

Aristotle on How Efficient Causation Works*

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In *Metaphysics* 5.2 and *Physics* 2.3, Aristotle defines the efficient cause in general, claiming that it is that “whence there is a first beginning of change or rest.” This definition needs a lot of interpretation and supplementation to be reduced to a true sense. The definition so expounded applies to the other causes as well. (Suárez, *DM* 17.1.1-2.)

When Aristotle explains efficient causation, he frequently does so using examples having to do with the activity of experts. Time after time, he speaks of builders building, doctors healing, and sculptors sculpting. They are central examples of efficient causes and cases that can be relied on when considering more intricate causal questions. So if we are to understand efficient causation within Aristotle’s natural philosophy, we ought to have a good grasp of these examples. And it might appear that we do have such a grasp because of the widespread agreement regarding the mechanics of these cases: the art or skill characteristic of experts is what initiates a change that results in the product associated with experts; or simply, the arts these experts possess make expert products. The art therefore efficiently causes such products. There are precisifications, of course. Some say that the art is the first in a chain of efficient causes, or that it is one of multiple efficient causes of expert products, or that it is the “true” or “fundamental” efficient cause of such products.

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But the general point remains. The arts that experts possess are, by and large, taken to be efficient causes.

The aim of this paper is to reorient our understanding of efficient causation, on the basis of these examples. I will argue that, despite the consensus, there is a puzzle in Aristotle's texts as to what efficiently causes expert products (§1). The best way out of the puzzle is to read Aristotle as holding that arts are unable to cause efficiently (§§2-3). My argument is primarily based on a passage from *De generatione et corruptione* (GC) 2.9. The text is well-trodden, but there is a subtlety to the form of the argument therein that has not yet been identified. I will show that this aspect of the argument is crucial, for the argument's form yields a pivotal insight into efficient causes: for Aristotle, efficient causes are temporally contrastive, in a sense to be defined below. I then explain a tendency that Aristotle has for characterizing arts in such a way as to suggest that they are efficient causes (§4). He often claims that arts are makers, and it is for this reason that arts are presumed to be efficiently causal. But as he himself notes, there is an ambiguity in 'maker.' I rely on this ambiguity in arguing that one sense of this expression captures the relation of efficient causality, another captures the relation of formal causality. And so, when Aristotle maintains that the art of house-building made the house, this is true without the art of house-building being an efficient cause of the house, for the art of house-building is a formal cause of the house. The result is a coherent framework that takes seriously the logic of efficient causation as outlined in GC.

§1: Expert Activity: A Case Study in Efficient Causation

It will be good to remind ourselves of Aristotle’s basic characterization of efficient causes. Our expression ‘efficient cause’ is shorthand for the cause Aristotle picks out with the expressions ‘source of change’ (ἀρχὴ μεταβολῆς or ἀρχὴ κινούσης), ‘primary source of change’ (ἀρχὴ πρώτη μεταβολῆς), and ‘that from which the source of change is’ (ὅθεν ἡ ἀρχὴ τῆς μεταβολῆς). He gives some illustrative examples of efficient causes in *Physics* 2.3 [194b29-32], saying that

[T1] [Another type of cause is] the primary source of the change or the staying unchanged. E.g., the man who has deliberated is a cause, the father is a cause of the child, and in general that which makes (τὸ ποιοῦν) of that which is made and that which changes [something] of that which is changed. (Trans. Charlton.)¹

Generally, makers or changers are efficient causes. The texts I use below focus on making, and so will I. Nothing philosophically important is lost in making this simplification — my arguments rely on certain features Aristotle takes makers to have, and ultimately he takes changers to have those same features — so I proceed on the assumption that Aristotle’s identification of something as a maker is sufficient for that thing’s being an efficient cause of something. We will have to revisit this assumption below, but for now, I uniformly translate ‘ποιεῖν’ and its variants with ‘to make’ and its variants, so as to clarify when something satisfies the condition Aristotle sets in [T1]: being a maker entails being an efficient cause.

Arts as Efficient Causes

There are several passages in which Aristotle asserts that arts are makers; the following from *Metaphysics* 7.7 [1032b11-23] is representative:

¹ Translations are taken from the volumes in the bibliography, with minor alterations. Square brackets mark additions.

[T2] Thus it turns out that, in a way, health comes from health, and a house from a house, the one that has matter from the one that does not; for the art of medicine is the form of health, and the art of house-building is the form of a house. [...] Therefore, the thing that makes (τὸ ποιῶν) health, and is what the change of getting healthy begins from, is the form in the soul, that is, if it is brought about by an art. (Trans. Bostock.)

Aristotle's description of the art of medicine as a form in the soul helps us avoid a potential problem, for one might reasonably take the art of medicine to be the discipline of medicine, a branch of knowledge which one finds in textbooks. But Aristotle here takes the art of medicine to be a state of one's soul, and this cannot be the discipline of medicine. Such a state is ontologically dependent on an individual subject: Salk's art did not exist before he did, nor does it exist after he passes away, and yet the branch of knowledge existed before Salk and continues to exist after.² Throughout the texts I consider here, Aristotle's use of 'art of medicine', 'art of house-building', and so on, indicates that he has in mind not bodies of knowledge but states of souls.³

² That the art of medicine is an accident ontologically dependent on a substance does not bear, I take it, on the issue of whether Aristotle held non-substantial items like accidents to be non-repeatable (and therefore akin to tropes), or repeatable (and therefore akin to universals of some sort or other). Generally, whether *a* goes out of existence when *b* does is orthogonal to whether *a* or *b* is repeatable. For instance, you might hold that *being a dodo* was a trope that went out of existence when the last dodo perished. But you might instead think that *being a dodo* was a universal, and therefore repeatable, and that it nevertheless went out of existence when the last dodo perished, because your account of universals does not tolerate universals existing without anything instantiating them. In short, *a*'s going out of existence when *b* goes out of existence doesn't bear on the repeatability (or not) of either *a* or *b*.

³ There is some question as to how it is that arts efficiently cause; Fernandez and Mittelman (2017) give a good summary of existing options before providing a novel one. In short, some take arts to be efficiently causal in virtue of being structuring principles of expert products, for it is only in reference to the art of house-building, say, that the process of house-building is explicable. Others take arts to be efficiently causal in that they are triggering episodes in the expert's soul, for the house-builder's thought about the art of house-building initiates a sequence of psychological acts that eventually results in a house. Fernandez and Mittelman take their efficiently causality to lie in their instantiating a dependence relation between themselves and their associated processes.

In [T2], we have an example of an art satisfying the condition in [T1] on being an efficient cause. What it is that makes something ailing healthy is the form in the soul of the one doing the healing. But the form in the soul is the art of medicine, and health is the characteristic product of this art. So the art of medicine is an efficient cause of recovery for those who seek out expert medical advice. It seems, then, that Aristotle is identifying at least one art as an efficient cause in this passage; he generalizes this claim in *Metaphysics* 9.2 [1046b2-4]:

[T3] [...] all arts and all sciences that are able to make (ποιητικαί) are powers. For they are principles of change in something else or in the thing itself *qua* something else. (Trans. Makin.)

