

Book Reviews

On nature and language

NOAM CHOMSKY

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Chomsky and his critics

LOUISE M. ANTONY & NORBERT HORNSTEIN (Eds)

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The last half century has been marked by a cognitive revolution that Noam Chomsky is in large part responsible for initiating. Chomsky's ideas have haunted many debates in linguistics and cognitive science, providing an ineliminable backdrop to the development of research programs in each discipline. Wherever Chomsky turns his attention, philosophers, linguists, cognitive scientists, and others feverishly respond—either hastening to develop the stages of his proposals, or hastening to fortify against his admixture of mentalist empiricism.

Two recent volumes on Chomsky's extensive contributions to philosophical debates allow him to reply to detractors and sympathizers, as well as situate the facets of his positions in historical context. *On nature and language* (2002) contains an extended introduction by the editors Adriana Belletti and Luigi Rizzi that amounts to a précis of the Chomskian program over the last two decades, including a review of the main arguments for Minimalism; it is informative for the initiate without being exhaustively detailed. Chapters 2–3 reproduce Chomsky's Galileo lecture (Pisa, 1999), and two additional lectures from Siena on language, offering an historical discussion of naturalism (beginning, appropriately, with Galileo). Chapter 4 contains an interview with Chomsky by the editors on the prospects for Minimalism. The final lecture is on the secular priesthood and democracy. *Chomsky and his critics* (2003) contains ten essays

by philosophers, cognitive scientists, and linguists, followed by extended responses from Chomsky. These essays range over his theories of representation, meaning, innateness, the proper study of language, and naturalistic inquiry in contemporary terms.

The historical discussion of naturalistic inquiry (2002) traces a study of language as that “marvelous invention” through Galileo, Descartes, and Newton. The basic position that emerges from Chomsky's discussion is this: analyzing language and mind in terms of a mind-body problem rests on the historical misunderstanding that physical bodies are well within our comprehension, and that the mind is the problematic entity. The struggle with the mind-body problem in the natural sciences has only demonstrated that we do not understand physical bodies, and so we are a far cry from reducing anything—least of all the mind to the brain (as I understand it, this lack of understanding of physical bodies threatens both ontological and intertheoretic principles of reduction from Chomsky's point of view). While Descartes may have been wrong about the “ghost in the machine,” Chomsky says that it was because, “Newton exorcised the machine; he left the ghost intact. It was the first substance, extended matter, that dissolved into mysteries” (p. 53). This is Chomsky waxing historical, where he is quick to suggest that theses such as, “things mental, indeed minds, are emergent properties of brains,” are not only ill-established, but unoriginal. He calls this a “centuries-old” hypothesis—one that is neither new, nor bold, nor astonishing. While philosophers may be accustomed to thinking of “consciousness” as the “hard problem” for a science of the mind, Chomsky cautions us against thinking that seemingly more modest problems have been solved or are even solvable in the near future. For instance, the nature of will and choice was the centerpiece of scientific questions in the pre-Newtonian world, and yet, Chomsky thinks that this basic question about how an organism constructs one plan of action rather than another has largely been ignored in empirical study, not solved. Other seemingly more modest problems include the nature of force and motion, and even bee communication—an example Chomsky returns to repeatedly for the reason that, “Bees have

brains the size of a grass seed, with less than a million neurons; there are related species that differ in mode of communication; there are no restrictions on invasive experiment. But basic questions remain unanswered: questions about physiology and evolution, in particular" (p. 75). One might think that Chomsky's prudence with regard to the blank check written by, in this case, phylogenetic inquiry is mere nay saying, but it would be better taken as a refreshing reflection on the present limits of understanding.

Chomsky and his critics (2003), edited by Louise Antony and Norbert Hornstein, is set up to be a fresh critical engagement between Chomsky and ten of his detractors on a host of philosophical, psychological, and linguistic issues. The breadth is certainly evident, but the articles' originality and critical attitude are sometimes lacking, in part because many of the critics ultimately end up being sympathizers offering friendly amendments and proposing new Chomskian research programs. Yet, the volume is not merely a *festschrift* for Chomsky and his work—one that displays Chomsky's long reach in the cognitive revolution—it also contains engaging exchanges between Chomsky and his critics, and, at times, addresses neglected philosophical problems helpfully or tired philosophical problems in a new way.

The first three chapters are challenges by William Lycan, Jeffrey Poland, and Galen Strawson (respectively) to Chomsky's set of positions on what is variously called the "mind-body problem," "physicalism," and "materialism"—that is, the contours and commitments of Chomsky's rationalist stance. Chomsky's responses to the three are disappointingly redundant. The position he iterates here can also be found in Chapters 2–3 of the above (2002) in slightly more detail, as well as in Chomsky (2000) and elsewhere. Those who want a fuller historical discussion along the lines of his responses to Lycan, Poland, and Strawson are advised to look to (2002), although the reader should be warned that (2002) does not move beyond the detail or editing of a public lecture, with many historical references left unexplained and uncited.

