Time (Chronos) in Aristotle's Natural Philosophy and of Time's Place in Early Naturphilosophie (1750-1800)

Chelsea Cathern Harry

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TIME (*CHRONOS*) IN ARISTOTLE’S NATURAL PHILOSOPHY
AND OF TIME’S PLACE IN EARLY *NATURPHILOSOPHE* (1750-1800)

A Dissertation

Submitted to the McAnulty Graduate School of Liberal Arts

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Philosophy

By

Chelsea C. Harry

May 2013
TIME (CHRONOS) IN ARISTOTLE’S NATURAL PHILOSOPHY
AND OF TIME’S PLACE IN EARLY NATURPHILOSOPHE (1750-1800)

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ABSTRACT

TIME (CHRONOS) IN ARISTOTLE’S NATURAL PHILOSOPHY
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Dissertation supervised by Ronald M. Polansky

In what sense, if any, is time related to nature? In this dissertation, I argue that Aristotle’s Treatise on Time (Physics iv 10-14) must be read in light of his foregoing discussion of nature (phusis) in Physics i-iv 9. Thus, Aristotle’s definition of time (chronos) in Physics iv 11, that time is the number (arithmos) of motion (kinesis) with respect to before and after (219b1), is highly contextualized and as such must be understood as not only derivative of both Aristotle’s definition of nature, as the inner capacity for motion and rest (192b13-22), and of his explanation of kinēsis, but also parallel to his analyses of the infinite (apeiron), place (topos), and void (kenos). What is more, I bring attention to the fact that Aristotle’s understanding of nature is shaped fundamentally by the distinction he makes in the Physics and elsewhere (Metaphysics iv) between potentiality (dunamis) and actuality (entelecheia). With this in mind, I
distinguish between the potential for time and actual time in Aristotle and conclude that the human being, along with actual motion, is both the necessary and sufficient condition for actual time on his account. Time, for Aristotle, then, results from an interaction between two or more parts of nature. It is not an a priori substance to be examined qua itself. My conclusions, therefore, offer a solution to those who read Aristotle’s Treatise on Time as a confused inquiry, i.e. one that switches back and forth between a theory of knowledge and a theory of reality and combines what many believe to be Aristotle’s characteristic realism with idealism. Finally, I use these conclusions to show a likeness between the account of time I attribute to Aristotle and what I suggest to be a return to thinking about time as derivative of a theory of nature in early Schellingian Naturphilosophie.
DEDICATION

For Wolfgang.

And, for my parents, who taught me to make the most of time.
ACKNOWLEDGEMENT

That it is an awful pun makes it no less true for me to write that I have been thinking about time for quite some time. As such, this dissertation owes a great debt to my sources of influence and encouragement—intellectual, emotional, and financial.

First, I would like to thank the organizers, my fellow presenters, and attendees of the following conferences, where I had the opportunity to present earlier versions of some chapters of this dissertation: 2012 Society for Ancient Greek Philosophy, 2011 Society for Ancient Greek Philosophy, 2011 Atiner Conference, and the 5th Annual Aristotle Symposium: On the Issue of Time.

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Introduction: The Study of Nature and the Nature of Time

“Aristotle’s Physics is the hidden, and therefore never adequately studied, foundational book of Western philosophy.”

Aristotle’s Physics was the dominant work on natural science in the West until Newton’s Principia, published in 1687. This is not to say, however, that it was widely read or commonly understood. Instead, except for in the cases of a few Hellenistic and Medieval commentators, it fell into relative obscurity. Even Aquinas’s great commentary on the work was most likely completed using a kontamination, or mixture of various translations, for lack of any standard or widely read translation (Aquinas 1961, xix). It is thus not too surprising that since the Physics really never received much recognition, following, or acclaim, once the paradigm of nature for which it argued was supplanted in the seventeenth century—ultimately by the Newtonian model, but Newton’s work was helped along by Copernicus, Descartes, Kepler, and Galileo—it became seemingly antiquated.

