of course, the issue whether eternal beings lacking nutritive capacity can be ensouled in the first place.

primacy to contact sense among the senses to solidify the necessary and sufficient condition for animal life.

If an animal has sense perception, its body is necessarily, Aristotle says, either simple or mixed (ἢ ἁπλοῦν ἢ μικτόν, 434b8–9). Of course any body whatsoever has to be simple or not simple. A simple body, however, cannot support the sense of touch (ἁφήν, a9–10). This repeats a point just made in 434a27–28, but there Aristotle was using it to suggest that plants cannot have and do not need sense perception, whereas now he is arguing that all animals necessarily have the sense of touch (a10–11). If he can prove that all animals must have at least the sense of touch, then he proves that all animals have sense perception. When he says, "This is clear from these" (τοῦτο δὲ ἐκ τῶνδε δῆλον, 434b11), it may seem he will argue about having a nonsimple body to support touch, but "this" turns out to refer especially to the necessity of touch, and he in fact argues for the necessity of touch for all animals without proving that their body has to be complex, which he does not defend until the next chapter. Touch is clearly necessary: "For since the animal is an ensouled body, and every body is tangible, and tangible is that which is perceptible by touch, indeed it is necessary that the body of the animal be capable of touch if the animal intends to save itself" (ἐπεὶ γὰρ τὸ ζῷον σῶμα ἔμψυχόν ἐστι, σῶμα δὲ ἅπαν ἁπτόν, ἁπτὸν δὲ τὸ αἰσθητὸν ἁφῇ, ἀνάγκη καὶ τὸ τοῦ ζῴου σῶμα ἁπτικὸν εἶναι, εἰ μέλλει σώζεσθαι τὸ ζῷον, b11–14).[6] This argument can work if the premise "tangible is that which is perceptible by touch" is taken also to mean "only that which is perceptible by touch is tangible." And he must justify the argument's conclusion with this additional support. The distance senses only perceive bodies through media, but the sense of touch apprehends what has immediate contact with the animal body, and there must be direct awareness of such contact for the animal to save itself through grasping or escaping from what is in contact with it (434b14–18). Since smell, vision, and hearing perceive only at a distance, in accord with the earlier argments that what directly contacts the sense organ is imperceptible (see, e.g., ii 7.419a11–21), without the sense of touch the animal could not be aware of what is in contact with it, and therefore it could not enhance its contact with what is useful to it or avoid what is an immediate threat.[7] Previously it was argued that animals with progressive motion need senses so that nature does not vainly enable them to enter into motion and they do not perish without reaching their end, as senses are needed for nourishment (see 434a32–b2). But now it is contended generally that all animals need contact sense to save themselves, where they are saving themselves by being aware of nutriment and escaping what threatens the body by contact (cf. 434b26–27). Whereas the sensibles of the distance senses only threaten their particular sense organs (or they only pose a larger threat because of

[6] That all bodies are tangible might be doubted in the case of fire or air. Nevertheless, surely the animal can have contact with these bodies and it will feel heat in proximity to fire and there can be some feeling of the temperature, moisture, or motion of air.

[7] In *Physics* 258a20–21 and *GC* 323a25–34 Aristotle speaks of the possibility of one-way contact so that things might merely touch the perceiver. He says in 323a32–33, "we say sometimes that the man who grieves us 'touches' us, but not that we 'touch' him." Here in the *De anima* Aristotle is only concerned with actual two-way contact.

the substrata within which they inhere; see 424b10–12), tangibles, by threatening the sense apparatus for touch and the animal body generally, may endanger the animal (see 435b7–19). A purpose, then, for his mentioning in 434b8–11 that the sentient body cannot be simple, though not presently argued, is to suggest that such a body could not be impervious to dangerous tangibles.

Having argued that touch is necessary for awareness of bodies in contact with the animal body so that the animal can preserve itself, Aristotle determines that taste is also a kind of contact sense (ὥσπερ ἁφή τις, 434b18). He seems to argue that it is a contact sense and consequently, as is touch, necessary for the animal's survival. Taste does its tasting with respect to food, that is, food in potentiality that is the body having contact (ἡ δὲ τροφὴ τὸ σῶμα τὸ ἁπτόν) when the animal is tasting (b18–19).[8] Sound, color, and odor, the objects of the distance senses, are not nourishing and contributors to growth or decline, so taste must be a contact sense because that which taste perceives is in contact and is capable of giving nourishment (διὰ τὸ τοῦ ἁπτοῦ καὶ θρεπτικοῦ αἴσθησιν εἶναι, b19–22; cf. 414b9–11). Both the senses of touch and taste are necessary to the animal, and it is manifest (φανερόν) there can be no animal without contact sense (ἄνευ ἁφῆς, 434b22–24). There surely are animals without the distance senses, and hence they cannot be necessary for animal life, as necessary as they have been argued to be for those animals that have progressive motion (434a32–b8). But the contact senses are necessary for any kind of animal for securing food and avoiding tangibles that threaten the body. As suggested in the argumentation back in iii 1, the contact senses go together as a package.