Lycan, Poland, and Strawson offer Chomsky several ways to opt out of his version of rationalism. Chomsky rejects these for reasons that are at times coherent and at times simply puzzling. For instance, Lycan, touting the virtues of functionalism, presses Chomsky as to why he is not a functionalist about mental states. Chomsky's answer is

to tell a historical story such as the one reviewed in (2002), reinforce his rationalist stance on the mind-body problem, demonstrate a standing antipathy toward certain "reductionisms" and "unifications," and, finally, appeal to the "mysteries" of the mind. The answer is cautious on two fronts: (i) scientific investigation into minds has just begun, and we are far from understanding even basic cognitive mechanisms; and (ii) if we were to understand the mechanisms of the mind, it is not obvious that we would understand the corresponding physical mechanisms. Here, as elsewhere, Chomsky's replies read something like a shell game, where much of the discussion centers on how he has been misinterpreted. This is understandable, but frustrates attempts to get clear on his position on, in this case, functionalism about minds.

Chomsky's cautionary tale continues in his response to Poland's thoughtful discussion of physicalism. Chomsky rejects physicalism because "the concept of *the physical* lacks content" (p. 30). Poland concedes much of this challenge, but proposes a "methodological physicalism" as triage. This suggestion seems as if it would be entirely acceptable for Chomsky: as Frances Egan notes in her chapter, "Naturalistic Inquiry: Where Does Mental Representation Fit in?" Chomsky distinguishes between "metaphysical naturalism" and "methodological naturalism." Egan describes the position of "methodological naturalism" as, "[A] commitment to apply scientific, empirical methods to the study of mental and linguistic phenomena, with the hope of eventually integrating our accounts of these phenomena with the 'core' natural sciences" (p. 89). In Chomsky's response to Egan, he does not take issue with her characterization of the position, despite the fact that her description implicates a principle of unification that he is so adverse to in responding to Poland's methodological physicalism. While Chomsky's commitment to methodological naturalism leads him to reject the role philosophers have ascribed to representational content and intentionality in the study of mind and language, he steadfastly rejects what he perceives to be the consequences of Poland's proposal. Chomsky remains cautious about the *unificatory* commitments of a methodological physicalism; he warns that our faith in neuroscience to explain away the mysteries of the mind and the mental is at best naïve and, at worst, ill-conceived—for our understanding of even basic cognitive structures in humans or much simpler

organisms is nascent. Consequently, if his reasons for rejecting a methodological physicalism lie in unificatory commitments, then why does Chomsky accept seemingly similar commitments under the name “methodological naturalism”?

Alison Gopnik presents and defends “theory theory” against Chomsky’s innateness hypothesis in yet another dimension of the empiricist-rationalist tension that characterizes the history of Chomsky’s thought. Here, Gopnik challenges Chomsky’s rationalist innateness hypothesis with what she takes to be an empiricist “theory theory” alternative. Her motivating claim is that Chomsky’s two principal theses—cognitive naturalism and the poverty of stimulus argument—are in a tension with one another that is lock-step with the empiricist-rationalist tension throughout the history of philosophy. Gopnik sensibly claims that empirical study, particularly developmental studies, would need to be done to buttress any innateness hypothesis; the bolder claim is that developmental studies from infancy on will endorse her version of “theory theory,” in which cognitive development mirrors the process of scientific theory formation. Chomsky’s poverty of stimulus assumption is meant to motivate the hypothesis of a web of innate structures that learn, or better, construct language given highly limited input. Gopnik’s theory theory, on the other hand, proposes no such richly innate given, but rather proposes a more modest innateness hypothesis (but an innateness hypothesis nonetheless) that infants are born with a handful of theories that they test out against the world, revise, trash, or keep. The combination of theories and the friction from the world give the developing mind all it needs to build the rich cognitive structures of, for instance, language. Gopnik boldly (and without substantiation) asserts that our theory-making cognitive capacities were *designed* to give us a veridical view of the world, and so it is unsurprising that we end up with such a view in both linguistic development and scientific inquest. Gopnik helps herself to all of the Chomskian rebuttals to challenges to innateness hypotheses, but never convincingly argues for why we should accept her *alternative* hypothesis, except to suggest that the innate theories that infants are born with are not necessarily veridical and can be abandoned with experience. Innateness hypotheses—both Chomsky’s and Gopnik’s—rely on negative evidence, to put it crudely: whatever could not have been gathered from experience must have developed from within, begin-

ning with some defined initial state. Gopnik complains that Chomsky’s poverty of stimulus assumption relies on the study of adult cognitive systems, whereas her innateness assumptions rely on developmental studies of infants. Yet, both Chomsky and Gopnik rely on positing an initial state that acts as a remainder of what has not yet been gathered in experience. And both innateness hypotheses are equal in developing the position that the internal structures are revisable and amenable to experience, that is, that cognitive systems develop and change—an uninteresting truism. Gopnik hides behind empiricism—Chomsky’s supposed rationalist foe—perhaps for rhetorical effect, yet never persuades the reader what exactly the empirical force of theory theory over poverty of stimulus assumptions is, aside from a prestigious affiliation with an idealized version of scientific theory formation.

