

Cambridge University Press

978-1-107-00262-3 - Aristotle on Time: A Study of the Physics

Tony Roark

Excerpt

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Aristotle conceives of time as a variety of hylomorphic compound. By “hylomorphic” I mean the kind of analysis Aristotle employs at very many places in his works, according to which the thing under consideration is to be understood as a combination of matter (*hylê*) and form, or shape (*morphê*). On the hylomorphic interpretation I endorse, motion is the matter of time, and perception is its form. Aristotle defines time as “a number of motion with respect to the before and after” (*Phys.* 219b1–2),¹ by which he intends to denote motion’s susceptibility to division into undetached parts of arbitrary length, a property that it possesses both by virtue of its intrinsic nature and also by virtue of the capacities and activities of percipient souls. Motion is intrinsically indeterminate, but perceptually determinable, with respect to its length. Acts of perception function as determiners; the result is determinate units of kinetic length, which is precisely what a temporal unit is.

It would be one thing to employ the conceptual framework of hylomorphic analysis as an interpretative apparatus or strategy, but I don’t intend to use hylomorphism that way. I am convinced that the proper way of understanding Aristotle’s view of time requires thinking of it as a variety of hylomorphic compound, because that is precisely how he himself understood it.

I take it that this view might seem quite implausible at first blush. For surely hylomorphism is most obviously suited to accounting for the nature of concrete objects like statues, houses, and animals. Conceiving of a statue as possessing two metaphysically distinct components (bronze and the shape of Hermes, for example) provides the basis for fruitful philosophical analyses along several different lines: causal properties, persistence conditions, semantic relations, and epistemic status, to name just a few.

¹ τοῦτο γάρ ἐστιν ὁ χρόνος, ἀριθμὸς κινήσεως κατὰ τὸ πρότερον καὶ ὕστερον.

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But why ought we to think that time, which is at once both metaphysically fundamental and seemingly abstract, should yield to such an analysis?

The question itself reveals an unhelpful prejudice that I shall attempt to dispel in Chapter 1. But prejudice aside, it should come as no great surprise if such an approach turns out to be exegetically fruitful. Aristotle's temporal theory is developed within the *Physics*, a treatise in which he examines the objects and phenomena of nature. In the second book of the *Physics*, Aristotle states that "we think we know something only when we find the reason why it is so, i.e., when we find its primary cause" (194b18–20).² But "cause" (*aitia*) is ambiguous between several different senses, including material and formal causes.³ Thus, the most complete account of any existent will include a specification of its matter and its form.⁴ It would be quite surprising indeed if this general principle didn't apply to a feature of nature such as time, since the principle is alleged to apply even to linguistic objects such as syllables and arguments (195a15–17).⁵ But this is not the place to argue for my thesis. I simply request that the reader consider carefully the arguments I offer in the chapters that follow. I anticipate residual resistance on points of detail that are left unfinished at the end of the book; however, if my arguments render the hyломorphic interpretation an attractive alternative to its predecessors, I will be happy to engage in debate over the details.

Now one might be inclined to think that the existence of time is a necessary condition for the existence of material objects. It seems necessary for the variety of objects that we're accustomed to interacting with, anyway. Indeed, it is quite difficult to imagine a world furnished by the kinds of things we're familiar with in which there is no time, since these sorts of things are subject to change, which, again, one might take to be a feature of the world that requires the existence of time. A world without time (according to this view) is a world without change, one populated with people who never age, fruit that never ripens, rivers that don't run, and so on. Time, then, might be thought to be an aspect of nature without which change and changing objects are impossible.

² εἰδέναι δὲ οὐ πρότερον οἰόμεθα ἕκαστον πρὶν ἂν λάβωμεν τὸ διὰ τί περὶ ἕκαστον (τοῦτο δ' ἐστὶ τὸ λαβεῖν τὴν πρώτην αἰτίαν).

³ See *Phys.* 11.3.

⁴ Almost anything. Aristotle acknowledges the exceptions of unformed elemental matter and un-enmattered divine forms. But these are not topics of investigation for the physicist.

⁵ ἅπαντα δὲ τὰ νῦν εἰρημένα αἰτία εἰς τέτταρας πίπτει τρόπους τοὺς φανερωτάτους. τὰ μὲν γὰρ στοιχεῖα τῶν συλλαβῶν καὶ ἡ ὕλη τῶν σκευαστῶν. Cf. *Met.* 1v.2.