In other words, according to our condition, arts are efficient causes. Being able to make makes them so.

It is on the basis of texts such as [T2] and [T3] that scholars attribute to Aristotle the claim that arts are efficient causes. Bolton, for instance, explains [T2] as Aristotle's affirming that

An art is the cause of its product in this sense — as that 'from which' — in that the form of the product is the cause of the product. So, as far as its causality goes, the art is just the form of the product (cf. *GA* II.1 735a2-3). So, in fact, in art just as in nature the form of the product is the true agent *or efficient cause* of the product. (My emphasis.)⁴

The true efficient cause of the product is the form of the product, but that is simply the art that is characteristically possessed by experts. As Bolton sees it, then, the art is the true efficient cause of the product. Charles makes this same point, noting that "Aristotle's efficient or 'making' causes (e.g. the art of house-building) make the effect to be in a certain

⁴ Bolton (2015, 131).

way [...]”⁵ Menn too takes arts to be efficient causes when he explains that “while the doctor is certainly an efficient cause of healing, the *first* efficient cause is the art of medicine itself, as present in the doctor [...]”⁶ Finally, Meyer takes this tack also:

[Aristotle] alternates between referring to an ordinary efficient cause (e.g. the sculptor) either as the sculptor, or as the capacity that makes him a sculptor. That capacity makes him productive of the sculpture, and also is itself productive of the sculpture; the sculptor produces sculpture according to (*kata*) that capacity (cf. *Met.* 1027a4; *Ph.* 195b24).⁷

The references Meyer provides establish that, in speaking of capacities, she has in mind arts — for sculptors, the art of sculpting, for house-builders, the art of house-building, and so on. So in saying that a capacity is productive of the sculpture, Meyer joins the consensus in holding that arts are efficient causes.

These examples are representative of the widespread agreement regarding arts’ being efficiently causal.⁸ To be sure, the examples are also representative of the subtle differences there are among interpretations. Some readers qualify the efficient causality of arts with an intensive — arts are *true* or *first* efficient causes. Some readers attribute to Aristotle there being several efficient causes of expert products, including the expert’s art.⁹

⁵ Charles (2003, 82n8); see also 215.

⁶ Menn (2002, 96), original emphasis.

⁷ Meyer (2011, 56n28). See also Sauv  (1987, 174).

⁸ In addition to Bolton, Charles, Menn, and Meyer, see also Bostock (2003, 125), Charlton (1970, 103), Everson (1997, 52), Frede (1980, 218), Frede (1992, 95), Gill (1991, 255), Johansen (2012, 103), Sorabji (1980, 42), and Tuozzo (2014, 32). Coope (2005, 202n3) seems open to arts’ being efficiently causal, but deliberately refrains from committing to the view.

⁹ Because these types of distinctions permeate discussions of the causality of arts, it is difficult to identify dissenters to the consensus view. E.g., Lewis (1991, 157) holds that experts are efficient causes, but says nothing to rule out arts’ being efficient causes as well. In this case, the omission is crucial because the attribution to Aristotle of the view that multiple items are efficient causes, including both experts and their characteristic arts, is a live option. So Lewis’ identifying the expert as an efficient cause does not entail his denial

But these differences can be set aside for our purposes. What matters is that the vast majority understand Aristotle's preferred examples as cases of arts being efficient causes.

Experts as Efficient Causes

There is no difficulty in finding textual evidence for the consensus view, according to which arts are the efficient causes of expert products. But something else altogether seems to compete for this causal role, namely the expert herself. For instance, throughout *Physics* 2.3 Aristotle claims that house-builders, doctors, and sculptors are causes of their products:

[T4] The seed, the doctor, and in general the maker are all things from which change or rest has its source. [...] Some causes are accidental, or in its genera; for example, the cause of a statue is in one way a sculptor and in another Polyclitus, because being Polyclitus is accidentally conjoined to the sculptor. [...] And both proper and accidental causes may be spoken of either as able to cause or as actually causing; for instance, the house-builder is a cause of the building of a house, or the house-builder who is house-building. (*Physics* 2.3 [195a21-195b6]; trans. Charlton.)

The doctor is dubbed a maker here, and so, the doctor is an efficient cause. And although neither the sculptor nor the house-builder are explicitly identified as makers, they are some kind of cause, and it is surely too much of a stretch in this compressed but comprehensible context to suppose they are meant to be instances of some other kind of cause.

That it's most plausible that the type of cause at stake in [T4] is the efficient cause is further supported when we read [T4] in conjunction with other passages where Aristotle asserts that each of these types of expert is a maker.¹⁰ For instance, in a passage from *Parts of Animals* 1.1 [639b16-19], Aristotle states that

of the consensus view. Still, even if Lewis in fact dissents from the mainline reading where arts are efficient causes, he is in the vast minority.

¹⁰ *Topics* 2.2 [110a14-22], 5.7 [136b33-137a8], *Physics* 2.1 [192b24ff.], *Metaphysics* 1.1 [981a13ff.], *Metaphysics* 6.2 [1026b37-1027a2], *Parts of Animals* 1.1 [639b16-19], as well

Once the doctor has defined health, and the house-builder has defined house, either by thought or perception, they provide the accounts and causes of each of the things they make (ποιεῖν), and the reason why it must be made in this way. (Trans. Lennox.)

Just as the doctor makes health, so too does a house-builder make a house. In which case, the house-builder is a maker, with the result that the house-builder is a plausible candidate for the role of efficient cause of the house — and more plausible that efficient causation is at stake in [T4].

There's further support to be found for the thought that experts are makers in *Metaphysics* 6.2 [1026b37-1027a4]:

And health is an accident of the house-builder, because it is characteristic of a doctor, not a house-builder, to make (ποιεῖν) it, but the house-builder was an accident of a doctor. Again, a confectioner, aiming at giving pleasure, may make (ποιήσκειν) something healthy, but not in virtue of the confectioner's art; and therefore we say it was an accident. (Trans. Kirwan.)

The doctor, the house-builder, the confectioner: these are all experts, for each has a characteristic art or skill. And here, at least, the doctor and the confectioner are explicitly identified as makers. Now, we've just seen that Aristotle includes house-builders in the class of makers, and so, this stretch of text contains a trio of experts that are makers.

