

Causation and Explanation in Aristotle

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Abstract

Aristotle thinks that we understand something when we know its causes. According to Aristotle but contrary to most recent approaches, causation and explanation cannot be understood separately. Aristotle complicates matters by claiming that there are four causes, which have come to be known as the formal, material, final, and efficient causes. To understand Aristotelian causation and its relationship to explanation, then, we must come to a precise understanding of the four causes, and how they are supposed to be explanatory. Aristotle's discussion of the causes, however, is compact, and he typically presents them without arguing for them. He thus leaves us with a number of questions, ranging from the highly specific to the highly general. One question in particular has captured the attention of scholars and philosophers over the last century, and it has had a strong influence on recent treatments of the four causes – namely, whether we are right to understand Aristotle as committed to a plurality of kinds of causation, or rather a plurality of kinds of explanation. Sometimes the question is raised as one of whether it would be more accurate to speak of the four 'because's' rather than the four 'causes'. This worry is highly general, and there are in fact several ways in which it might be formulated; nonetheless, it is important to clarify the precise nature of the problem, and the possible ways of responding to it. At issue is not just whether Aristotle's notions are sufficiently like the modern notion of causation to be relevant to our concerns, but, more importantly, whether the distinctions he draws are ultimately metaphysical or epistemological in character.

1. *The End of Explanation*

If we think that causation is, roughly, a matter of the ways in which things come to be, and that explanation is, roughly, a matter of the ways in which things come to be understood, then recent philosophical work would suggest that they may be dealt with separately, even if they have important points of contact. Causal explanation is today generally thought of as one type of explanation among others. To give an account of explanation in general, however, is to give an account of the structures or patterns by which we render events or other phenomena intelligible – whether by subsuming them under a law of nature (as proposed in Hempel's Covering Law model) or by some other means. To account for causation, on the other hand, is to specify a relationship by which certain events or types of event follow from one another, or how they constitute regularities in nature – much discussion of this relation lies in the shadow of Hume's critique of the notion of 'necessary connexion'.

The relationship between causation and explanation in Aristotle's philosophy is tighter than that: they cannot be treated separately. The goal of inquiry is an answer to the question 'Why?', and we answer such questions, Aristotle thinks, when and only when we cite *aitiai*, traditionally rendered 'causes' (I will follow the tradition in that regard, though the adequacy of this translation has been a cause of distress – more on that below). Thus, we have an explanation of something when and only when we know its causes. Satisfying this

condition is made more complicated by Aristotle's pluralism about causes: he thinks that *'aitia'* is "said in many ways" – four ways to be precise, which have come to be called the formal, final, efficient, and material causes. These four, however, are all there are.¹

We need to understand what these causes are, then, and why citing them is necessary and sufficient for an answer to the question 'Why?' A full treatment of these issues would come close to a treatment of Aristotle's entire philosophical system: the four causes are integral to his accounts of change, existence, substance, scientific understanding, the soul, biological phenomena, the good, the state, the heavens, and God, among others. Obviously, I will not give a full treatment. A narrower focus is warranted, in any case: examining the core of Aristotle's four-causal framework alone gives rise to several challenges and problems which must be addressed if we are to have a clear grasp of it, either in its specifics or in its more general features. We can make a first approach by presenting the four causes as Aristotle does (Section 2), and by bringing out some of the most important questions we face in trying to make his account precise (Section 3). Then (in Section 4) I will look in closer detail at one of those questions, the discussion of which has been especially influential in the understanding of Aristotelian causation and explanation over the last century.

2. The Four Causes Presented

The canonical statement of the four causes comes from Book II of Aristotle's work on natural philosophy, the *Physics*.

Book I of the *Physics* gives Aristotle's account of the principles (*archai*) of natural science: roughly, the question of principles is that of the nature and number of concepts or factors to which we must appeal in order to account for natural phenomena. He discusses the natural philosophy of his predecessors, such as Parmenides, Melissus, Empedocles, and Democritus, and then offers his own account. He argues in particular for a distinction between matter and form, in order to give an account of change that can resist Parmenidean arguments to the effect that change and plurality are impossible.