The question as to whether Aristotle’s Physics is a work of philosophy or a work of science has not been, and really cannot be, properly addressed. But, whereas philosophers still glean important lessons from ancient texts, scientists largely consider older works of science to be passé. Even in the philosophical community, however, as

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1 Martin Heidegger (Heidegger 1998, 185). Emphasis is his.
2 See for example Tim Maudlin’s exceptionally clear discussion on the birth of physics (Maudlin 2012, 1-4).
3 Maudlin (Maudlin 2012, 4) explains: “Abandoning Aristotle’s spherical universe entails abandoning his basic physical principles and rethinking the form that the laws of physics can take. This task was undertaken by Sir Isaac Newton.”
Lambros Couloubaritsis (Couloubaritsis 1997, 2-4) argues, interest in Aristotle’s philosophy of nature is relatively recent, having received little attention until the mid-late twentieth century. At this time, a series of commentaries sprung up (Maison, 1945, Solmsen, 1960, Wieland (1962), 1972, Heidegger, 1967), spearheaded by Sir David Ross’s 1936 monograph, now considered the standard work on the Physics. More recently still, scholarship in ancient philosophy has seen a renewed interest in Aristotle’s treatment of time in the Physics (Physics iv 10-14). And, it is the account of time that is now calling attention to other parts of the work.

This is to say that recent contributions to the growing literature on Aristotle’s Treatise on Time (Physics iv 10-14) have focused on the importance of considering this section in light of arguments made in other sections of the work. For example, in Ursula Coope’s recent publication, Time for Aristotle’s Physics IV.10-14, she admonishes her reader that familiarity with Aristotle’s account of change, and in particular, Aristotle’s argument that change is divisible, is required to understand his account of time (Coope 2004, 5-9). Similarly, Tony Roark’s manuscript, Aristotle on Time: A Study of the Physics attempts an “hylomorphic interpretation” of Aristotle’s account of time (Roark 2011, 1-8). He argues that time is “a combination of matter (hule) and form, or shape (morphè)” (Roark 2011, 1) analogous in structure to the natural substantial beings Aristotle investigates in the Physics.

I agree that reading Aristotle’s Treatise on Time in the greater context of the Physics is fruitful. But, more specifically, I argue that understanding Aristotle’s analytic of time requires that it be read in the context of his foregoing arguments about nature.4

4 Most recently, in Nathanial Stein’s paper, “Aristotle and the Whittling Argument,” read
motion, and the terms of motion in the *Physics*. Aristotle’s Treatise on Time responds to the commonly held ideas (*endoxa*) about time to argue for a consistent definition of time and of its principles (*archai*) in light of his account of nature (*phusis*). Simplicius, among other early commentators, believed the eight books of the *Physics* to be an amalgamation of two original texts, one on nature and one on motion (*kinēsis*). On one account of this division, it is possible that the time section was in fact the end of the work on nature (See Ross 1936 on the possibility that the work concerning motion began with book five).

This seems right, as Aristotle’s allusions to time in *Physics* v-viii align with only one of the two types of time, i.e. infinite time,\(^5\) he names at the beginning of his Treatise on Time (218a1); whereas, what I designate as his analytic of time, in his Treatise on Time, focuses on another type of time, i.e. time taken.

Aristotle redefines nature in the first four books of the *Physics*, seemingly unseating what has been argued to be the Platonic conflation of nature with being (see Grant 2006). According to Aristotle’s definition, *phusis* is an *archē*, an inner principle, of motion (*kinēsis*) and rest (*stasis*) (192b13-22). Thus, Aristotle’s interest in natural objects becomes an interest in explaining change. The apparent search for the *archē* of time, then, cannot lead us to think that Aristotle had it in mind to develop a theory of time qua time. Instead, it is only because Aristotle is ultimately interested in the simplest

\(^{5}\) Coope (Coope 2005, 9-13) sets up her argument about how to read *Physics* iv 10-14 discussing the sense in which time is, like change, continuous. Yet, the support for the idea that time in Aristotle is continuous seems to come from *Physics* viii. The notion that time is analogous to *kinēsis* in being continuous only works if we are talking about the rather nebulous notion of “infinite time,” which, as we will discuss shortly, seems relegated as a topic to *Physics* iv 10, *Physics* v-viii and *De Caelo*.
elements (stoikeia), primary conditions (aitia), and first principles (archē) of nature (184a9-16), as a principle of motion and rest, that he takes up a discussion of time at all. This is to say that Aristotle’s time section is derivative of what he says about change, and change only because it is so fundamental for the study of nature.