All told, there is evidence that we ought to take very seriously the possibility that, for Aristotle, experts efficiently cause expert products. There is, then, a causal puzzle latent in Aristotle's texts: is it the art that efficiently causes expert products, or the expert herself? Now, one might reasonably think that there is no need to decide between these two options. [T2] – [T4] seem to provide good evidence that Aristotle affirmed both that experts are efficient causes, and that the arts that the experts possess are efficient causes. So instead of

as two passages I consider in the main text, *De generatione et corruptione* 1.7 [324a29-30] and 2.9 [335b18-24].

choosing between these alternatives, we might be tempted to embrace the pluralism that they jointly evince, and allow that both arts and experts are efficient causes. After all, causal pluralism is one of Aristotle's most celebrated — or at least, most famous — doctrines. But this temptation is to be resisted. Arts cannot be efficient causes because, as we are about to see, they fail to satisfy an important condition on being such a cause.

§2: Efficient Causes and Temporal Contrastiveness

In a well-known passage out of *De generatione et corruptione* (*GC*) 2.9 [335b9-24], Aristotle gives the following argument against those who posit that Forms are efficient causes:

[T5] Some thought the nature of the Forms is an adequate cause for coming to be. [...] For others, it's the matter, for it is from this that change happens. But neither are correct. [A] If the Forms are [efficient] causes, [B] for what reason (*διὰ τί*) do they not always generate things continuously rather than sometimes doing so and sometimes not, since [C] both the Forms and the things which partake in them are always there? [D] Furthermore, in some cases we observe something else being the cause: it is the doctor who imparts (*ἐμποιεῖ*) health and the knowledgeable man knowledge despite the existence of both health itself and knowledge, and what partake in them; [E] and it is the same in all other cases where something is done according to a capacity. (Trans. Williams.)

Here and in passages below, I use 'Form' with a capital 'F' to mean 'Platonic Form as understood by Aristotle.' Now, much of the scholarly interest in [T5] has originated from a desire better to understand Aristotle's interpretation of Plato's theory of Forms, and whether Aristotle's report does or does not inform us about Plato's theory in its own right.¹¹

¹¹ See, for example, Annas (1982), Bolton (1998), Fine (1987), and Mueller (1998).

But that is not at all my concern here: I shall be dwelling solely on what this passage tells us about Aristotle's own causal theory.

Pretty obviously, the argument is supposed to conclude that Forms are not efficient causes. That efficient causation is the type of causation at stake in [T5] is best supported by Aristotle's use at [D] of a compound verb the verb stem of which is ποιεῖν; that Platonic Forms are not such causes, according to Aristotle, is clear from the beginning of the passage, for those who offer Forms as efficient causes, along with those who offer matter as efficiently causal, say something incorrect. The rest of the argument is very compact, coming to us in the single sentence that begins at [A].

The argument has the logical form of a *reductio*: if Forms are efficient causes, then an inconsistency follows, in which case Forms are not efficient causes. To derive the inconsistency that follows from Forms' being efficient causes, Aristotle uses the claim at [C], that Forms and their participants are always there, and says that this entails the claim at [B]. Now, [B] begins with a request for an explanation or a cause, “διὰ τί” or “for what reason.”¹² This construction alerts us to the fact that [B] is a claim about reasons, about why something is the case. There is, moreover, a clear comparison between two possibilities, Forms always generating and Forms intermittently (and hence not always) generating, and the structure of the comparison — why is it that one would be the case rather than another? — indicates that, on the assumption that Forms and their participants are always there, there would be no reason for one to hold rather than the other. In short, [B] and [C] are

¹² There is some debate as to whether Aristotle held that there is a difference between causes and explanations, though I do not think that there is a position on that issue that would jeopardize my conclusions in the main text.

connected as follows: if Forms and their participants are always there, there is no more reason for Forms to generate always than for Forms to generate intermittently.

In rendering [B] as ‘there is no more reason for Forms to generate always than to generate intermittently’, I identify it as an indifference premiss, a premiss of the form ‘there is no more reason for p than for q’. An argument containing such a premiss is a specific type of principle of sufficient reason argument, namely an indifference argument.¹³ The *reductio* of [T5] therefore contains, as a component, an indifference argument. Usually indifference premisses are expressed by coordinating two terms, οὐ and μᾶλλον, though this is by no means necessary. Just as one need not use ἴσος when meaning that a pair of quantities are in some respect no more and no less than one another, for their equality in this respect will not require the Greek for “equal” in order to be expressed, so too one need not use οὐ and μᾶλλον when expressing an indifference premiss. Indeed, indifference premisses can be expressed simply by parity of reasoning — the latter is a form of indifference reasoning — and parity of reasoning is being deployed at [B].¹⁴

If we take [B] as an instance of Aristotle using this kind of reasoning in order to describe what causation is like, the structure of the overall argument of [T5] is clear. For it is clear what Aristotle takes to follow from an indifference premiss: according to him, if there is no more reason for p than for q, then either both p and q or neither p nor q.¹⁵ The argument of [T5] then becomes quite simple. Assume that Forms are efficient causes. Forms and their participants are always there, therefore without further ado there is no more

¹³ On indifference reasoning both generally and in ancient philosophy, Makin (1993) is impeccable.

¹⁴ See *Physics* 4.8 [215a22-24] and GC 1.7 [323b3-21], as well as Makin’s remarks on these (Makin 1993, 105-122).

¹⁵ *Ibid.*

reason for Forms to cause at all times than to cause intermittently. This indifference premiss entails that either Forms both cause at all times and intermittently, or they cause neither at all times nor intermittently. Presumably, our inexhaustible supply of disease and ignorance gives the lie to Forms causing at all times; therefore they neither cause at all times nor intermittently. This is simply to say that they do not efficiently cause at all, contradicting the assumption with which we started.

There are a number of ways in which one might undermine this argument, but for my purposes they can be set aside.¹⁶ Regardless of its quality, or whether it is a fair critique of Forms as efficient causes, it nevertheless contains a pivotal insight into how Aristotle himself conceptualizes efficient causes. Charity towards Aristotle will have him self-consciously abiding by any principle he uses to refute Plato's theory of Forms. The key to understanding Aristotle's own conception of efficient causation lies, then, in the indifference premiss: if there is no more reason for something to cause efficiently at all times rather than at some times, then it is not an efficient cause. One candidate that seemingly fails to satisfy this condition is Form — when considering Forms at one time and another, there is no difference one could point to in order to explain why Forms caused efficiently at one time rather than another. Because there is no more reason for Forms to

¹⁶ Fine (1987, 79-80) seems to take the argument to be invalid, though on my reconstruction it is merely unsound: Aristotle has it that there being no more reason for p than for q entails p just in case q, but this is false. As Makin (1993, 129-135) shows, there being no more reason for p than for q entails merely that p and q have the same modal profile — that is, an indifference premiss comparing p and q entails either possibly p just in case possibly q, or necessarily p just in case necessarily q (for any type of modality). p being true and q being false is compatible with what in fact follows from an indifference premiss, but not with what Aristotle thinks follows from such a premiss.

cause efficiently at one time rather than at another, Forms cannot explain why something is, or happens, at some time rather than at a different time.