In Book II Aristotle begins the task of discussing natural philosophy as such, with less explicit attention to his predecessors and their problems. Chapters 1 and 2 discuss the scope of natural science, and how its objects of study are to be distinguished from those of mathematics. Chapter 3 begins thus:

Having made these distinctions we must examine causes, both what they are like and how many they are in number. For since our work is for the sake of knowledge, but we do not suppose ourselves to know something before we grasp the Why of it (and this is to grasp its primary cause), it is clear that we must also do this regarding generation and destruction, and for all the kinds of natural change, so that, knowing their principles, we might attempt to lead each of the things we are investigating back to them. One way in which cause is said, then, is as that out of which something comes to be and which is present in it, for example, the bronze of the statue and the silver of the cup, and the genera of these. And another way is the form or paradigm—this is the account of the essence—and their genera (for example, the ratio 2:1 of the octave, and number in general), as well as the parts in the account. Further, the primary source of the change or rest; for example, the one who has deliberated is a cause, and the father of the son, and in general the maker of what is made and that which changes something of what it changes. Further, as the goal: this is that for the sake of which; for example, health of walking about. Why does he walk about? We say, "so that he may be healthy", and speaking thus we take ourselves to have given the cause. (194b16–35)

To do natural philosophy, then, Aristotle thinks we must study causes (*aitiai*), but we must be careful, since *'aitia'* is 'said in several ways', i.e. multivocal.² Four distinct notions

ought to be separated: the underlying material, the form or essence, the source of change, the goal or purpose. Aristotle devotes the rest of the chapter to clarifying and developing these distinctions. Things may of course have more than one cause, and they may bear different causal relations to each other (exercise both *gives rise to* and *is for the sake of* health). Causes may be (or be spoken of as) particular or general, and as proper or coincidental (if the chef who made your dinner is also an Elvis impersonator, you could truly say that an Elvis impersonator is the cause of your dinner; nonetheless, it is insofar as he has, hopefully, exercised his culinary skill that he is the cause of your dinner). They can be given by themselves or in combination (Ludovic, or the chef, or Ludovic-the-chef). All of these may also be given either as potential or as actual. Particular, active causes, such as doctors exercising their medical knowledge, exist for precisely the same period of time as their effects (i.e. the healing-doctor and the patient-being-cured are co-eval). We should give the 'highest' (i.e. the most proximate) cause, and we should be careful to keep cause and effect, so to speak, properly aligned: universal causes for universal effects, particular ones for particular effects, potential ones for potential effects. So much, Aristotle thinks, for causes: 'As to the question how many causes there are, and in what way they are causes, let the distinctions we have made suffice' (195b28–30).

This chapter, and especially the key passage which presents the four causes, are unsatisfying: Aristotle does not argue for his fourfold distinction, nor does he suggest how it might be defended. We are simply given a list with some examples, which are followed up by clarifications and distinctions, many of which are technical in nature. In sum, the chapter looks like it gives us a sketch of a doctrine or theory that is already, in a way, finished – the traces of its origins and the arguments in its favor are absent.³

A different discussion of causes, especially significant for understanding their epistemological importance, is woven through the *Posterior Analytics*, Aristotle's work on the nature of scientific knowledge and demonstration.⁴ Finished science (*epistēmē*), he thinks, ought to present its results in the form of demonstrations, which are a special class of syllogism (A belongs to all B, B belongs to all C, therefore A belongs to all C). These syllogisms are meant to capture the objective order of things, and the bar is set very high: their premises must be true, primary, and immediate, as well as better known than, prior to, and explanatory of their conclusions.⁵ A key feature of a demonstration, Aristotle thinks, is that their middle terms (the 'B' terms) pick out causes. How this proposal is meant to work in detail is a difficult question, but minimally, the idea is that a scientific demonstration derives the fact that A belongs to C, not by just any available path, but by one which captures and displays genuine connections in nature. Science carves nature at its joints, and those joints are causal.

3. Complexities

What is it to be a cause, then, and why is grasping causes necessary and sufficient for explanation? To answer these questions, Aristotle's accounts must be made more precise, along several dimensions.

We may start with a simple example. Since late Antiquity, it has been common to illustrate the four causes by the example of a single artefact, such as a statue.⁶ The statue has a formal cause (shape), a material cause (bronze), an efficient cause (the sculptor), and a final cause (to commemorate a victory, perhaps). Seen in terms of this example, Aristotle's suggestion is that a complete explanation of the statue must cite all four of these, and that they are jointly sufficient when cited. Any further feature we might hit upon as explanatory, such as the fact that it was commissioned by a local businessman, will in fact fall under one of these four headings (in this case, the local businessman looks like a

non-proximate efficient cause, who happens to have a desire for the final cause of commemorating or honoring something).