Aristotle’s definition of time, “number of motion in respect of ‘before’ and ‘after’” ἀριθμὸς κινήσεως κατὰ τὸ πρότερον καὶ ὕστερον (219b1), depends on (1) what he means by number, (2) what he means by motion, and (3) what he means by before and after. Thus, one gets the sense that it is not possible to understand what Aristotle is trying to say about time without first understanding what he has to say more generally about nature. This is the intended result of a portion of the dissertation that follows—an examination of the first four books of his most general work on nature, the Physics, and research to include the Metaphysics, the Categories, the Nicomachean Ethics, De interpetatione, and works on more narrow topics: De anima, De sensu, De memoralia. I hope to show the thematic thread running through the Physics, that the dialectic between potentiality and actuality underlies not only Aristotle’s theory about first principles of

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6 Aristotle’s approach to the science of nature (φύσεως ἐπιστήμης), then, reclaims in a sense the Pre-Socratic approach. The first philosophers attempted to provide reasonable explanations for the ways natural things exist. For the Milesians, the aim was to understand an underlying element to explain nature in its various manifestations, i.e. to ask what is the unifying element of the multiplicity around us. The answers to this question varied, e.g. for Thales it was water (De caelo ii 13), for Anaximander it was an indefinite principle (apeiron), and for Anaximenes it was aer (Simplicius, 24.26-25.1). Yet, the idea that nature comes from and exists as a single underlying material element, or element of change and rest, dominates. Plato’s physics, on the other hand, is less certain, told in the Timaeus as only a likely tale (38c). The notion of material change, as opposed to the steadfast form or Idea (eidos), inherent in nature called into question the possibility for veracity at all in an account of nature. Thus, at the heart of Plato’s physics is something rather immaterial. Instead of studying the nature of natural beings, it provides a conjecture about the entire picture. A theory of nature, then, is not a study of individual bodies subject to change; rather, it gives an account of the whole.
nature, but also his emphasis on accidental change, i.e. the locomotion, alteration, increase, and decrease of substantial beings, as the defining capacity for natural objects and the way he defines this type of motion and terms related to it.

To be clear, motion is an actuality (entelecheia) of the potentiality (dunamis) for the acquisition by a substantial being of an accidental form, the infinite is never actual and always a potential for continuous division or addition, place is a boundary occupied by a body, and void either does not exist in any modality, or—on some readings—it exists in potentiality as rarefaction. Because, as Klein argues in his book *Greek Mathematical Thought and the Origin of Algebra*, the Greek concept of number was not a symbolic expression, but a discreet reality, the arithmos of time has to be a name for that which actually exists. As Aristotle famously writes in Physics iv 11, “time, then, is what is counted, not that which we count” (219b8-9). What actually exists are natural objects beginning (“before”) and completing (“after”) motion. But, time, is the number of this; it is an attribute of motion (see primarily 223a16-20 but also 221b19-22). What does not actually exist, unless it is enumerated, is time. The potential for enumeration always exists for discreet pluralities, but without someone or something to name the plurality, the numeral is a mere potentiality.