Something being the case at one time rather than another is a feature I call temporal contrastiveness. Contrastive accounts of causation are those according to which the causal relation includes an argument place for a relevant contrast, in addition to argument places for the cause and effect: c rather than c^* caused e , where c^* denotes a class of contrasts, broadly construed.¹⁷ In this case, the causal relation is a ternary relation, not a binary one, for it is a relation with three argument places, not two. An example will help here. Say that, some afternoon, I take a nap and my flowers wilt. If causation is contrastive in the way I describe, the causal relation does not hold merely between my napping and my flowers' wilting; instead, it holds between my napping, my watering the flowers, and their wilting, for my napping rather than my watering the flowers caused the flowers to wilt. If we limit the sort of contrast c^* can be in the following way, we specify *temporal* contrastiveness: some cause c is temporally contrastive when c at some time rather than c at another time causes e .¹⁸ The argument in [T5] contains, then, a powerful idea. Whatever it is that efficiently causes some effect is something that, according to Aristotle, satisfies what we consider a very plausible kind of constraint. But if Aristotle's own efficient causes are to be resistant to this criticism, it must be the case that they can be substituted into ' c at some time rather than c at another time causes e ' so as to yield a truth.¹⁹

¹⁷ On contrastiveness generally, canonical examples include Hitchcock (1996), Schaffer (2005), and Woodward (2003). I draw on and simplify their examples throughout. Note that Schaffer includes a contrast class on the side of the effect as well, holding that c rather than c^* causes e rather than e^* .

¹⁸ On temporal contrastiveness in particular, see Mackie (1974, 34-35).

¹⁹ In focusing on temporal contrastiveness, I privilege time over place, though one might reasonably think that efficient causes also explain why something happens here rather than

§3: The Unaffectedness of Forms and Arts

Examining the argument of [T5] yields an insight into Aristotle’s own conception of efficient causation by giving a criterion that disqualifies certain causal candidates. Forms fail to be temporally contrastive, and the basis of this failure is, according to Aristotle, the fact that Forms are “always there.” But a moment’s thought reveals this to be problematic. Forms’ being “always there” is not, in [T5] anyway, shorthand for their being eternal because both Forms *and* their participants are there described as being always there, and the latter are not eternal. We might take Aristotle to be saying that Forms and their participants are always there during the causal interaction of which Forms are stipulated to be efficient causes, or that they are there both before and after the causal interaction they are stipulated to efficiently cause, but then we risk disqualifying the candidates that Aristotle himself offers at [D]. After all, doctors and the knowledgeable people are present for the duration of their efficient causing, and they are there both before and after their efficiently causal effects.²⁰ Put another way, if the point at [C] is that Plato’s candidates for

elsewhere. (There is a use of *ποτέ* suggestive of place, *τινες ποτ’ ἐστέ* or “who in the world”, though the additional use of *ἀεὶ* in [T5] probably settles that *ποτέ* is temporal there.) I do not deny that Aristotle also took efficient causes to be spatially contrastive; indeed, this may be what grounds the constraint in *GC* 1.6 that a maker must be in contact (*ἀφή*) with what it makes. Still, all I need for the argument in the main text is temporal contrastiveness, and I bracket spatial contrastiveness in the discussion below.

²⁰ According to a distinction Aristotle draws in *Physics* 2.3 [195b16ff.], actual (*ἐνεργοῦντα*) doctors will only be present during the duration of their causing, whereas a potential (*κατὰ δύναμιν*) doctor is typically present both before and after her causing. I say more about this passage in §3; for now, I leave it aside: there are precisifications of ‘always there’ in [T5] according to which both actual and potential doctors are always there, and that is all that is required to motivate understanding the criterion of [T5] in more detail.

efficient causation fail to be temporally contrastive because they are present both before and after the processes they are purported to cause, it's difficult to see why Aristotle's candidates do not also fail to be temporally contrastive. Now, ultimately, I think that the doctor and the knowledgeable person do satisfy the criterion set down in [T5], but seeing how they do so requires a better understanding of what exactly the criterion of [T5] amounts to.

Aristotle's other critiques of the notion that Forms are efficiently causal help to explain when the criterion should be applied. Many of these critiques are found in the latter half of *Metaphysics* 1. But the most relevant passage for our purposes is in the *Topics*, for there he not only explains that Forms lack efficient causal efficacy, he gives an explicit reason for why this is so:

[T6] Generally, when one applies 'capable of making' or 'capable of being made' [to a subject], the subject (τὸν ὄρον) and the Form must be different; for those who assert the existence of Forms hold that they are unaffected and unmoved (ἀπαθεῖς καὶ ἀκίνητοι). (*Topics* 6.10 [148a18-21]; trans. Pickard-Cambridge.)²¹

Aristotle takes the second half of this sentence to explain the first. The second half is the claim that Forms typically enjoy the properties of being unaffected and unmoved. Now, Forms' having these properties has the consequence mentioned in the first half of the passage, that if the predicate 'capable of making' holds of some grammatical subject, that subject will not be a Form. Put another way, because Forms are unaffected and unmoved, the predicate 'capable of making' does not hold of them. Presumably, the predicate

²¹ The sense of τὸν ὄρον might be 'definition,' instead of 'subject,' in which case the thought in [T6] is that, when 'capable of making' holds of a definition, the definition and the corresponding Form must be different. But on either translation, there is an incompatibility between being capable of making and being a Form, and that is all I need for the argument in the main text.

‘capable of making’ cannot hold of Forms just in case Forms cannot make. In short, we have in [T6] the claim that Forms cannot make, cannot be efficient causes, because they are unaffected and unmoved.²²

This additional facet to Aristotle’s general critique of Forms as efficient causes gives guidance as to when the criterion of [T5] disqualifies a causal candidate. There, the basis of Forms’ failure to be temporally contrastive is given as their being always there, but as we saw, it is difficult to see what precisely it is about Forms that makes them unsuited to be efficient causes. This difficulty is even more pressing in light of the fact that Aristotle immediately offers his own candidates for being efficient causes, doctors and knowledgeable people. Whatever it is about Forms that prevents them from efficiently causing had better not prevent doctors and the knowledgeable from playing that role. But with [T6] in hand, we have an answer to this difficulty, for we see that it is Forms’ being always there, *unaffected and unmoved*, that disqualifies them. For Aristotle, if Forms are unaffected and unmoved, they do not change over time. And so, he holds that if a Form causes at one time, it does so at other times as well. There is, then, no way a Form could be substituted, so as to yield a truth, into the cause argument place of ‘*c* at one time rather than *c* at another time caused *e*.’ And so, Forms cannot be efficient causes.