This kind of illustration is illuminating, and though Aristotle does not present the four causes in this way, both the statue example and the strategy of clarifying the elements of nature by way of looking at artefacts are deeply Aristotelian (see especially *Physics* II 8, 199a8f.). At the same time, the example is incomplete and potentially misleading in several ways. By focusing on these difficulties, we can appreciate how Aristotle's approach to causation may be made clear. Four in particular command attention:

(a) The relata of explanation: The statue illustration suggests a straightforward picture according to which explananda are particulars, and knowledge of four different facts about them is necessary and sufficient to explain their existence. As we have just seen, however, the passage in which Aristotle presents the causes does not use a single example, but rather gives a disjointed and at times cryptic list. The "Why-questions" which Aristotle offers as examples, moreover, range well beyond questions as to why individuals exist, and Aristotle claims that knowledge or understanding is of universals, not particulars (e.g. *Post. An.* 77a5–9, *Metaphysics* 1003a14–15). It is simply unclear how Aristotle thinks of the nature of causal explananda: natural substances are certainly an important case, but not the only one; indeed, the distinction between form and matter is introduced in *Physics* I as a way of explaining *change*. What, then, can we say about the explananda of four-causal explanation—is there a systematic way of understanding them, or does Aristotle think that explananda may range broadly, perhaps depending on our own pragmatic interests, but that for any of these, one or more of the four causes will suffice?

(b) Completeness: The artefact example suggests that the four causes are all the causes there are because they are necessary and sufficient for an account of an explanandum. As we have just seen, the nature of the relevant explananda is in need of clarification, but the class appears to include things like changes or events, as well as static features and dispositions of substances. So, we cannot assume that the ability of the four causes to explain individual substances is the source of their completeness (although we might argue that the analysis of other causal phenomena depends on the core case of substance).⁷ Aristotle *does* think that substances such as living things have all four causes, and is willing to list them (as at *Metaphysics* 1044a34f.). This is rare, however, nor does he think that all explananda have all four causes (not everything has a final cause (*Physics* 196b18), and some explananda, such as eclipses, do not have matter (1044b10)). Are the four causes exhaustive, then, because their explananda (or their primary explananda) have all and only these four, or because nature as a whole, upon inspection, exhibits these causal relations and no others? How might either claim to completeness be established?

(c) Form and matter: The notion of form implied by the statue example is simply that of shape. Form, however, is much wider for Aristotle: sometimes the relevant form is a quality such as a shape or color, as in the theory of change mooted in *Physics* I, but, more robustly, a form is an essence – sometimes called *to ti ên einai* (the-what-it-is) – that in virtue of which something is the kind of thing it is (paradigmatically, a member of a given biological species). Formal causes also include such things as ratios (as in the passage cited above), souls (forms of living bodies), and constitutions (structures of political entities). Clearly, then, Aristotle is committed to a more robust notion of the formal cause than that of shape. (Similar concerns apply to matter as well.) This ontological promiscuity seems problematic: part of the intuitive plausibility of the four causes involves its appeal to recognizable kinds of entities such as structures, shapes, stuffs, and actions. What kinds of thing are actually involved in even the basic cases of substances and changes they undergo, and what constraints are there, if any, on the ontology of causation?

(d) Roles and occupants: The artefact example suggests that, where something has four causes, these are simply four distinct entities (e.g. bronze, a shape, the sculptor, the goal). It also suggests that their distinctness is obvious, insofar as different types of objects are suited to be material causes than those which can be formal or efficient causes. In many cases, however, including the important case of natural substances, Aristotle thinks that the number of distinct entities involved as causes is fewer: one or more of the causes are the same. (Most commonly and most firmly, he maintains that the formal and final cause are 'one' (*Physics* 198a24).) A natural construal of this claim is that one occupant can play distinct causal roles. If so, then the fourfold distinction is in the first instance a distinction of roles, and need not correspond to a distinction in types of thing; we then must clarify which statements Aristotle makes about *aitiai* are best construed as describing the roles, and which are about their occupants. Further questions arise: how can one thing bear two or more explanatory roles with respect to something else? Are some causes reducible to others, or do they nonetheless remain distinct, even in cases where they co-incide?