Aristotle has established the necessity for contact senses to preserve an animal. Hence all animals, including the stationary animals, have to possess the contact senses. Clearly, then, all animals necessarily have sense perception since contact senses are senses. That sense perception is sufficient for animal life follows either from the very definition of being an animal or the argumentation that plants lack sense while faculties of soul besides sense presuppose it. Thus sense perception is essential to animal life, its necessary and sufficient conditions, and among the senses the contact senses are the necessary and sufficient condition of sentient life inasmuch as some animals get along without distance senses but none without contact senses. Though Aristotle has established that contact sense is necessary and sufficient for animal life and so any other senses, he has yet to indicate the dependence of the other senses on the sense of touch as he will in iii 13 by considering what type of body is needed for supporting touch, that is, a nonsimple body. And while both contact senses are essential, there could be argument for touch as more crucial than taste. He might argue that the entire animal body has the capacity for touch, so touch is needed at all times to safeguard the entire body, whereas

[8] Τὸ ἁπτόν is here perhaps a sensible object perceived by contact, i.e., especially flavor (cf. 434b22), rather than merely a tangible perceived by the sense of touch. Nourishment was mentioned in connection with the argumentation about progressive motion in 434b1–2; attention to nutrition discloses that contact sense is absolutely demanded for animal nutrition. An alternative way to read τὸ ἁπτόν is as the tangible, but then ἁφή τις in 434b18 should be read as "touch of a sort" rather than "a sort of contact sense" so that throughout Aristotle would be arguing that taste is only touch of an ersatz sort. Support for this could be that solely the tangible as such is nourishing, flavor is merely a sweetener (see 414b13), and only tangibles rather than flavors are lethal (see 435b12–13).

taste, as are the rest of the senses, may be limited to some more specific part of the body, such as the region of the mouth and tongue (see discussion of 435a18–19). He will clearly in fact argue in 435b7–19 that excessive sensible objects of the other senses, including taste, are not lethal, but excessive tangibles through destroying the capacity for touch destroy the animal.

434b24–435a10 Aristotle has been connecting the contact senses, especially taste, with nutrition, but he has not supposed the sensitive powers solely for the sake of the nutritive powers. This would subject the higher to the lower. Rather he has been arguing that contact sense is necessary for the life of the animal. Since there are animals that merely have contact sense, such sense can also be sufficient for animal life. The life of animals includes nutritive life, but more fundamentally the life maintained by sense perception is perceptive animal life itself and the animal motions connecting closely with it. He can then allow that the contact senses are for the sake of life; the rest of the senses are also for the sake of living well (τοῦ τε εὖ ἕνεκα, 434b24). Perhaps we may doubt that the animals without distance senses, remaining stationary and using their contact senses primarily for maintaining their sort of life, qualify for living well. Consider that with indefinite *phantasia* as discussed in iii 11 these animals are in motion from moment to moment rather randomly. Though contact sense surpasses plant life, unless a mortal animal has a chance for projects lasting through time, there is little real chance to speak of living poorly or well (see, however, comments on 435b19–25).

The distance senses belong not to any chance class of animals but to those with progressive motion (434b24–26).[9] Addition of these senses, we may readily suppose, enriches the sensitive life, since the expanded ranges of proper sensibles also enhance awareness of common and incidental sensibles and make *phantasia* more determinate. Aristotle notes that the distance senses disclose to the animals with progressive motion things beyond immediate contact (ἁπτόμενον) but also from afar (ἄποθεν), and he claims such perception necessary for the animal's life to be saved (σώζεσθαι, 434b26–27). It might seem that instead of explaining the way such senses permit the animal to live well, he merely points out, as before in 434a32–b1, that sense safeguards the animal. But back there Aristotle was indicating that sense is needed for nutrition; now he seems to be allowing that distance senses save the animal by directing its motion and giving it access to a wider world. What saves the animal by disclosing things at a distance, preventing it from colliding with dangerous things, and leading it to advantageous things seems also to be enabling it to live well. The orderly and directed motion that results from perceiving from afar and gaining some sense of time is a good life that far surpasses the life possible for those animals without distance senses (cf. 434a4–5). Hence, though it may appear that Aristotle merely continues to speak of saving the animal's life, he in fact clarifies

[9] In *HA* iv 8.534b11–535a25 all five senses are attributed to all the animals except the testacea, and even some of these have all of the senses. It is plausible to surmise that Aristotle thinks all animals with progressive motion must have the distance senses. This makes the distinction of stationary and locomotive animals equivalent to the distinction of incomplete and complete animals (cf. 433b31–434a1) and entails that all the incomplete animals are aquatic since only aquatic animals can be stationary.

what life this is being saved, a life of wider awareness and orderly animal motion, and thereby manages to indicate how even low-level beasts that have progressive motion along with the distance senses live well.

We might be inclined to suppose that only humans live well. In the *Ethics* living well for humans depends upon using reason well and is equivalent to happiness (*eudaimonia*). Aristotle succeeds in showing that for the nonrational beasts having progressive motion, the distance senses fill out the perceptive life and give greater design to their motion. Thus these senses enable even such animals to live well at their own level. That the senses display this hierarchical possibility, the distance senses sustaining a better life than the contact senses alone, lends additional weight to the Aristotelian position that natural things including soul are for the sake of something. Goodness belongs in natural things even apart from human evaluations.