This is one way of resolving the difficulty latent in [T5]. In taking this tack, I am not taking Aristotle to have intended that [T5] and [T6] be read together as an argument

²² One might worry that Aristotle is not speaking *in propria persona* in [T6], given that it is the Platonists affirming that Forms are unaffected and unmoved. Still, the beginning of the sentence is clearly in Aristotle’s own voice, and it is not clear that he is merely reporting Platonists’ views — Brunschwig (2007), for instance, suggests deleting ‘τοῖς λέγουσιν ἰδέαζ εἶναι,’ in which case the sentence is simply Aristotle’s own thoughts on Forms. I take it as more likely than not, then, that [T6] contains Aristotle’s own thoughts as to why Forms fail to be efficiently causal.

against Forms being efficient causes. My interpretation is simply that the arguments of [T5] and [T6] work together in Aristotle's critique of the thought that Forms are efficient causes. In [T6], Aristotle takes specific features to entail the failure of Forms to be efficiently causal, saying that it is *because* Forms are unaffected that they are unable to cause efficiently. He must have it that being unaffected suffices for efficient causal failure — else his inference in [T6] is invalid — and his doing so explains why the criterion of [T5] prevents Forms from being efficient causes but not his own candidates: doctors and knowledgeable people are not unaffected. But without [T5], we would not have an explanation for why Forms' being unaffected entails their efficient causal failure. Something's being unaffected implies that it fails to be temporally contrastive, that there is no more reason for it to cause efficiently at one time rather than another. But efficient causation is temporally contrastive, so anything that enjoys the feature *being unaffected* is no efficient cause.

The criterion of [T5] rules out items that are unaffected from being efficient causes. But Forms are not the only candidates for the role of efficient cause that enjoy the property *being unaffected*. In GC 1.7 [324a32-b4], we find an extended account of a distinction between two types of maker, what he dubs the first or primary maker, and the last maker. Alongside [T5] and [T6], these lines are rich in their depiction of the causal role of arts and deserve to be quoted in full:

[T7] [F] In the case of making, the first maker is unaffected (*ἀπαθής*), but the last [maker] is itself also affected. [G] Things that do not share the same matter make without being affected; e.g., [H] the art of medicine, which makes health without itself being in any way affected by the thing which is made healthy, whereas the food [that is administered], in making, also is affected in some way or other — either it is heated or cooled or is affected in some other way in the course of making. The art of medicine is like the principle and the food is like the last [maker] which is in contact [with the thing made]. (Trans. Williams.)

For our purposes, there are two aspects of this passage that need explaining: what gets sorted according to Aristotle's distinction between first or primary makers and last makers, and why those that are first or primary enjoy that status. For the rest of this section, I try to answer the first question; I consider the answer to the second question in §4.

Whether something is affected tracks what kind of maker it is. Something is a first maker if it is unaffected, something is a last maker only if it is affected. Aristotle uses the terms 'first' and 'last' presumably because he has in mind a causal chain — the first link in the chain is one kind of maker, the last another. But what will be more relevant for our purposes is whether a maker is affected or not. So I will instead use the expressions ' α -maker' for those makers that are unaffected; and ' β -maker' for those makers that are affected.²³

Aristotle elaborates the distinction by way of example, and his primary case of an α -maker — the art of medicine — illustrates how [T7] connects with our question of the causality of arts. Multiple times throughout this passage, Aristotle attributes to α -makers the very feature that, by way of [T5] and [T6], precludes Forms from being efficient causes ([F], [G]). His example of an α -maker, the art of medicine, is also characterized as unaffected at [H]. And so, both α -makers in general and the art of medicine in particular fail to be temporally contrastive. As a result, they cannot be efficient causes.²⁴

²³ There are clear affinities between the distinction at work in [T7] and the distinction between moved and unmoved movers, but I avoid simply identifying the distinction in [T7] with that between moved and unmoved movers because Aristotle keeps moving and making separate throughout GC 1.7. 'Unaffected maker' and 'affected maker' are more illuminating than Aristotle's names, but are by no means elegant. Hence my opting for the pithier ' α -maker' and ' β -maker'.

²⁴ In the line immediately preceding [T7], Aristotle finds a similar ambiguity in ' $\kappaινούν$ ': some changers are themselves unchanged, some are themselves changed. Indeed, Aristotle

In saying that the two fail to be temporally contrastive, I do not mean to diminish the differences between Aristotle's arts and Plato's Forms. Most strikingly, arts are, in some sense, ontologically dependent on the subject in which they are instantiated; typically, Platonic Forms are understood not to be dependent for their being in this way. Now, the subject on which an art is ontologically dependent can, itself, change over time, so one might think that arts can be temporally contrastive. Nevertheless, the criterion disqualifies arts all the same. Take the art of medicine. As we have seen in [T2], and as Aristotle says elsewhere, the art of medicine is the form of health. So when Aristotle says at [D] that health and its possessor are both present, this is to say that the art of medicine and its possessor are both present — hence his generalization from the example of the art of medicine and its possessor to the claim at [E] that “it is the same in all other cases where something is done in virtue of a capacity.” In contrast to Forms, arts are not eternal; an instance of an art is no more when the subject who bears it passes away. But the point Aristotle makes in [T7] suggests that, as with Forms, there is no more reason for the art of medicine to cause efficiently at all times of its instantiation rather than intermittently. Though instances of the art of medicine are not always there, when they are present they are unaffected; Hippocrates' art, for example, is no different before, during, and after his healing Socrates. If Hippocrates' art doesn't change, either it is efficiently causing at all times of its instantiation or at no times. So it cannot be that Hippocrates' art efficiently

says that “the same account has to be accepted both for making and being made, and for changing and being changed.” Just as some makers are unaffected, so too some changers are unchanged — and according to [T6], being unaffected and being unchanged explains why Form are unable to be efficient causes. I take it, then, that the account I have given of Aristotle on makers coheres with his remarks on changers, even though I have focused primarily on the former.

caused at some time during its instantiation rather than at another time. It is not, then, an efficient cause, and generally, arts are not efficient causes.

One might push back against this conclusion, on the grounds that there is an ambiguity in ‘being affected’ latent in [T7].²⁵ A maker might be affected by the very thing what it makes, or a maker might be affected by something distinct from what it makes. Conversely, there is an ambiguity in ‘being unaffected’: a maker might be unaffected by the very thing the maker makes, or it might be unaffected by anything at all. It is possible, one might think, that the art of medicine is only unaffected by what it makes and is yet affected by something else. And if it is affected by something else, it is possible for the art of medicine to satisfy the criterion laid down in [T5]. Still, I doubt this is the case. The general characterization of α -makers in [T7] is simply that they are unaffected, just as the general characterization of Forms in [T6] is simply that they are unaffected. If Aristotle took there to be a distinction among types of unaffectedness, it is surprising that he did not consistently deploy it throughout [T7] or at all in [T6]. Rather, I take it that, although the art of medicine’s being unaffected by what it makes leaves it open as to whether it is unaffected by anything at all, its being an α -maker makes it more likely than not that it is unaffected full stop. So in all likelihood, arts cannot be efficient causes.²⁶

²⁵ See Williams (1982, 122-123).