These complexities give rise to more general questions. Given the lack of argumentation for the fourfold distinction, what should we say about its status in Aristotle's thought? Does it amount to a full-blown theory, or is it something more basic – a doctrine or framework that Aristotle would not really argue for, which must be justified by other means? In either case, where did the distinction come from? If it is meant to be intuitively plausible, this might be because it is in fact a survey of common ways of speaking, or of well-established opinions. Or is it, on the contrary, a distinction which is more peculiar to Aristotle? Further, what is the nature of the distinction? Aristotle says that '*aitia*' is multivocal (*pollachôs legomenon*) – is this a distinction between kinds of cause or senses of 'cause'? In virtue of what are the four causes all 'causes'? Finally, how should we understand Aristotle's key terms, '*aitia*' and '*aition*'? Given the complexity and breadth of application of this theory or framework, perhaps, as some have argued, it is misleading to think of Aristotle as giving us an account of causation in the modern sense.

These general questions and the more specific ones cannot be answered separately. Whether we think there is a specific ontology of causation will depend in part on whether we think Aristotle is offering us a doctrine, a theory, or received opinion; how we account for the completeness of four-causal explanation will depend in part on whether we think the concepts with which Aristotle is dealing are properly thought of as causal ones. Our answers to those general questions will in turn be balanced against what look like specific claims about what causes what. In other words, answering any of these questions involves assessing some of the most general aspects of Aristotle's system and some of his most narrowly circumscribed claims in light of each other.

4. Causes and Because

Despite these complexities, Aristotle seems committed to the following basic claims: (a) there are four distinct metaphysical relationships – formal, final, material, and efficient causation; (b) all and only these four are relevant to scientific and philosophical understanding. Causal relations, in other words, underpin explanation. Over the last century, however, doubts have been raised about how to understand Aristotle's basic commitments regarding the four causes. Most commonly, these doubts focus on the central notion of *aitia*, and may be summed up as the claim that to speak of "Aristotle's Four Causes" is in one way or another misleading – it would be more accurate, some suggest, to speak of four 'Because's, or 'explanations', or 'explanatory factors'.⁸ This suggestion has been highly influential, though its actual force is not always clear. Causes are, in a

straightforward sense, explanations of their effects – the poison in someone’s system both causes and explains their symptoms – and so the question is whether *aitiai* are simply explanations in that sense, or in some way which ought to be distinguished from it. If the latter, we may need to revise our understanding of Aristotle’s metaphysics and natural philosophy in important ways. At the same time, some persistent problems in making coherent sense of certain of Aristotle’s claims might simply dissolve. It is thus important to be clear on the substance of these doubts, and how we ought to respond to them.

One worry is roughly conceptual in nature, and has to do with the scope and domain of ‘*aitia*’ in relation to that of ‘cause’. It is quite common to begin a discussion of the four causes with a warning that ‘*aitia*’ is used more widely by Aristotle than ‘cause’ in English, or at least, in English-language philosophical discourse.⁹ Of course, it should go without saying that Aristotelian *aitiai* are not *Humean* causes, and so if we thought that an account of causation must be given within a Humean framework, the four *aitiai* would indeed be disqualified from constituting a theory of *that*. Current approaches to causation are wide-ranging, however, and include non-Humean ones (some of which appeal to distinctly Aristotelian notions such as causal powers), so this difference should not give us pause.

Perhaps, though, the breadth of uses for ‘*aitia*’ or ‘*aition*’ is grounded in a more fundamental difference. Aristotle applies the term to relations between ratios and musical intervals, for example, and between premises and conclusions (*Physics* 195a18) – in such domains it may strike us as natural to speak in English of ‘reasons’ or ‘grounds’ or ‘determining factors’, but absurd to speak of ‘causes’. Care is required here. The fact that Aristotle uses the term ‘*aitia*’ in such a broad range of contexts may only imply that it is extensible to different domains, perhaps not univocally. Aristotle explicitly recognizes that some uses of ‘*aitia*’ are analogical (*Metaphysics* 1071a24–27), so we should not prejudge the scope of ‘*aitia*’ strictly speaking.¹⁰ Moreover, we might think that it is philosophically an open question whether the determination relations that hold among such entities are the same as those which hold between elements of the natural world. Certain forms of idealism and rationalism, in any case, would not distinguish them.

Even if we take the four causes as characterized in the *Physics* on their own, however, we might think that *aitiai* account for things which simply range beyond phenomena we would recognize as causal: Aristotle’s term is meant to capture the relation between a form and its substratum, between material and what it constitutes, and between goals or functions such as human happiness or pumping blood and their explananda or ‘effects’ – say, the structure of the state or of an animal’s heart. We might be willing to speak of explanatory relations here, and perhaps determination relations of a sort, but not, we might think, causal relations. Indeed, even if we are favorably disposed to include structural and material factors as causes or causally relevant, as some philosophers have recently done, we might balk when we get to the final cause. Those who do not think Aristotle is committed to a laughable, Panglossian kind of teleology may be tempted here most of all to emphasize a distinction between being *aition* in Aristotle’s sense and being a cause in ours.