In *Physics* iv 14, Aristotle famously claims that the counting of time is dependent on nous (223a25). Commentators have argued about how to interpret the meaning of

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7 Coope (Coope 2005, 31 n. 1) does not think the translation of πάθος at 223b17, as “attribute” in the ROT should connote “property.” Instead, she prefers what she admits to be an awkward rendering in English, i.e. “something of change,” which, as she explains, is said better in French, i.e. “quelque chose du changement.” I will keep the word “attribute,” substituting it sometimes with “term,” which fits better with the way Aristotle talks about the infinite, place, void, and time in his discussion of kinēsis in Physics iii 1. I do not think that time for Aristotle is simply something of change, but that which is derived from kinēsis.
“nous” here. Did Aristotle mean God, the intellective faculty of soul, or—as nous is sometimes understood more generally—the perceptive faculty of soul? On my reading, “nous” here means broadly the working together of sense and intellection in that, as we see in *De anima*, the faculties of intellect require sensation. This is important to Aristotle’s definition of time in particular because in order to number motion, one requires both the faculty of sense by way of a body to perceive external change (*kinēsis*) from before the acquisition of accidental form to after and the intellective capacity to count or number it. Whereas, super human beings lack both a readiness for thinking—because super human being is pure activity and lacks all potentiality (see *Metaphysics* xii 7-9, Polansky 2011, Gabriel 2009) in addition to a perceiving body, sub-human beings lack intellective capacity to count or number. Thus, I argue that human beings, along with the actual existence of external accidental change of natural objects, are the necessary and sufficient conditions for actual time in Aristotle’s account.

Richard Sorabji (Sorabji 1983, 90) acknowledges commentators have long been confused by Aristotle’s claim that the existence of time requires countability and thus someone to count. He believes that Aristotle is mistaken about this, but reconciles the apparent confusion pointing to Aristotle’s intentions and preoccupations. While I do not necessarily agree with Sorabji when he says that Aristotle’s definition of time is wrong, I agree with his assessment that readers of Aristotle’s Treatise on Time need to, “turn our attention away from time to the notion of possibility and to such related modal motions as countability” (his emphasis). Sorabji’s point clearly supports a contextualized reading of Aristotle’s Treatise on Time, and it turns us to one of Aristotle’s primary interests in his

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8 Cf. *Physics* iv 14, 223a25
natural philosophy—potentiality. I add to Sorabji’s critique and suggest that the confusion he cites on the part of commentators has led to a general misunderstanding of Aristotle’s method and goals in the *Physics*. Namely, it is sometimes claimed that Aristotle’s *Physics* in general, and the Treatise on Time in particular, is a confused inquiry—part metaphysics and part epistemology. On such a reading, Aristotle can be understood in such a way that it looks like he thinks time is actually existing, i.e. “is real,” with or without the potentiality for perception and intellection in the world, i.e. without “someone to count.” I consider this reading to take Aristotle’s Treatise on Time out of its intended context and to impose on his work a bifurcation between a study of reality and a study of knowledge, i.e. a difference between what is and what we can know, which does not apply in Aristotle’s time.

Sorabji looks at Aristotle’s use of *aesthesis* in four works to justify the claim that Aristotle is concerned with possibility in the *Physics* generally, so too in the Treatise on Time. Like Sorabji, I emphasize the role of potentiality in Aristotle’s general account of nature in the *Physics*, but I do so by calling attention to the key role of the interplay between potentiality (*dunamis*) and actuality (*entelecheia*) in Aristotle’s treatments of the principles of nature, *kinēsis*, the infinite (*apeiron*), place (*topos*), and void (*kenos*). Thus, I argue that Aristotle’s conclusions about time are analogous to Aristotle’s conclusions about the infinite, place, and void, i.e. that they are derived from his theory of nature generally. On this reading, time for Aristotle emerges as an actualized potentiality, which

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9 Many thanks to Professor Theodore Scalsas for bringing this to my attention and for taking the time to talk it through with me. Professor Scalsas is one such proponent of reading Aristotle’s Treatise on Time as part metaphysics and part epistemology. While I argue against this position, I appreciate very much his willingness to challenge my reading of Aristotle.
exists as actual or “real” as a result of an interaction between two or more parts of nature. The parts of nature that can relate in such a way as to bring about actual time require conditions for the actualization. It is then up to the philosopher to argue for what those conditions may be. In this way, temporality is never an a priori or fixed presence; it is not a container, a continuum, or a copy of eternity. What we know of time is the same thing as what time actually is.