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Whether this characterization of the contemporary popular view of time is correct (supposing that such a thing exists), I can't say. What is clear, though, is that Aristotle turns this picture on its head: according to Aristotle, time owes its existence immediately to motion and perception, and ultimately to material objects, substances. His motivation for endorsing such an account seems to be his commitment to the view that the strictest ontology is one which includes only instances of natural kinds (e.g. individual men, horses, trees). In such an ontology, there is no room for an item of such abstract character as time. But surely time exists *in some way or other*. And so Aristotle concludes that time must somehow derive its existence from substances. Filling out the account of this parasitic existence is the challenge that Aristotle attempts to meet in *Physics* IV.10–14, and the purpose of this work is to spell out Aristotle's answer to that challenge.

Before I set about examining the relevant texts and developing my interpretation, though, I ought to say something about why I've written this book and how it is structured.

To the first point, I feel no embarrassment in saying that this book combines two of the most philosophically exciting topics that there are: the nature of time and the philosophy of Aristotle. While many philosophers would challenge this evaluation, I take it that no one reading this Introduction is likely to lead that charge.

The philosophy of time is home to some of the knottiest conceptual problems around. Augustine is famous for confessing his own inability to articulate time's nature: "What then is time? If no one asks of me, I know; if I wish to explain to him who asks, I know not" (*Conf.* II.14; Augustine [1980]).⁶ Closer to our own day, C. D. Broad has expressed similar frustration:

I am well aware how easy it is to talk nonsense about Time, and to mistake for arguments what are in fact merely verbal tangles. I think it is quite possible that I may have done this. I have altered my mind too often on this most perplexing subject to feel any confidence that my present opinions are either correct or well-founded.⁷

Judging from the number of academic monographs produced on the subject within the past twenty years, the philosophy of time is enjoying a good deal of attention. The explanation for this popularity is not far to

⁶ *quid est ergo tempus? si nemo ex me quaerat, scio; si quaerenti explicare velim, nescio.*

⁷ Broad (1967), 138–9.

seek: time remains a perplexing subject, and the business of philosophy is to clarify that which perplexes.

I have written about Aristotle's theory of time elsewhere, and parts of this book draw directly on those published works. But it has always seemed to me that Aristotle's view of time is sufficiently complex in itself, and so thoroughly bound up with different theories and doctrines developed elsewhere in the corpus, that a proper treatment of the account requires a book-length effort. I am glad that I have made the effort to produce a systematic reconstruction of his account of time, because in the course of doing so I have come to appreciate other, seemingly unrelated aspects of Aristotle's thinking to a far greater extent than I could have imagined.

Aristotle is a philosophical optimist, and that optimism is evident in the fact that he articulates a concise definition of time in the *Physics*. But although he is ambitious, he is not cavalier. Before he articulates his definition, he acknowledges several puzzles surrounding the nature of time, puzzles whose solution must somehow fall out of his own account. Aristotle never explicitly addresses the puzzles after giving them voice, but I shall show in Chapter 13 what his solutions must be, given the view he develops in those final five chapters in Book IV of the *Physics*. For the most part, the solutions turn out to be fairly trivial. This is at once both disappointing and gratifying: disappointing, because one might have expected fancier footwork in dealing with the puzzles; gratifying, because their triviality explains why Aristotle doesn't bother to lay them out for us, and this fact confers additional credence upon the hylomorphic interpretation.

Understanding Aristotle's definition of time is not easy. But those who are familiar with his writings know that there is little in Aristotle that is easy. His views are individually sophisticated and collectively reticulate. One can hardly work through any particular area of his thought without feeling compelled to turn from treatise to treatise with the hope that doing so might help to discover the underlying theoretical machinery. What at first seems to be a simple question of his stance on a narrow question quite often turns into an exegetical labyrinth. Such is the case with his treatment of time.

While I expect some readers to doubt that I have produced the uniquely correct reconstruction of Aristotle's temporal theory, I think it would be an error to deny that I have identified at least one path through the labyrinth. Indeed, my complaint with so many of the competing reconstructions of Aristotle's temporal theory is that they simply *couldn't* be

adequate, because they fail even to countenance some of the philosophical territory that seems so obviously to stand between the opening moves and the conclusion, let alone to navigate it successfully.

The territory I have particularly in mind is Aristotle's account of perception. One recent work examining Aristotle's temporal theory – Ursula Coope's *Time for Aristotle*⁸ – evidences an impressive knowledge of Aristotle's doctrines and displays enviable ingenuity. Any reader of Coope's book is bound to learn a great deal about the Aristotelian conception of time. I certainly have. However, I am convinced that neither Coope nor any of the many other interpreters of *Physics* IV.10–14 has paid sufficient attention to the central role of perception within Aristotle's theory of time. Indeed, if my own hylomorphic interpretation is correct, *all* of the previous attempts to reconstruct Aristotle's temporal theory have neglected a critical component of time's essential nature: its form.