The remainder of this chapter excitingly elaborates upon the theme of what enables animals to perceive things from afar. The sense perceives things distant from the animal because the medium is acted upon and moved (πάσχειν καὶ κινεῖσθαι) by the sensible object and the medium does this in turn to what has the sense power (434b27–29). Without appropriate media, principally air and water, that are acted upon in certain ways by sensible objects and pass this along, there could not be distance sense. Talk of suitable media continues the theme of living well. Nature seems providentially to have supplied most animals with distance senses and to have arranged the universe with the requisite air and water in the regions inhabited by most animals so that these animals may perceive things at considerable distances upon the Earth and even the heavens at still greater distances (cf. 435b19–22). What can make such a contribution to living well for most animals as this happy conjunction of sensible objects, media, and senses permitting cognizance of the wide world?

Since the medium passes on to the sense power the action from the sensible object, the medium serves as a kind of moved mover; Aristotle explores the special way in which the sense media are moved movers. In typical cases of the mover's causing locomotion (τὸ κινοῦν κατὰ τόπον), change is produced up to some point (μέχρι του μεταβάλλειν ποιεῖ), with a first mover that propels while not itself being propelled (τὸ μὲν πρῶτον κινοῦν ὠθεῖ οὐκ ὠθούμενον), an intermediate (τὸ μέσον) or a series of intermediates that are both propelled and propelling, and a final thing (τὸ ἔσχατον) that is merely propelled (434b29–435a1; cf. 433b13–15). This fits the usual account of three factors: first unmoved mover, moved movers, and the moved, with propelling covering the way the unmoved mover causes motion and the pushing or pulling usual to moved movers (see *Phys*. 243a11–17). Similarly these three factors enter into alteration, except that there may be change in quality without changing places (435a1–2).[10] Aristotle is explaining the way change extends to some point

[10] What need not change places as a result of the alteration involved in sense perception can be disputed. It could be the sensible object that does not change places, the medium, or the sense organ or sense. Hicks 1907, 582 notes that Themistius favors the sensible object, Torstrik the medium, and Philoponus the percipient. Hicks sides with Philoponus. It seems, however, that Aristotle deliberately words it so that any one or more of these might allow alteration without changing place, though there might be

when the intermediate moved movers undergo action and act in turn. He illustrates, again using locomotion for alteration, with dipping, stamping, or sinking something into wax: the wax is only moved so far as the object is sunk into it (μέχρι τούτου ἐκινήθη, ἕως ἔβαψεν, 435a2–3). What Aristotle apparently has in mind is that fairly firm wax will not send out ripples when something is impressed into it, so the motion goes on only for as long and as far as the object is pressed into the wax. Should we not be reminded of the account of sense offered at the start of ii 12 and the way wax is receptive to the impression of the signet ring, only here it is emphasized that with wax the impression only goes so far? Rock as material in contrast with wax will not allow any penetration so there will be no effect at all (a3). Since rock is hardly affected at all, and wax retains too well what affects it, rock and wax seem dubious materials for sense media. But were the object dipped or sunk into water, motion is set up that will go far, and dipping into air has it moved most so that it acts and undergoes, if some unity of the medium is maintained (ὁ δ' ἀὴρ ἐπὶ πλεῖστον κινεῖται καὶ ποιεῖ καὶ πάσχει, ἐὰν μείνῃ καὶ εἷς ᾖ, a3–5). The way Aristotle says the air acts and suffers (ποιεῖ καὶ πάσχει) while remaining one puts us in mind of alteration and the air's role as sense medium and moved mover. The call for some unity of the air to serve as moved mover reminds us of the discussion of the cause of sound in 419b35–420a4. The air has to maintain some unity to transmit what can be heard and more generally to provide a medium for vision and smell. We are not to think at all of any projectile motion, even if there is some locomotion through the medium (see *De sensu* 446b27–447a11), but being propelled and pushing in turn are meant to represent the way the sense media primarily receive nonstandard alteration and cause nonstandard alteration in turn.

Suitable media for distance senses must receive and pass along action and for quite some distance. This typically occurs best if the medium is quite fluid and subtle yet capable of holding together as a unity. Air and water reign supreme as media for all the distance senses. Earth is hardly fluid, and fire also lacks ability to hold together as one. Transparent bodies such as glass without being fluid serve well enough for vision because as is they offer a unified expanse of transparency. Aristotle points out that we may account for reflection in vision better on the assumption that light and vision do not emerge from the eye as Empedocles DK 31B84 and Plato *Timaeus* 45b–46c suggest but the medium is moved mover as he proposes (435a5–6). Their accounts belittle the medium's ability to be moved and to move. For Aristotle color and figure affect the medium air and are visible so long as the air remains one, that is, there is no interruption in the continuous expanse of transparency, and even upon a smooth reflecting surface the air can retain unity of effect so that the medium continues to be moved right to the eye:

Hence indeed concerning reflection, it is better than having vision emerging [from the eye] bending for the air to be affected by figure and color, for so long as it would be one. Upon the

some change in place regarding any of them (this is especially the case for hearing). All Aristotle needs to justify the claim is that the alteration need not in all cases involve change in place. Most pertinent to the context are the medium and sense organ for a distance sense composed primarily of the same material, water or air.

smooth [reflective surface] it is one; hence indeed this moves vision, just as if the impression in the wax would pass through until the limit. διὸ καὶ περὶ ἀνακλάσεως βέλτιον ἢ τὴν ὄψιν ἐξιοῦσαν κλᾶσθαι, τὸν ἀέρα πάσχειν ὑπὸ τοῦ σχήματος καὶ χρώματος, μέχρι περ οὗ ἂν ᾖ εἷς. ἐπὶ δὲ τοῦ λείου ἐστὶν εἷς · διὸ καὶ οὕτος τὴν ὄψιν κινεῖ, ὥσπερ ἂν εἰ τὸ ἐν τῷ κηρῷ σημεῖον διεδίδοτο μέχρι τοῦ πέρατος. (435a5–10)

It seems more plausible to have the sensible object continuing its action upon the medium after being reflected by a mirror rather than to have a visual beam emerging from the eye bending there toward the sensible object. A smooth surface as a mirror, unlike the rough surface of something like wool, maintains unity so that the original action can continue. It is as if the pressing of the signet ring into a lump of wax goes all the way through to the other side of the wax so that the figure of the ring's seal remains intact throughout.[11] This returns to the imagery of ii 12 for the purpose of stressing that the sense is acted upon through the medium rather than itself pressing on the wax. In the case of reflection from a smooth surface in vision (or hearing), it is as if the signet instead of pressing on wax that we then look at presses mediately upon the sense itself. Aristotle is considering the way sensible objects affect the medium so that it in turn affects the sense. This fits with the discussion of the requirement of sense perception for animals, and in particular the distance senses for animals with progressive motion, and the contribution of distance senses to living well.

This general treatment of the way perception at a distance is possible, that there are media that can be acted upon and in turn act upon the sense, is about as sustained a discussion of the way media are acted upon as Aristotle has to offer. He can only use analogies to ordinary locomotion and alteration. In this work about soul and its capacities, he does not of course focus on bodies and changes within them. Yet those bodies serving as media have crucial importance for the soul's operation. Insofar as they are media for the senses, that is, they are bodies peculiarly suited for their role in sense perception, there is no better context for considering them than in connection with the sense faculties: hence the discussion of transparency, light, the holding together of air or water for sound, vision, and odor enter this work and receive little attention elsewhere. Only some bodies can serve for media and as a result of special features less relevant in other contexts. The emphasis upon media as possibly fluid but most crucially having the capacity of unification such that they permit being acted upon and passing along the action readily, though without the capacity's being lessened or destroyed, indicates that the action of sensible objects upon the media is hardly typical alteration. As sensible objects act upon the sense in unusual ways rather than generating a standard alteration (see ii 5.417b2–7), the action upon the medium is already unusual alteration. Colors

[11] Though Aristotle speaks of vision (ὄψις) and reflection (ἀνακλᾶσθαι), his wording recalls 419b25–420a4 (as Hicks 1907, 583 points out), where Aristotle is saying both echo in sound and reflection of light always occur but more manifestly when smooth surfaces keep the air united. That something emerges from the ears, as vision might emerge from the eye, seems quite strange, and if there is always considerable echo and reflection of light, explaining this by either vision from the eye or sound from the ear is most strange.

do not color the intervening illumined transparent; sounds do not make the air to sound, or odors make the air a sustained source of odor. The sense media, being colorless, soundless, odorless, and so on, are not altered as are bodies that serve as the substrata for sensible qualities. In various places in the *De anima* this point that the media are acted upon but not as we expect other bodies to be acted upon is suggested (see, e.g., 422a35–b10 and 424b3–18). This poses some difficulty for the project of a comprehensive physics, but Aristotle has no way around the difficulty. As he speaks of sense-perceiving as alteration of a sort, so the media acted upon undergo alteration of a sort. As much as he can say about this is said.

13

The Sort of Body Requisite to Support the Order of the Faculties of Soul

Aristotle has justified the succession of the crucial powers of soul, nutrition and sense perception, and in the case of the latter both contact and distance senses. He has justified them functionally – that is, they are necessary and along with suitable bodily apparatus sufficient for accomplishing vital functions or ends of the living organism – and in this way he has demonstrated the accidents of the soul as following necessarily from the definition of the soul and its faculties (see 402a7–10). The operations of the living beings that are the accidents of being ensouled are relatively obvious, even if they require demarcation, so that it merely has to be established that the capacities of soul accomplish them, in conjunction with the body, and are needed to accomplish them. Thus, these faculties conduce to the plant or animal's nature being for the sake of something. The senses are necessary and sufficient for bestowing animal life upon a suitable body, and the contact senses primarily so.