Here again, though, care is required. Aristotle uses the same term to describe both teleological relations and the uncontroversially causal relationship between a builder and what he builds, nor does he suggest that one type of *aitia* involves, for example, an ‘as-if’ relationship, or that some of the causes are more heuristic in nature than others. Treating the four causes in this uniform manner, even if construed in purely metaphysical terms, does not require us to interpret Aristotle as committed to the absurd view that final causation works by means of ‘ghostly tugs from the future’, as some have suggested – that would be to confuse final causation with efficient causation, something Aristotle is the least likely to do of anyone. The nature and defensibility of teleology, however, whether construed as a genuine

determination relation between elements of reality, or as something more epistemologically implicated – a pattern of subsuming something particular under something general, for example – are difficult and complex matters to say the least. We should be sensitive to this complexity in approaching Aristotle's four causes. On the other hand, we should not try to "domesticate" Aristotle or gloss over such difficulties by giving him a term which is simply a kind of hedge between the metaphysical and the epistemological.

Thus far, we have good reason to be aware that translating '*aitia*' as 'cause' is not as straightforward as translating '*Hund*' as 'dog', but no reason to think of it as especially misleading. We may think of Aristotle as offering a kind of causal pluralism similar to some recent proposals, though one which ranges beyond the phenomena we normally treat as causal, for better or worse. Or, we may think of him as treating (what we would call) causation as part of a wider consideration of (what we could call) determination. On either of these views, the challenge is to say what, if anything, justifies the claim that a conceptually significant boundary is being blurred – that is, what arguments we might have for distinguishing some of these kinds of relation as causal and others as non-causal.

Some commentators express a different sort of worry, however, to the effect that *aitiai* are explanations in a way which is markedly different from that in which causes are. Again, the precise nature and strength of the claim varies and is not always clear, but in one way or another, the suggestion is that *aitiai* are kinds of explanation in an epistemological sense which makes them significantly unlike causes in contemporary accounts.¹¹

On some construals, the suggestion is simply implausible. The things Aristotle cites as *aitiai* – structures or shapes, pieces of bronze, builders and their activities, goals and purposes – are not representations or elements of language; they are not ways in which *we* explain things, except derivatively, in virtue of the fact that they are ways in which some elements of the natural world explain others.

On the other hand, we might call attention to the fact that Aristotle presents his causes as distinct answers to the question, 'Why?' So, we might wonder whether Aristotle's aim is, in the first instance, to distinguish ways in which things explain each other, or ways in which *we* explain some things by appeal to others. In other words, perhaps it is misleading to think of Aristotle as distinguishing four distinct kinds of what we would call causal relation, or more broadly, four kinds of metaphysical determination relation. Rather, perhaps he means to distinguish four different ways in which causal relations – which themselves might be of a single type or reducible to one – are appropriately cited. He may explicitly think that there is only one kind of causal relation, or he may have taken for granted a single 'common sense' notion of causation, or, again, he may not have a clear view on the matter.

If so, we have a dispute as to whether Aristotle is drawing a metaphysical distinction or an epistemological one. If we think the distinction is in the first instance metaphysical, we must then give an account of these distinct modes of metaphysical determination, and say why all and only these roles or relations are relevant to scientific understanding in the way Aristotle maintains.¹² If we think the fourfold distinction corresponds in the first instance to ways in which we may explain things, we must say whether there is a single metaphysical notion of determination underlying those modes of explanation which is actually at work, and furthermore, what grounds the distinction if not differences in the ways things explain each other.¹³ What other principles are there by which these modes of explanation may be distinguished? On what basis can Aristotle capture the explanatory relations sought by science while excluding deviant or unsuccessful ways of explaining phenomena, except by appeal to metaphysically prior facts about the ways in which things explain each other? Here again, we should not interpret him as "merely" making a point about different ways we can explain things in order to make the view sound more palatable.

There are two intermediate strategies. First, we might soften the pluralism. We may argue that the four causes are all causally relevant, though not all causes strictly speaking (see Fine 1984), or that they are best seen as distinct types of efficient cause, with, for example, formal, material, or teleological aspects (see Irwin 1988).¹⁴ On either of these views, the four causes are all causes in a relatively straightforward way, but the distinction between them turns out to be a weaker one than we might have thought.