It would be both inefficient and inappropriate for me to undertake a systematic critique of Coope's work here. It would also be inexcusable if I were not to engage her interpretation on central points of contention. Therefore, I shall quite selectively present and critically discuss her views and those of many different scholars, from ancient times to our own, as suits my purposes. I suspect that few of these philosophers would concede dialectical victory on the question at issue, and many would rightly criticize me for overlooking some part of their own reconstruction that they regard as particularly important. But my aim is not to discredit my exegetical competitors by direct refutation, for that would be a practically impossible task. I prefer to believe that my interpretation is strong enough to stand on its own legs; I engage the views of others primarily to indicate what I take its legs to be.

My strategy for defending a hylomorphic interpretation of Aristotle's account of time proceeds in four phases, each comprising a major division of this book.

In Part I I prime the pump, so to speak, by examining the background conception of time against which Aristotle developed his own view. Aristotle is a conservative philosopher in the sense that he seeks everywhere to preserve the judgments of common sense to the greatest extent possible and to integrate the insights of his predecessors.⁹ Consequently, we shall do well to examine briefly the extant evidence that is relevant to determining what a typical fourth-century Athenian citizen's notion

⁸ Coope (2005).

⁹ For the definitive discussion of this aspect of Aristotle's methodology, see Owen (1975b).

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of time might have been like. The central sources of evidence here are Hesiod, Herodotus, and Thucydides, but we shall also have occasion to touch briefly upon the time-keeping technology of Aristotle's time.

Perhaps more importantly, a well-grounded reconstruction of Aristotle's view on time (or any other topic, for that matter) must begin by examining its Platonic counterpart. For whether Aristotle is rejecting the extravagance of Plato's forms or attempting to integrate what he regards as the less radical elements of his doctrines, Aristotle's thought always begins by countenancing the genius of his mentor. The most well developed discussion of time in the Platonic corpus is to be found in the *Timaeus*, which presents its own exegetical challenges. An explication of the view presented there constitutes the bulk of Chapter 2.

Before any of this historical work can be done properly, however, we must first reflect on our own concept of time. It has become absolutely clear to me that one of the primary obstacles to understanding Aristotle's temporal theory is to unreflectively import into his view (and most particularly, into his definition of time) modern notions that are quite inappropriate within that context. We will be far less likely to fall prey to this mistake if we make a conscious effort to articulate the various facets of the concept of time that figures in our own thought on the subject. To this end, I shall make use of the theoretical apparatus developed by the twentieth-century British idealist J. M. E. McTaggart. McTaggart formulated an argument for the irrealty of time that has driven some philosophers to fits. As it turns out, not only is the McTaggart-type architecture useful in preparing us for an investigation of ancient notions of time, it also serves as an interesting test for Aristotle's hylomorphic temporal theory. Toward the end of the book (specifically, in Chapter 12), I shall examine what I take to be one of the virtues of Aristotle's view, namely its immunity to arguments like McTaggart's.

Chapter 1 closes with some remarks about hylomorphism and how it figures in Aristotle's larger philosophical agenda. Appreciating the motivation behind his implementation of hylomorphic analyses will greatly aid our understanding of how his analysis of time is supposed to run.

Part II of the book is dedicated to developing the material side of the hylomorphic analysis of time. One of Aristotle's first conclusions about the nature of time in *Physics* IV.11 is that it must be some aspect of motion (219a9–10).¹⁰ My reconstruction of the argument to this conclusion requires us to understand Aristotle as endorsing the idea that time is what

¹⁰ ἀνάγκη τῆς κινήσεώς τι εἶναι αὐτόν.

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I call an “evident proper feature” of motion. This takes us directly to the very common objection that Aristotle’s definition of time as “a number of motion with respect to the before and after” is patently circular. Both motion and the *prior–posterior* relation (so the objection runs) presuppose the existence of time, so neither can very well figure in its definition. The objection is based in part on the unhelpful prejudice I address in Chapter 1, but more specifically it fails to take seriously Aristotle’s analysis of motion in Book III of the *Physics*, which is developed in non-temporal terms. To deflect the objection, in Chapter 4 I examine Aristotle’s definition of motion in detail and offer a novel interpretation of it. Once his view of motion is properly understood, the claim that his definition of time is objectionably circular on account of the fact that “motion” (*kinêsis*) appears in the definiens becomes implausible.