Previously Aristotle suggested that plants among living things have a body too simple to support the sense of touch (434a27–28), and in setting out to prove that touch is necessary for animal life he contended that touch supposes a body that is not simple (434b8–11). He has yet, however, to argue against overly simple bodies for animals. Now he provides the argument for his earlier claims that too simple bodies will not uphold a sense of touch necessary for animal life. Thus he rounds out the case that plants lack both the requisite soul (see 424a32–b3) and the supportive bodily organs to sustain sense perception, and he maintains the argumentation of iii 12 that touch is necessary and sufficient for sensitive life by connecting touch with the required type of body. Reflection on the animal body's serving as the medium or organ for touch contributes to the argument that the sense of touch is necessary and sufficient for any sensitivity. Though he has already established that contact sense is necessary for the animal and presupposed for any other senses, he still needs to display better why and how the other senses have dependence upon the sense of touch. By arguing for the sort of body required by touch he grounds sensitivity generally in touch. And this reflection upon the appropriate body for touch completes the theme of the relationship and suitability of body and soul.

The so-called hylomorphic view that Aristotle has been developing requires that body and soul are somehow one. The soul enables the living body to engage in its natural functions; the body must be of the right sort to support these operations. Though discussed previously (see 414a23–28), this is argued most strongly in this chapter. In iii 12 he established the necessity of contact sense for animal life; here he establishes that in order for the animal to have the sense of touch, and consequently any of the senses, it must have a complex body. No simple elemental body would permit the animal to sense things. Such argumentation amounts to a clear rejection of the possibility that psychical functions might be realized in nearly any kind of body or matter.[1] Hence the case made here for a complex body for animal life does essential work in support of the overall account of the soul and its relation to the body. Earlier Aristotle lightly dismissed the idea that souls travel between bodies (see 406b3–5), and he has emphasized that the soul and body are one (in 412b6–9), but perhaps only here does he provide the fundamental argument that secures the whole position.

435a11–b3 It is manifest (φανερόν), Aristotle says, that the animal body cannot be simple (ἁπλοῦν), by composition merely of one element such as fire or air, or the animal would be unable to have sense perception at all since it would lack the sense of touch (435a11–13; cf. 434b8–11). If the other senses presuppose the sense of touch, its conditions are the requisites for sentient life. In the previous chapter he argued that the sense of touch is necessary for animal life, and he now must prove that touch requires that the animal body be complex, complex beyond what suits plants. Aristotle supports the necessity of touch for the other senses with an ambiguous statement. He says, τὸ γὰρ σῶμα ἁπτικὸν τὸ ἔμψυχον πᾶν, ὥσπερ εἴρηται (435a13–14), which may be translated either as "for every ensouled body must, as we have said, be capable of touch" or "for the entire ensouled body must, as we have said, be capable of touch."[2] On the translation that has every animate body having the power of touch – assuming within the context of 435a11 that this is restricted to animal bodies – Aristotle argues that since every animal has touch, though possibly lacking the other senses, touch must be the most necessary sense. On the other translation, stating that the entire animal body is capable of touch, he argues that the other senses presuppose touch because even their particular sense organs must also be capable of supporting touch, since the whole animal body is the apparatus for touch.[3] Either translation supports touch as the minimal condition

[1] The contemporary view called "functionalism" has been attributed to Aristotle (see, e.g., Nussbaum and Putnam 1995). In its most straightforward versions it hardly fits with the argument in iii 13.

[2] The former translation is that found in Barnes 1984, Jannone 1966, Hett trans. 1957, Hamlyn 1993, and perhaps also Hicks 1907, while the latter appears in Ross 1961, 324. The reference of "as we have said" seems to be especially to 434b11–14.

[3] Ross 1961, 325 says, "It is impossible for animals to have any other sense without having that of touch, not because the sense of touch is necessary for the existence of the other senses, but because the whole living body is an organ of touch." This interpretation is in one way correct but in another not correct. Insofar as touch is necessary for the animal, both because the animal's life depends upon it and because the entire animal body is capable of touch, the sense of touch is necessary for the other senses. The

for animal life: the other senses cannot be without it. The argument allowing that the other sense organs are also organs of touch boosts the case for the complexity of the animal body and may soon be rather more explicit (see on a18–19).

Sense organs may arise, Aristotle says, from the elemental bodies besides earth (435a14–15).[4] That quite earthy material cannot constitute a sense organ (or sense medium) was suggested in 410a30–b1 when he denied that such earthy parts as bone and hair serve for sensibility (cf. Plato *Timaeus* 64b–c), and in 434a27–30 he indicated that plants' bodies are too simple, that is, too earthy, to have sensitivity by touch. These points are restated later in 435a24–b1. Too earthy bodies may observably fail to have the sense of touch since we do not perceive with our earthiest parts and plants do not react to contact as if it is perceived. The other elements may fare better for the other sense organs because Aristotle has announced that the eye is fundamentally water, the ear air, and the organ of smell water or air (see 425a3–8). Thus the sense organs for the distance senses seem relatively simple and composed primarily either of air or water. Perceiving through a medium, typically air or water, the sense organ much resembles the medium. This leaves a question about fire as a sense organ, but perhaps since animal bodies must have heat, and the heart that for him is the ultimate sense organ is especially hot, he speaks as if all the three elements other than earth may form sense organs (cf. 425a5–6). That the sense organs must all have some fire and as also organs of touch must be somewhat fleshy means that an argument establishing complexity of the body for supporting touch applies to the other sense organs as well.