²⁶ That arts’ being unaffected entails their efficient causal failure invites a number of digressive questions, though the following still seem especially pressing: what sort of cause is Aristotle’s (unaffected) God, and are other powers efficiently causal (especially faculties of the soul)? First, God is, on some accounts, a final cause, though not an efficient one, and God’s being unaffected would not preclude God’s being finally causal. (See, e.g., Caston (1999, 216ff.)) Second, my arguments herein only concern arts. It may be that, for Aristotle, other powers are temporally contrastive and therefore can be efficiently causal, but this would not threaten my intended conclusions.

§4: The Causal Role of Arts

One might reasonably suppose that my interpretation of Aristotle's texts saddles him with an inconsistency. He identifies arts as makers, and according to the basic account of [T1], this identification is sufficient for arts to be efficient causes. What is more, in a number of places Aristotle applies to arts his so-called expressions for efficient causes.²⁷ Given that arts are makers, and also that expressions for efficient causes hold of them, it is difficult to see how an interpretation according to which they are not efficient causes can be accepted.

Addressing this concern will complete Aristotle's account of the causal structure of expert activity. But the concern is only half of the problem that arises due to the texts considered above, for the standard interpretation is threatened with inconsistency as much as mine is: given that arts have precisely the feature which precludes Forms from being efficient causes, it is difficult to see how an interpretation according to which arts are efficient causes can be accepted. In short, the puzzle of what efficiently causes expert products is significant, for on either interpretation, inconsistency lurks. We are now in a position to formulate the puzzle as an inconsistent triad, one in which (i) arts cannot be efficient causes; (ii) arts are makers; and (iii) makers are efficient causes. It might also be helpful to put the puzzle in terms of the so-called expressions for efficient causation, instead of makers, since Aristotle sometimes says that an art is a source of change (ἀρχὴ μεταβολῆς) or a primary sources of change (ἀρχὴ πρώτη μεταβολῆς). A formulation of the

²⁷ For 'primary source of change', see *Metaphysics* 12.4 [1070b26-28]; for 'source of change', *Metaphysics* 5.2 [1013b6-9] and *De generatione animalium* 2.1 [735a2-4]; and for 'that from which the source of change is', *Physics* 2.3 [195a3-8]. On Aristotle's various expressions for efficient causation, see Meyer (2011), 36ff.

triad that reflects this is as follows: (iv) arts cannot be efficient causes; (v) arts are sources of change (or primary sources of change); (vi) sources of change (or primary sources of change) are efficient causes.

The Wrong Way Out: Denying (i) and (iv)

There are several ways out of this puzzle, of course. One that would be preferred by those who hold the standard interpretation is to deny that arts cannot be efficient causes ((i) and (iv)). I've argued that doing so completely ignores Aristotle's criticisms of the thought that Forms are efficient causes as outlined in [T5] and [T6]. But there is a nuanced reply to what I have said so far. Arts are, for Aristotle, a type of power, and one might reasonably think that when powers are exercised, they transition from one state to another, from being unexercised to being exercised. They cannot, then, be unaffected in the way I claim they are, and they might very well be suitable candidates for efficient causal roles.

To be sure, this sort of response requires attributing to Aristotle a distinction he does not explicitly make. There is no getting around Aristotle's identification of arts as unaffected in [T6], so it is essential to this response that there be some weaker sense of 'unaffected' applicable to arts. My preferred solution makes use of a distinction that Aristotle explicitly does make, and I count this as an advantage over the proposal that we deny (i) and (iv). But before I get to my own solution, I want to consider the evidence that when powers are exercised, they transition from one state to another. For if powers transition from one state to another, if the transition from being unexercised to being exercised is a real change, they could very well be temporally contrastive: the reason that

they efficiently caused at some time rather than another would be that they were unexercised prior to efficiently causing and exercised upon efficiently causing.

For as long as one is a certain type of expert, one has a certain causal power. As soon as Socrates, say, has acquired the art of house-building, he has the power to make houses. He does not always do so, of course; he has to sleep, eat, and walk the dog, all of which are activities incompatible with building houses. But even while he sleeps, eats, and walks the dog, he is yet a type of expert and he still has the power to make houses. Aristotle marks the difference between, on the one hand, Socrates' possessing and not exercising the power to make houses, and on the other hand, his possession and use of that same power as the difference between exercise and being able. The following lines are normally taken to be canonical in this regard:

[T8] As what builds is to what can build [...] [so is] what has been finished off to what is unwrought. Of these contrasts let the exercise (ἡ ἐνέργεια) be defined by the one part, the being able (τὸ δυνατόν) by the other. (*Metaphysics* 9.6 [1048a37-b6]; trans. Makin.)

I do not propose to explain the distinction in much greater detail than this, given that Aristotle's understanding and deployment of it is contentious.²⁸ Rather, I attempt to ward off a misunderstanding, based on texts such as [T8], about the exercise of powers in the specific case of arts.²⁹

²⁸ Part of the difficulty of explaining this distinction is that, according to Aristotle, it would be a mistake to attempt to define ἡ ἐνέργεια and τὸ δυνατόν (1048a36-37), with the result that we can only grasp them through analogies. See Frede (1994) and Makin (2006, 133ff.).

²⁹ Aristotle holds there to be powers that aren't arts, of course; e.g., it seems that human souls have the power to perceive, and this is no art. I therefore take my conclusions in the main text to apply only to arts — it may be that other powers are efficiently causal — for only arts are characterized as unaffected in the way that Forms are unaffected.

Fundamentally the misunderstanding regards what it is that changes when a house-builder goes from sleeping to constructing a house. For instance, Marmodoro understands the exercise of a power to be “a transition to a different status of the power itself.”³⁰ Transitions between states are simply changes, with the result that Marmodoro holds powers themselves to change. Makin too takes the exercise of powers to involve a change in the powers themselves in virtue of their transitioning away from an inactive state to an active one:

At this point I want to introduce a contrast between two ways in which we could think of the relation between a potentiality [i.e. a power] and its exercise. The contrast concerns different ways in which we might think of the transition of a potentiality away from its inactive state. [A] The transition of a potentiality away from its inactive state is thought of as a binary transition. The potentiality is either inactive or it is active. [...] [B] The transition of a potentiality away from its inactive state is thought of as gradual or scalar. The potentiality can be more or less active — further from or nearer to its inactive state, as it were.³¹

As Makin goes on to show, the two ways of thinking of the exercise of powers are more and less successful at explaining diverse examples, but each of [A] and [B] presuppose that the exercise of a power involves a change in the power itself.