Not only does a proper understanding of Aristotelian motion vanquish the first charge of circularity, it also provides the necessary theoretical resources to address the second charge, namely the claim that the appearance of “before and after” in his definition illicitly invokes time. Appealing to the interpretation I develop of Aristotle’s definition of motion, I endeavor to show that: (a) there is a distinctly kinetic (and therefore non-temporal) sense of “before and after” at work in his definition of time; (b) “the before and after in motion” denotes the material component of “the now,” or the instantaneous present; and (c) the kinetic entities so denoted are intrinsically ordered and thereby provide the basis for temporal order. This project comprises Chapter 5.

Once the material constituent of time is properly understood, we may proceed to investigate the form of time, which is the focus of Part III of the book. Chapter 6 begins with an argument to the conclusion that the relevant sense of “number” in Aristotle’s definition of time requires us to regard perception as time’s form generally, and more narrowly of the form of “the now.” This conclusion gives rise to an objection about the phenomenal character of perception, an objection whose reply is to be found in Aristotle’s sophisticated theory of perception. By examining the central texts in which this theory is developed (principally the *De Anima* and the *Parva Naturalia*), we shall see that *phantasia* (“imagination”) plays a crucial role in perception, as Aristotle understands it, and therefore also in his account of time. Briefly, *phantasia* serves as the basis for both memory and anticipation, thereby making possible the possession of mental states about the past and the future. *Phantasia* is also directly implicated in the perception of what Aristotle calls the “common perceptibles,” among which motion is included. Clearly, Aristotle’s views concerning

our perception of the common perceptibles must contribute substantially to the hylomorphic analysis of his temporal theory.

With the formal analysis of time in place, we will be prepared in Part IV to address several difficult questions that remain concerning Aristotle's views on time. In particular, we shall have to determine how the hylomorphic interpretation accounts for simultaneity and other temporal relations. Celestial motion is important here, and so we shall examine briefly some of Aristotle's remarks on this subject, principally in the *De Caelo*. The nature of "the now" and temporal passage is taken up in Chapter 12. Recent scholarship challenges Aristotle's position on temporal passage, or the apparent "flow" of time, and I show how the hylomorphic interpretation produces a view that is largely immune to contemporary arguments against the possibility of temporal passage. I close the book with a few brief, speculative remarks about how the success of Aristotle's view on this issue might be emulated by contemporary theorists working in the philosophy of time.

I conclude this Introduction with a note about the conventions I've adopted in textual citation. Ever hopeful that Aristotle's views on time hold some interest for philosophers whose training is not primarily in classical philosophy, I have chosen to make the body of this book Greek-free – only transliterations will appear whenever Aristotle's own words are recounted. I put the original text in footnotes for those with Greek and also for those without but who nonetheless find it beautiful to look at.

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PART I

Times new and old

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CHAPTER I

McTaggart's systems

One needn't be a metaphysician to have been gripped by puzzles concerning the nature of time. Does it have a beginning? Will it ever come to an end? Why is it that we can remember the past but can only anticipate the future? What happens to objects and events of the past – do they exist in any sense at all? Are any events of the future already determined? Am I identical to any person who existed in the past? How is it that time *passes*? What *is* time, anyway? Growing up on our family farm, I would sometimes lie awake nights pondering questions such as these, unsure how I might even begin to find their answers.

As C. D. Broad's remark quoted in the Introduction suggests, much of the difficulty we experience in discussing and contemplating time arises from the language in which we frame the propositions of speech and thought. Certain facts about the English language (e.g. that temporal adverbs are frequently vague or are used ambiguously, that verbs tokened in writing and speech indicate grammatical tense, or even that the word "time" can function as the subject of a sentence) give rise to challenges for those who would inquire into the nature of time.

But these are no less facts about Attic Greek than they are about English, and Aristotle – arguably the first philosopher to explicitly attempt to unravel the snares inherent in language – must have faced the same sort of challenges that arise from them when he composed his own theory of time, an account that he develops in chapters 10–14 of Book IV of the *Physics*. Indeed, he goes to some trouble in IV.13 to consider the nuances of the expressions "at some time" (*to pote*), "recently" (*to arti*), "immediately" (*to edê*), "long ago" (*to palai*), and "suddenly" (*to exaiphnês*) (222a25–b30). None of this, of course, is meant to suggest that Aristotle's theory of time should be familiar or even particularly accessible to us today.

Aristotle's philosophical successes are indebted, at least in part, to his insistence on taking stock of the standing opinions regarding his subject before launching his own examination. By doing so, he seems to believe