The other sense organs made primarily of elements other than earth perceive through media (435a15–17); in the case of touch, perception takes place usually not through another body, as when we feel things through clothing or a shield, but by direct contact (a17–18). Hence the sense of touch (ἡ ἁφή) receives the name ἁφή that is the general term for contact (see, e.g., discussion of contact in *Physics* v 3). After setting contact sense off as perceiving by contact, Aristotle seems to say that the sense organs of the other senses can also perceive by contact, but through another, whereas touch alone seems to perceive through itself (καίτοι καὶ τὰ ἄλλα αἰσθητήρια ἁφῇ αἰσθάνεται, ἀλλὰ δι' ἑτέρου· αὕτη δὲ δοκεῖ μόνη δι' αὑτῆς, 435a18–19). Commentators typically take these lines to mean that all the senses perceive by contact; only the senses other than touch (and taste) perceive their objects through a medium: that is, they have mediated contact. But this flies quite in the face of passages elsewhere. In *De sensu* 440a15–20 and 442a29–b3 Aristotle criticizes ancients such as Democritus for having all perception by contact. Of course Aristotle's insistence upon media for distance senses and his view of the

potentiality of touch (its "first actuality") is thus, contrary to what Ross says, necessary for the existence of the other sense potentialities. The other sense organs are only suitable for their own senses because they can also be sentient for touch as well. Ross seems correct, however, inasmuch as the actuality of the other senses ("second actuality") does not presuppose the actuality of touch; e.g., we may be seeing something without also touching it. Yet see later on 435b17–19.

[4] It does not much matter whether τὰ δὲ ἄλλα in 435a14 is taken to refer to the other elements besides earth or to the other sense organs besides that for touch. Beare 1906, 198n1 argues for the latter; Hicks 1907, 584, for the former.

sensible objects would give the contact quite a different meaning from that which it has for Democritus. Yet there is something surprising about Aristotle's presenting the observation in this context.[5] Could he more importantly be making the rather strange argument that *all* sense is somehow by contact, so elimination of contact sense destroys all power of sense, and hence touch really forms the foundation for all other perception?

Typical interpretations of the lines 435a18–19, while possible, fit awkwardly with the context. Perhaps, then, Aristotle also means, and even more importantly, that the other sense organs, the eyeball, the ear, the nose, and even the tongue, serve as well as "organs" for touch. That is, when an object is on the eyeball or in contact with the ear or nose or tongue, the object is felt by touch, though of course perception by the distance sense as a distance sense is precluded because they can only perceive what is at a distance and through a medium (see 419a12–13, a25–30, and 421b16–19). The sense organs for the senses besides touch are also sensitive by touch, but this is not, surely, their own proper or peculiar sensitivity. Only the sense of touch touches on account of itself. Aristotle may then have some fun with δι' ἑτέρου in 435a19. It might mean "on account of another" rather than "through another"; that is, the other senses feel the object in contact with them on account of another sense, that is, touch. Then δι' αὑτῆς also in a19 should be translated "on account of itself" rather than "through itself." This reading of the lines much strengthens the case for touch as the necessary foundation for the other senses since sentience by touch extends to the body as a whole. That the entire body does not serve similarly for taste as for touch gives to touch the key role in the contact senses.

If all the sense organs serve too as organs for touch, the point also perhaps made in 435a13–14, then the fact that the other sense organs compose part of the entire body capable of sensitivity by touch has the crucial implication that the other sense organs cannot really be simple, granting that touch cannot take place through a simple organ. This is just what Aristotle seems to conclude: "With the result that of the such sorts of elements [i.e., fire or air] there would be no body of the animal" (435a19–20). That is to say, no animal body can be simply elemental. Since the eyeball, ear, nose, and tongue also perceive through contact, that is, they support touch, they cannot really be elemental if touch needs a complex body.[6] Because these sense organs cannot be purely and simply water, air, or fire, the rest of the animal could hardly be such. Whatever requirement having touch places upon the animal body, this applies as well to the sense organs of the other senses, and these sense organs cannot be as elemental as some earlier passages may have suggested.

[5] Hicks 1907, 584 justifies these lines by observing, "As just before A. has said or implied that ἁφή, the sense of touch, discerns by touching, i.e. being in direct contact, so immediately afterwards he reminds us that the other or telepathic senses also discern by contact, τῇ ἁφῇ, though by indirect contact." For Hicks Aristotle merely adds the point to rather little purpose.

[6] This calls into question the claim in Burnyeat 1995b, 422 that "[Aristotle] insists that the sense-organs are composed either of one simple, homogeneous element or, in the case of touch, of a homogeneous mixture" and Bradshaw 1997, 149–150, "Unlike the organs of the other senses, therefore, the organ of touch must be composed of a blend of all four elements." Yet the most sensitive part of the sense organs may be rather elemental or homogeneous (see *PA* 647a2–24).