In her “In Defense of Public Language,” Ruth Garrett Millikan joins Chomsky in his skepticism about traditional philosophical discussion of the “conventions” of “public language.” His rejection of these notions has led him to the position that the only proper subjects of linguistic study are internal-, individual-, intensional- or I-languages, and to reject that shared-, external- or E-languages should find their way into the study of language. As Millikan notes, Chomsky has claimed that E-languages are of no *scientific* interest. Millikan’s position is to accept that I-languages are sources of productive study, and to share Chomsky’s aversion to much of the philosophical literature on conventions and public languages, but to maintain that E-languages are interesting both scientifically and philosophically in their own right. Dismissing them entails dismissing real linguistic phenomena—indeed, Millikan reclaims *communication* as a basic function of language. Her argument works in two stages: (i) “a central function of the language faculty in humans is to make language conventions possible”; and (ii) “the functions of conventions are to make communication possible” (p. 218). Chomsky’s reply to Millikan’s proposals are some of the most detailed and fierce of his responses, ultimately rejecting Millikan’s position, arguing that her reconstrual of *functions*, *conventions*, *communication*, etc. is so hopelessly vague so as to be truistic (e.g. *some* interaction with other language-users or the world is necessary for normal development), or to be ungrounded in *any* empirical research. Millikan invokes a biological—as opposed to a philosophi-

cal—sense of the *lineages, reproductions, and functions* of linguistic conventions. Yet, it appears to Chomsky that Millikan's case relies on research that has not yet been done or cannot be done (e.g. studying the linguistic development of children raised in complete isolation). Millikan's resuscitation of the study of public languages is compelling; it is unfortunate that it fails to break from the terminological baggage of philosophical debate on these matters. It seems that she wants to propose a naturalized alternative to the study of systems of conventions in shared languages, and so should help herself to a new way of formulating the problems, one less likely to raise Chomskian hackles.

Georges Rey, Frances Egan, Peter Ludlow, Paul Pietroski and Paul Horwich discuss some of Chomsky's most controversial claims for philosophers of language—namely, his disregard for the force of intentionality and representational content in a computational system, his apparent rejection of referential semantics and the traditional “world-word” fit, and the vestiges of meaning in the language faculty. Georges Rey receives the disproportionate brunt of Chomsky's criticism for his discussion of intentionality and the Computational Representational Theory of Thought. Rey asks why we should take representations as causally efficacious or psychologically real, assuming that these are positions Chomsky holds. Similarly, Egan makes an intuitively appealing but nonetheless vague case for a working concept of “representational content” and “semantic characterizations” in Chomsky's computational theory. Chomsky is notoriously difficult to pin down on the role or function of semantic characterizations: at times he is hostile to semantics, and at times dismisses it as nothing more than a terminological preference. He regards his work as furthering the ancient investigation into the relation between form and meaning, and whether that is called “syntax” or “semantics” is of no consequence to him. As Ludlow demonstrates in “Referential Semantics for I-languages?” there is *some* version of the familiar referential semantics amenable to Chomsky (who largely concurs). The semantic hitches, then, are (i) representational *content*—both unhelpful and inappropriate to a naturalistic study of language; and (ii) confusing the use of words to refer to things with the idea that words themselves refer to things. Chomsky's construal of reference in response to Ludlow's exposition is again hesitant; the preferred formulation is something like a relation between speaker, expression,

context, and “the world,” or at least just expression and “the world” (p. 294). Does this result in a philosophically robust sense of reference? Probably not. At the very least, it severs reference for sound from reference for meaning, to be studied separately, with distinct objects (e.g. metaphysically robust sounds, abstractions such as “average guy”). While Chomsky is remarkably open to Ludlow's proposals for a referential semantics for I-languages, he is never convinced that studying reference will bear much fruit, conceding that his skeptical position is due to the fact that too little is known. This volume also contains an essay by Pietroski on analyzing certain verbs in Davidsonian action-theoretic terms, a proposal Chomsky is amiable to. Finally, Horwich appears to take the least critical stance of Chomsky among these collected critics, proposing a place for meaning (or lack thereof) in the language faculty, although Chomsky is reticent to accept Horwich's overly simplified view of sound, meaning, compositionality, and the language faculty.

References

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The evolution of reason: logic as a branch of biology

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William Cooper offers a new reductive theory of human reason according to which even deductive logic and mathematics form part of a larger biological picture. The reductionist urge in logic is not new, but unlike attempts to reduce logic to psychology, language, or mere convention,

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