It has been likewise popular for readers of Aristotle’s Treatise on Time to label him with a certain epistemological orientation. Namely, Aristotle has been called an “idealist” as a response to misunderstanding the role of nous, or the requisite “counter,” in his Treatise on Time. This characterization of Aristotle thus sets up another polarization of his position, against the typical portrayal of Aristotle as “realist,” but—more importantly—reducing Aristotle’s dynamic work to anachronistic and overly simplified terms. Nevertheless, labeling Aristotle in this way opens up the possibility to assume a univocal relationship between Aristotelian “idealism” and eighteenth and nineteenth century German “Idealism.” Kant’s transcendental idealism is generally accepted as the precursor for German Idealism, and it is Kant’s work that seems to have

10 The question as to whether time is “real” or “unreal” for Aristotle is a question about whether or not time is an existing self-subsistent being (οὐσίαν αὐτὸ ὁν) for Aristotle. Demetra Sfendoni-Mentzou argues in her paper, “Is Time Real for Aristotle?” delivered at the 5th International Symposium on the Issue of Time in Aristotle at the Aristotle University of Thessaloniki (May 2012), that time is indeed real for Aristotle and requires no interaction between parts of nature to make it so. Inwood (in Judson 2003, 177) also holds this view. However, Inwood limits his study to an investigation of the puzzles of time in Physics iv 10 and does not treat Aristotle’s provocative discussion about time and the soul in Physics iv 14.

11 Consider, for example, the famous portrayal of Aristotle in Raphael’s fresco School of Athens (1509-1511). Aristotle’s hand is pointing out, suggesting that for Aristotle truth is known empirically, contrasted with Plato’s hand, which is pointing up, suggesting that for Plato truth is relegated to the realm of the intelligible.
first appropriated Aristotle’s conclusions about natural philosophy. Because (1) I take Aristotle’s account of time to be one that comes out of a particular philosophy of nature, (2) Immanuel Kant’s account of time in the *Kritik der reinen Vernunft* is often read to be an appropriation by Kant of what some consider an Aristotelian idealism—on account of the role of *nous* in his account—with regard to the Treatise on Time, and (3) for Kant, time cannot be derived from nature, I argue for dissimilarity in the two accounts. Kant’s theory of time is a partial rejection of Newtonian space-time, the consequence of which according to Kant renders time contingent, foreclosing the possibility that conclusions based on temporal succession can be necessary or certain (B54). For Kant, time is both an a priori intuition, a capacity that allows for—instead of being derived from—human experience of the natural world and a category, which sequences the experiences in order that they be cognized.

But, though Kant’s account of time argued for something fundamentally different from what Aristotle proposed, Kant did provoke a school of thought that seems to have returned to what I consider to be an Aristotelian paradigm, i.e. an approach that developed a theory of time from a theory of nature and emphasized the role of potentiality in both. Early German *Naturphilosophie* (1750-1800) sought to understand nature as an interrelated and integral system. The approach was a simultaneous rejection of Cartesianism and of Kantian category distinction from Kant’s critical works;

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12 My reading of early German *Naturphilosophie*, and in particular the early Schelling and his relationship with the Kantian critical philosophy, is indebted to Prof. Dr. Claudia Bickmann’s seminar on “Schelling—Realist or Idealist?” at Universität Köln during the 2011 Summer Session. Dr. Bickmann helped me to see that it would be an oversimplification of the goals and methods of early *Naturphilosophie* to consider it either “idealistic” or “realist.” A dynamic conception of nature, which includes human beings as a part of the dynamism, is necessarily neither and both “idealism” and “realism.”
mind (*Geist*) and matter are not two differentiated entities, nor are time and space and attributes of matter given to experience by way of consciousness. Thus, a theory of time derived from such a theory would have had to be the result of an interaction among the distinct yet undifferentiated parts of nature; time could not have been considered an independent being that was a part of nature. Instead, it had to be the name for a type of actualization that comes out of the system of nature.