What builds stands to what can build as the exercise of a power stands to that very power. But this analogy does not entail that *powers* change when exercised, that they transition from an inactive state to an active one. All that [T8] settles is that what is exercised is what builds. Moreover, it is likely that, in the cases we’re focused on, the relevant power does not change. For we have good evidence that Aristotle took what builds to be the house-builder, and that the exercise of the house-builder’s power is a change in

³⁰ Marmodoro (2014) 13.

³¹ Makin (2018), 53-54.

the house-builder, not the art of house-building. In *Physics* 2.3 [195b16-21], he distinguishes between potential causes and actual causes, saying that

Causes which are particular and actual (ἐνεργοῦντα), are and are not simultaneously with the things of which they are causes. For example, this healing man with this being-healed man, and this house-building man with this house being built. With causes which are merely potential (κατὰ δύναμιν), the same does not always hold: the builder and the house do not pass away at the same time.

What builds is the house-builder, and the house-builder is either a potential cause, in an inactive state; or an actual cause, in an active one. When the house-builder goes from sleeping to building, say, he is the one exercising the power, and therefore he is the one that changes from a potential cause of the house to an actual one. And of course, this is perfectly compatible with the power for making a house remaining unchanged, for as Aristotle says at 195b16-21, it is the house-builder, not the art of house-building, that transitions from being potential to being actual. And that is consistent with what Aristotle says in [T7]: the art of house-building in the house-builder's soul remains unaffected when he goes from sleeping to building. That the art of house-building was previously unexercised by the house-builder and is now exercised by him does not entail that the power itself changed, just as his previously being taller than his son and now being shorter does not entail that he himself changed. The exercise of a power, at least in the case of arts, is simply a mere Cambridge change of the power. And in light of the fact that Aristotle does not distinguish between ways of being unaffected, it is likely that this is how we should understand the transition from non-exercise to exercise of the art of house-building.

One might make a final bid for the arts being temporally contrastive despite not changing over time.³² An art is a power, and Aristotle plausibly takes the specification of a power to include certain conditions; for instance, the art of medicine is, at least, the power to heal at times when in contact with a patient, to harm at other times, and so on.³³ Now, it is not difficult to imagine some of these conditions giving us the means to explain why the art efficiently caused at one time rather than another: you might say that the art of medicine caused at some time rather than another because it was in contact with a patient at the former time but not the latter.³⁴ In which case, it would seem that though the art of medicine does not change — it has always been the power to heal when in contact with a patient, and its being differently related to a patient is a mere Cambridge change — it nevertheless is temporally contrastive.

Appealing as this line of thought is, we have to keep in mind that attributing to Aristotle the thought that arts are efficiently causal yields an inconsistency. In [T6], he claims that being unaffected entails being unable to cause in that way, and as we saw, this is the root of Forms' failing to be able to efficiently cause: they are unaffected and therefore cannot be efficient causes. If arts are unaffected and yet efficiently causal, that would contravene Aristotle's own argument against Forms' being efficiently causal. So, it would seem, merely building certain conditions into the art of medicine will not make it possible for the art to efficiently cause. However, I have argued that we can understand the connection between being unaffected and failing to be efficiently causal in terms of

³² I thank an anonymous referee for bringing to my attention the possibility that being unchanged comes apart from being temporally contrastive.

³³ *Metaphysics* 9.5 [1048a2ff.]; see also Makin (2006), 98-112, 119-122.

³⁴ Such contact would be what Aristotle describes as contacting without being contacted, a feature he says holds of unmoved movers (GC 1.6 [323a25-33]).

temporal contrastiveness, and with this conception of powers in hand, we can better appreciate what it takes to be temporally contrastive. If something does not change over time, then there is no more reason for it to cause at one time rather than another. But if Aristotle's arts partly consist in conditions governing their exercise, then something's merely Cambridge changing over time also implies that there is no more reason for it to cause at one time rather than another. For Aristotle, it takes real change, not mere Cambridge change, for something to be temporally contrastive. When it comes to filling the argument place in the temporal contrastiveness condition — c at some time rather than c at another time causes some effect — the only values that the place can take are ones that can really change. But being unaffected is incompatible with real change, and therefore being unaffected prevents something from being an efficient cause.

The Right Way Out: Disambiguating (ii) – (iii) and (v) – (vi)

Even in their being exercised, arts are unaffected, with the result that we cannot deny that arts cannot be efficient causes ((i) and (iv)) without ignoring Aristotle's criticisms of Plato. A better way out is to deploy a distinction that Aristotle explicitly makes, and in this respect, the distinction among makers in [T7] provides the key to understanding both how the texts are consistent with one another and what the causal structure of expert activity is.

If 'maker' had but a single sense, then there would be an inconsistency among the claims that (i) arts cannot be efficient causes; (ii) arts are makers; and (iii) makers are efficient causes. But as we have seen, 'maker' has at least two senses for Aristotle: some makers are α -makers, makers that are unaffected in their making; some makers are β -makers, makers that are affected in their making. Arts fall under the former, and a more

perspicuous version of (ii) would read ‘arts are α -makers.’ Now, (i) – (iii) would still be inconsistent if (iii) had to be precisified as ‘ α -makers are efficient causes’, but again, Aristotle attributes to α -makers the same feature that leads Forms to efficient causal failure. The right revision of (iii) is that β -makers are efficient causes. Aristotle’s example of a β -maker — the food that will heal an invalid — is a particularly vivid case in which a maker is affected in its activity of making. So vivid, in fact, that it’s easy to give several temporally contrastive explanations associated with the food’s healing: the food efficiently caused healing now rather than later because it was brought into contact with the invalid now rather than later; the food is no longer efficiently causing healing now rather than earlier because there was yet food remaining earlier but now it is no more; and so on. There is no inconsistency, then, when (ii) is read as a claim about α -makers and (iii) a claim about β -makers.

The way out of the alternatively formulated inconsistent triad — (iv) arts cannot be efficient causes, (v) arts are sources of change, and (vi) sources of change are efficient causes — is structurally similar. Because he holds ‘maker’ to have various senses, Aristotle’s basic account of efficient causation in terms of making is ambiguous. There are two ways of being a maker, and therefore, according to [T1], there are two kinds of thing to which Aristotle’s so-called expressions of efficient causation will truly apply. But only the things that fall under one of these kinds can, in fact, be temporally contrastive and therefore satisfy an important condition on being an efficient cause. So the fact that one of these expressions truly applies to something is not sufficient for that thing’s being an efficient cause, just as the identification of some process as oxidation is not sufficient for that process’s being rusting, for there is another way altogether of oxidizing, namely

combusting. And just as ‘oxidizing’ can be disambiguated by instead using ‘rusting’ and ‘combusting’, so too can ‘source of change’ (or any of the usual expressions) be disambiguated by instead using ‘ α -maker’ and ‘ β -maker’. Once again, Aristotle’s explicit distinction gives us the means to resolve the apparent inconsistency: if we precisify (v) from ‘arts are sources of change’ to ‘arts are α -makers’, and (vi) from ‘efficient causes are sources of change’ to ‘efficient causes are β -makers’, the problem dissolves.