Alternatively, we may maintain the pluralism but deny that there is a choice to be made between the metaphysical and the epistemological understandings of the distinction. We might suppose, for example, that Aristotle thinks there is a way in which we explain things if and only if there is a way in which things explain each other – that is, epistemological and metaphysical pluralism march in step.¹⁵ If so, the question is whether there are priority relations between the epistemic and the metaphysical aspects of the four causes, and if so, which way they run. We might think that the four causes are in the first instance metaphysical determinants, which render things intelligible in virtue of their metaphysical features; or, conversely, that they are in the first instance things which render other things intelligible. Finally, we might argue for a third option: neither. That is, we might think there is no priority to be discerned, and that at the most fundamental level, there is no distinction to be drawn for Aristotle between making something the case and rendering it intelligible.

The confluence of metaphysical and epistemological concerns in the four causes is utterly explicit, so it is unsurprising that we should find it difficult to separate them. Aristotle is just as likely to motivate the causes by metaphysical concerns – e.g. by arguing that they account for change, or, against Plato, that efficient causes must be recognized, since Forms alone cannot account for the fact that things are generated intermittently, not constantly (*Metaphysics* 988a1f.) – as by showing how they may serve to answer the question ‘Why?’ The four causes are, from the start, held to be crucial to our knowledge-seeking activity as well as to the structure of the world, and a full understanding of them must determine how these modes function and interact. Whether Aristotle’s distinction is ultimately metaphysical or epistemological in nature, can, like many questions of such general character, only be answered by looking at the details of Aristotle’s account of causation – details which, we have seen, are far from simple. Examining those details is also the only way to tell whether Aristotle’s causal approach to explanation is, in fact, a good one.

Short Biography

Nathanael Stein’s research focuses on topics in ancient philosophy, with particular emphasis on causation, explanation, time, and psychology, as well as on their contemporary analogues. He is currently working on a book about causation and explanation in Aristotle, and on a project concerning his arguments about time. He has a BA in Romance Languages from the University of Chicago, an MA in Philosophy from CUNY, and recently finished his DPhil at the University of Oxford. He is currently Assistant Professor at Florida State University.

Notes

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¹ Aristotle is in principle open to there being a fifth, but at *Metaphysics* 993a11, after discussion, he concludes that there is no reason to think there is one.

² See also *Physics* 195a4, and 195a29; *Metaphysics* 983a26, 1013b4, 1052b4; and *De Anima* 415b9.

- ³ Another important discussion of the causes comes in book A of the *Metaphysics*, in which Aristotle presents an account of the history of philosophy as a halting discovery of causes, beginning with the early materialists, and culminating in his own system of four. The discussion is very rich, but to the extent that it contains justifications or motivations for the four causes, these must be teased out.
- ⁴ See especially chapters A2, A13, A34, B2, and B8–12.
- ⁵ These criteria (except perhaps truth) present difficulties – technical, textual, and philosophical: see Barnes (1992) p. 94ff.
- ⁶ See Sprague (1968), and Todd's (1976) reply for discussion of the example and its origins.
- ⁷ See Graham (1987) for an approach which develops this possibility.
- ⁸ This suggestion is endorsed in one form or another by Barnes (1994), Charlton (1992), Annas (1982), Moravcsik (1975 and 1976), Sorabji (1980), Frede (1980), Hocutt (1974), Lear (1988), Akrill (1997), and Cornford (1929), among others. Some commentators mean something relatively modest, others something robust; in some cases it is not obvious what the ultimate content of the claim is. The main goal of this section is to clarify the relevant (and plausible) alternatives.
- ⁹ See, for example, Charlton (1970), 98. As it happens, 'cause' entered English from the scholastic Latin 'causa' (OED), hence, presumably, with a scope appropriate to the Aristotelian paradigm discussed in the schools.
- ¹⁰ *Metaphysics* (1071a24–27)
- ¹¹ Thus, Vlastos's (1969) influential claim that "Aristotle's so-called four 'causes' are his four 'because's' (294) some of which cannot be considered causes without absurdity, and Annas's (1982) claim that "In saying that there are four kinds of *aitiai*, Aristotle is saying that the question, why something is the case, can be answered in four mutually irreducible ways, giving four different types of explanation" (319).
- ¹² Freeland (1995) argues for this sort of approach.
- ¹³ Robin (1910) argues for an underlying metaphysical simplicity, according to which the causes all reduce to form or essence.
- ¹⁴ See also Moravcsik (1974) and (1975) for a somewhat similar approach.
- ¹⁵ A version this view is suggested in Charles (1984).

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