In the latter part of my dissertation, therefore, I use what I have determined to be both (1) the conflation of a theory of knowledge and a theory of reality in Aristotle’s *Physics* and (2) an emphasis on the important role potentiality plays in Aristotle’s natural philosophy to make a comparison between his Treatise on Time and what seems to be the beginnings of a theory of time as an actualized potentiality in early Schellingian *Naturphilosophie*. Thus, my investigation explores more generally the relationship between time concepts and the way they are sometimes derived from philosophies of nature.

In the end, despite various scientific inaccuracies the *Physics* might present as true, we might have an important lesson to recover from Aristotle’s philosophy of nature, or, if not a lesson, at least some questions to pose. Namely, do concepts of time often correlate and/or come out of contemporaneous philosophies of nature, or are studies of time better left to be studies of time qua time, i.e. studies that take time to be a study in itself, of itself? If they do not often correlate, then should they? Is time a being of nature qua itself, or is it an attribute of the natural world? In short, what is time’s place in nature? In this dissertation, I argue that theories of time that come out of theories of nature, dynamic concepts about natural beings and the ways they exist and interact,
necessarily make actual time into a result of an interaction between human beings and other beings in the world and eliminate the possibility that time is a thing qua itself, i.e. a self-subsistent being.

The five chapters will develop as follows:

In the first chapter I conduct a careful reading of *Physics i 1* in an effort to emphasize the importance of acquiring a sense for the scope, goals, and method of Aristotle’s project as preparatory to reading subsequent arguments in the work. In particular, I will propose that, contrary to the typical polarized readings of this section, Aristotle’s method in the *Physics* is necessarily a combination of dialectic and demonstration. I will then continue my reading of book 1, highlighting the potentiality/actuality distinction in Aristotle’s account of natural change, *gignomenon* and *kinēsis*, in substantial natural beings. I will suggest that this distinction is quite important for Aristotle’s conclusions about the principle of natural beings in *Physics ii* (192b13-22) and that understanding these conclusions entail the potentiality/actuality distinction is preparatory to a correct reading of the definition of motion Aristotle advances in *Physics iii 1* (201a10-11) and to his subsequent explanations of the infinite (iii 4-8), place (iv 1-5), void (iv 6-9), and especially time in the *Physics*. This all will be with an eye to showing that Aristotle’s Treatise on Time is a parallel account to his foregoing studies of nature, its principles, motion, the infinite, place, and void. Ultimately, I aim to show here the extent to which the time section is highly contextualized and must be read in light of Aristotle’s conclusions in the earlier chapters of the *Physics*.

In the second chapter I provide a reading of *Physics iv 10-11* with the aim of showing that *Chronos* here has to do with time as an attribute of motion, as an interval,
i.e. the type of time that, as Aristotle describes at 218a1, “is taken.” I argue that Aristotle’s actual analytic of time begins at 219a1-3 with his claim that time is an attribute of motion (kinēsis). I trace the development of his analytic from this starting point until he both defines chronos at 219b1 and then, after some argument, reaffirms his definition at 220a25. I attempt to show, by way of a proposal that the “now” for Aristotle is not only (1) non-temporal, as Coope (Coope 2005, 29) has suggested, but also (2) a name for existing selfsubsistent natural beings undergoing kinēsis, that the best reading of this analytic is to understand Aristotle’s position on time to be that time is only ever potentially real, and by consequence only ever potentially a continuum, unless it is apprehended as such. This claim rests on the assumption that nothing is actually named or referred to unless it is perceived. I support this reading by contrasting the way Aristotle dismisses that time could be a selfsubsistent being composed of real parts in chapter 10 and then argues that time is in some sense continuous, i.e. presumably a whole composed of parts, in chapter 11. For Aristotle, time that is actually taken as a whole, or continuum, has to be dependent on (1) kinēsis and (2) something to apprehend the kinēsis insofar as time’s “parts” are only ever potentially existent, requisite on the (1) apprehending and (2) naming of beings undergoing kinēsis.