Moreover, no quite earthy body permits touch either (a20–21), and thus the stage is set to exclude too elemental bodies for animals, if Aristotle can only establish that touch demands a complex body. By establishing that touch needs a complex body, and the other senses therefore, as themselves capable of touch, also have organs that are complex, he shows touch giving the grounding conditions for any sensitivity whatsoever.

The sense of touch is receptive of *all* of the tangibles, not only the differences of earth and earthy bodies, such as dryness (solidity) and coldness, that are the proper differences of earth, but also of heat and coldness and the rest of the tangibles (435a21–24).[7] But then being a mean (ὥσπερ μεσότης) as is any sense, touch could not have its organ composed exclusively of earth. To be receptive to all the tangibles, touch has to be a mean of the tangibles and hence some relation of them all, as suggested in ii 11.423b27–424a15 (contrast with mind in iii 4.429a13–27). Were the body too elemental, too earthy, it would not support sense as a mean. Such an unbalanced sense apparatus could hardly be receptive to opposites to itself that might too easily destroy it, and neither should it receive those features that it already has. Only as a mean will it be receptive to slight or great differences from itself, and without too much danger of destruction. The body of the animal having touch, then, must suitably combine the various elements. That we do not perceive by hair and bone confirms that too earthy parts cannot be sensitive (435a24–b1), and plants for the same reason, that their body is largely of earth, do not have sense perception (b1–2).[8] Lacking the sense of touch a living thing must be without any other sense (see 434b8–24), and the seat of sensitivity for touch has been proved not to be earth or too elemental (435b2–4).

Having placed the other sense organs within the sphere of touch, since they also permit sensitivity by contact, and having established that touch demands a complex, nonelemental body, Aristotle has shown that the animal's body generally cannot be elemental. The whole apparatus of sensitivity must have a complicated structure. This is tantamount to exposing why all the other senses depend upon and presuppose the sense of touch: there must be the sort of body that can sustain touch. And a well-suited body for touch and sense perception generally means there must be soul having the capacity naturally to utilize this body.

435b4–25 The necessity of a complex body for animal life has emerged by observing that the whole ensouled body perceives through touch. It is manifest (φανερόν), Aristotle says, that touch alone (μόνης ταύτης) is the necessary sense, if animals cannot be deprived of touch without dying (435b4–5). If the body ceases to support the sense of touch, no other sensitivity will be supported. Loss of the other senses

[7] We expect wetness in 435a23 rather than coldness, but perhaps Aristotle means to indicate that he is not now at all concerned with just what are the differences of earth or tangibles generally.

[8] To explain lack of perception in plants by their too earthy body is, of course, explanation from below. Lacking the requisite organ, the plant is incapable of perceiving, but it lacks this organ because it lacks the power of soul that might have made use of it, so nature did not vainly provide it a body suitable for animal life. Nourished by the earthy and stationary in their location in the earth or upon earthy things, plants do not need senses to live.

does not entail death for the animal, but loss of touch is lethal for the animal. Touch alone, therefore, is necessary for animal life; that means that it is also sufficient for animal life, for, he insists, what is not an animal cannot have this capacity of touch and nothing other is necessary for being an animal but this capacity (b5–7). The dependence of all the other senses upon touch and the suitable body for touch is evident, because a too intense object of another sense merely destroys the sense organ connected with that sense by incapacitating it for sense perception for a longer or shorter time, while a too intense tangible threatens the animal with complete destruction (b7–13). Color, sound, and odor, objects of the distance senses, do not themselves kill the animal, but something accompanying them, such as a blow, that is, something tangible, so that this is what destroys the animal rather than the other excessive sensible objects (cf. 424b10–12).[9] And even flavor is only lethal insofar as it accompanies something tangible that wreaks havoc (435b12–13). Destruction due to tangibles of the animal body as capable of touch, and not as capable of perceiving any other sensible objects besides tangibles, confronts it with death, so such a body capable of touch grounds all sensitivity. Extreme tangibles, such as hot, cold, and hard, jeopardize the sense organ for touch, as any extreme sensibles, but the sense organ for touch is the very integrity of the sentient body, while the excess of other sensible object only threatens the special sense organ, eye, ear, nose, and tongue (b13–17). Since the *entire* living body is sensitive by touch, and all sensitivity depends on this living body, destruction of the apparatus for touch is catastrophe for the animal as such (b17–19).[10] Aristotle is not speaking of loss of feeling merely in one part of the body, as when a limb goes to sleep or there is injury to a limb, but he must mean total loss of the sense of touch since only such a loss is analogous to the destruction of the other sense organs. Such a total loss of the sense of touch has to mean the cessation of animal existence, for the body that will not support touch will no longer support any sensitivity. Thus touch alone is the sense necessary and sufficient for animal life (ἀνάγκη μόνην ἔχειν ταύτην τὰ ζῷα, b19).