This solution is reinforced by Aristotle’s numerous examples of β -makers in the context of the activity of experts. Experts are makers of some sort, and they are, in Aristotle’s ontology, the right kind of thing to be β -makers, to be affected in their making. They are neither accidents nor substances; rather, they are accidental unities. For as Aristotle says at [D], the doctor is the efficient cause of health, and he rules out from being efficient causes both the art of medicine and the subject on which the art ontologically depends. No, it is the compound of these two, the accidental unity comprising a human being and the art of medicine, that is affectable. When a doctor makes someone healthy, she might be affected in the manner that the food in [T7] is affected, i.e. she might be affected by the very subject of her healing; in wrapping a sprain, say, she stabilizes a convulsing joint with her hands and thereby her arms tremble as well. Or she might be affected by something distinct from the invalid; she might be healing because she made a choice to do so. Aristotle describes a case of this latter sort at *De anima* 2.4 [416a34-b3], noting that even if a carpenter, in making some timber to be in a certain way, is not affected by the timber, still the carpenter is changed. Experts are therefore changed in some way in the course of their making, even though their characteristic art is not changed at all, and

even if they are not changed by what they make. So experts are not unaffected in their making, and thereby they are β -makers.

Because experts are affectable in a way that their arts are not, they can be temporally contrastive where their arts cannot. Why the doctor heals at the moment she does, and not earlier or later, is that her hands came into contact with the joint at the moment they did, and not earlier or later. Or she heals at the moment she does because that is when she made her choice — not earlier, and not later. An experts' being affected in some way gives an easy blueprint for explaining their temporal contrastiveness: experts can be substituted into the cause argument place in ' c at some time rather than c at another time causes e ' and yield a truth because the former times are the times at which the experts changed, but the latter times are not.³⁵

There is, then, a way through the inconsistent triads. Aristotle holds that arts are α -makers, experts are β -makers, and only the latter are efficient causes. Put as such, we see that the assumption laid out in §1, that something's being a maker suffices for its being an efficient cause, needs revision: consistency demands that only something's being a β -maker suffice for its being an efficient cause. And it is for this reason that something's

³⁵ The fact that only certain kinds of entities can be temporally contrastive coheres with other accounts of Aristotle's basic causal theory. Huismann (2016), for instance, argues that causes must be both necessary and sufficient for their effects (a condition dubbed 'causal commensurateness'): a shirt's being burgundy is sufficient for the bull's charge, but not necessary, the bull would've charged a scarlet shirt as well; and the shirt's being colored is necessary but not sufficient, for the bull wouldn't have charged a green garment. In short, it takes the right kind of entity to be a cause, for Aristotle, and that supports the thought that experts, but not their arts, can efficiently cause. Arts are intimately connected to experts, just as burgundyhood is intimately connected to redness: every expert possesses a characteristic art, and every burgundy is red. But the intimacy of these connections is not enough for art to efficiently cause what the expert efficiently causes, just it is not enough for being burgundy to cause what being red causes.

being a source of change, or a primary source of change, or being that from which the source of change is, does not suffice for being an efficient cause, because enjoying one of those properties only entails being some kind of maker or other. It turns out that the so-called expressions for efficient causation are just as ambiguous as ‘maker’ is.

The question remains as to why α -makers deserve the honorific ‘first maker’ when they are not efficient causes, and establishing this connection will complete Aristotle’s account of the causal structure of expert activity. In [T2], we are told that the art of medicine and the art of house-building are the forms of what doctors and house-builders characteristically make, health and houses.³⁶ We might reasonably suppose, then, that arts are generally the formal cause of the products that are associated with them, experts the efficient cause.³⁷ Since arts are Aristotle’s primary example of α -makers, and experts are good examples of β -makers, the relation between α -makers and β -makers is that between formal and efficient causes. Any apparent tension between arts’ being α -makers — that is, their being first or primary makers — and failing to be efficiently causal is dissolved, then, by the well-established fact that formal causes are prior to efficient causes. Take Aristotle’s remarks at *Physics* 2.3 [195b23-25]: “a human builds houses because he is a house-builder, and a house-builder builds in virtue of the art of house-building. The art of house-building, then, is the prior cause, and similarly in all cases.” The house-builder makes a house and thus is its efficient cause; but the art of house-building, the house’s formal cause, is prior

³⁶ This idea is echoed in *Metaphysics* 12.4 [1070b33].

³⁷ Although it might seem odd to say that the art of house-building, e.g., formally causes a house, I take it that my reading is explicable using existing models of the causality of unmoved movers. E.g., Sauvé (1987) argues that, of the many activities that can be undertaken with a hammer, only some of those result in a house, and it is the art of house-building that fixes which of those activities do, in fact, bring about a house. This is one way, I take it, that the art of house-building could formally cause a house.

to the builder because it is in virtue of the art of house-building that the builder makes a house. Even though the art is not an efficient cause of the house, its being that in virtue of which an efficient cause operates is enough for Aristotle to reserve a sense of ‘maker’ for arts such as the art of house-building.

On the other hand, a formal cause of some effect is not an efficient cause of one and the same effect; hence β -makers, and not α -makers, are efficient causes. Consider what Aristotle says in *De anima* 1.4 [408b11-15]: “To say that it is the soul which is angry is as if we were to say that it is the soul that weaves or builds houses. It is better not to say that the soul pities or learns or thinks, but that the human being does these things by means of the soul.” According to this passage, there is something in the doctor that in a sense cures, but it is less than perspicuous to say that the doctor’s medical art cured Socrates. Better, we are told, to say that the doctor did the curing, and did so by means of, or in virtue of, some part of her. How is this delicate distinction to be fitted into the four cause theory? Just as I say: the doctor is the efficient cause of the resulting health, her art the formal cause.³⁸

The complete account of the causal structure of expert activity which I am offering is, then, a coherent one. Taking seriously the logical form of Aristotle’s criticism of the causal role of Forms gives us a compelling reason to think that what, in fact, efficiently causes expert products is the expert, not her art. Though experts efficiently cause in virtue

³⁸ On my interpretation, Aristotle is describing, in [T7], a formal cause and an efficient cause: the α -maker a formal cause, the β -maker an efficient cause. One might reasonably wonder why Aristotle speaks now of one type of causality, now another, but this is by no means unique to [T7]. In speaking of now one type of cause, now another, Aristotle gives us the kind of account we find elsewhere; the excerpt from *Physics* 2.3 [195b23-25], quoted in the main text, is a good example of this.

of their arts, their arts are not efficient causes. For their arts are not capable of real change, and therefore do not have what it takes to cause efficiently.

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