The other senses are not so necessary for animal life, and hence the animal has them not merely for being but for well-being (435b19–21). Aristotle indicates that he has already said this (ὥσπερ εἴρηται), and must be referring to 434b22–27, but there *both* the contact senses, touch and taste, seemed necessary for the being of the animal, while the distance senses make for well-being of animals with progressive motion. Commentators also note that in the expanded discussion of the way senses contribute to well-being in *De sensu* 436b13–437a17, touch and taste are put together as for the sake of being and the distance senses are said to be for the sake of well-being. Here in the *De anima* touch is distinguished from the rest because Aristotle emphasizes that this is the only necessary sense. The entire flesh of the body serves as its organ, entailing that the destruction of capacity for this

[9] Commentators such as Simplicius *In de an*. 328,35–39 suggest that Aristotle in 435b9–11 is thinking especially of the thunderbolt, as in 424b10–12, and ὁραμάτων in 435b11 refers at least to lightning.

[10] Were Aristotle to consider something farther in, such as the heart, as the real sense organ for touch, the same destructive result follows for the animal. Death to the animal can mean cessation of sensitive life, as for a comatose being, or complete death.

sense is loss of all sensitivity and death to the animal. Perhaps those animals merely having contact sense partake little in well-being, but touch surely contributes to the living well of those animals that have the rest of the senses. That humans have the best sense of touch even helps explain their superior intelligence (see 421a18–23). Such a role for touch is not pressed here because those animals with touch alone hardly live well because of it, and the more touch seems necessary for mere life rather than the good life, the stronger the case that it is absolutely necessary for animal life.

Aristotle now proceeds to explain the way the senses besides touch contribute to well-being of the animal. One suspects that this discussion becomes more and more meaningful for higher animals, culminating in human beings. Animals living in air or water, that is, a transparent medium, have *vision* in order to see objects from afar (435b21–22). In other contexts such as *Metaphysics* i 1.980a21–27 the role of vision in disclosing the most differences is stressed, and in *De sensu* 437a4–17 the natural predominance of vision is elaborated. Aristotle perhaps alludes to the significance of sight by indicating that animals live in the transparent permitting them to see even as far as the heavens.[11] This connects with the suggestion in 434b24–435b10 that nature providentially supplies air and water to serve as media for the distance senses. The sense of *taste* opens to animals the realm of pleasant and painful things (435b22–24). While surely there are pleasure and pain in other sensibles and sense perception, taste especially leads the animal into experience of these and perhaps refinement with respect to these. This is because this sense connects closely with nutrition and appetite and animal motion in relation to these, so essential to animal life. Even the simplest animals may have some limited exposure to the good life, beyond what it receives from touch, through relishing certain nourishments. Human development of good taste may help liberate them from perpetual concern with mere being. The sense of *smell* is left unmentioned, perhaps because it is imprecise in humans, and links closely with the sense of taste and makes connected contributions. *Hearing* allows things to be signified to the animal (ἀκοὴν δὲ ὅπως σημαίνηταί τι αὐτῷ, b24). Aristotle's way of putting this covers everything from simply hearing things at a distance, to hearing truly significant sounds, even articulate speech, as this very discourse on the soul. Since sound is due to the striking of one object against another in the medium (see ii 8), what hearing seems to disclose is a sign or announcement of some being. Hearing, in order to be of much use to the animal, involves much association of what is heard to certain beings. This is most clearly the case with animal calls and human speech.

Hearing allows something to be signified to the animal; the tongue permits the animal to signify something to another (γλῶτταν δὲ ὅπως σημαίνῃ ἑτέρῳ τι, 435b24–25). The tongue, of course, is not a sense, as are sight, taste, and hearing. Yet the tongue works closely with hearing and the other senses in those animals that have a tongue. The tongue, besides other possible tasks in tasting and nutrition, allows for articulation of sound. Communication with other animals contributes to the

[11] Plato's *Republic* esp. 522e–525b and *Timaeus* 46e–47c give vision an extraordinary role in preparing humans for mathematical reasoning and philosophy.

well-being of both the animal that communicates and the animal that receives the communication. This is what makes possible political life for the being that is naturally a political animal (see *Politics* i 2, esp. 1253a7–18). Aristotle may well be writing his account of the soul in the *De anima*, but writing is a way for humans to record what they might say as well. He has come around at the end to reflecting upon the way faculties of soul, and the supporting bodily apparatus, make this treatise possible and contribute to well-being.

Mention of the tongue is in place here. Aristotle's closing lines suggest the wonder of the senses, and the way they may lead beyond themselves to the exceptionally marvelous. This ending connects with the very start of the whole treatise, where Aristotle stressed how this investigation of the soul is a particularly noble pursuit because of the honor and precision of its subject and its contribution to truth. Soul enables animals to live and to live well. Elaborating this very discourse and struggling to comprehend it contribute to living well. Nature has provided amply by enabling Aristotle to complete this investigation and to communicate it. Theoretical inquiry does not focus upon particulars and the personal, but it may certainly contribute greatly to self-understanding.

The reflection in the final two chapters upon the necessity of the succession of capacities of soul, and hence the necessity of soul generally, confirms the completeness of the investigation of the treatise. Aristotle has followed a path through all the essential capacities of the soul considered as causes of their most basic operation. He manages to elucidate the whole realm of formal causes of mortal life. He has dealt as well with the requirement that soul makes upon the bodies of living things. All the sorts of causes pertaining to soul, its faculties, and their operations have been delineated.

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