In the third chapter I argue that Aristotle’s question about the relationship between time and the soul in Physics iv 14 is not an epistemological one. Rather, Aristotle accounts for the apparition of actualized or “real” time given that it is an attribute of kinēsis. Time for Aristotle, in the sense that it is “taken” (λαμβανόμενος), requires some sort of “taker,” or more precisely, since time is an arithmos of kinēsis for Aristotle, it requires someone or something to observe the non-temporal before and after
and thus to ascertain the number of the *kinēsis*. This is not to say that time cannot exist potentially insofar as *kinēsis* can exist independently of its apprehension, but only that time requires additional conditions in order to be actualized. I offer two arguments in defense of the view that (1) the *kinēsis* of natural beings along with (2) human beings are the necessary and sufficient conditions for the existence of real or actualized time in Aristotle’s account. I will discuss in particular the relationship between number (*arithmos*) and *nous* in *Physics* iv 14 and Aristotle’s account of sensation in *De sensu* 436a-437a. Namely, I suggest that the existence of number requires not only (1) a readiness for thinking, which can actually count/number (*arithmeiton*) or measure (*metreiton*), as opposed to simply marking (*orizei*) *kinēsis*, but also (2) a body by which to sense perceive that which can be counted. These of course are in addition to the being undergoing *kinēsis*.

In the fourth chapter I argue that Kant’s theory of time, as it is advanced in the *Critique of Pure Reason*, is an unnecessary adulteration of Aristotle’s Treatise on Time. Kant taints what I argue to be the two most original and salient aspects of Aristotle’s theory—the absence of a mind/body distinction and a way to understand time that emerges from a certain understanding of natural beings and their principles—in an effort to reinterpret the Aristotelian categories. Unlike Aristotle, Kant develops a theory of time divorced from a theory of nature.

In the fifth and final chapter I try to show the implicit Aristotelian influence on Schelling’s early nature philosophy. I suggest, though the results are inconclusive, that even while Schelling still appears to be defending the critical philosophy, he does so in a paradigm fundamentally contrary to Kant’s and indeed to Fichte’s. Though the
differences between the Aristotelian and Schellingian nature philosophies are many, I suggest a point of comparison between the two. Namely, both suggest to us a philosophy of nature whence the principles and terms of nature derive, or emerge co-equal to, and are thus not argued for outside of this philosophy of nature, qua themselves. I conclude that Schelling returns us to a pre-Cartesian understanding of time as an actualized potentiality between more than one aspect of nature, i.e. he implicitly argues for a theory of time that derives from his theory of nature. I use chapter two of his *Abhandlungen zur Erlaeruterung des Idealismus der Wissenschaftslehre* (1796/1797) to propose that Schelling’s ideas about nature depend fundamentally on interactions between potentiality and actuality, form and matter, and subject and object.

As an appendix to the dissertation, I provide a translation of chapter two of Schelling’s *Abhandlungen*, as it is currently unavailable in English.
In this chapter, I continue in the vein of recent commentators who read Aristotle’s Treatise on Time as a contextualized account of time. In fact, I argue that Aristotle’s time section is not just related to, but entirely dependent on, the preceding arguments for motion, infinity, place, and void, and indeed on Aristotle’s definition of nature and his search for the principles, archai, of natural objects, in the same work (Physics i-iv 9).\footnote{See also Bolton page 2 (in Judson 2003) on the importance of a contextualized understanding of the Treatise on Time.}

I depart from the literature, however, as I do not read Aristotle as a philosopher concerned about time—in questions about time or in delimiting the being of time\footnote{Aquinas (Aquinas 1961, 2) seems to be making a similar claim, though not explicitly, when he writes that natural science “deals with those things which depend on matter not only for their own existence, but also for their definition.” According to Aquinas’s prior argument, subjects like number, magnitude, and figure depend on matter for their existence but not for their definition. By deduction, since time is a number for Aristotle, it would not be a proper subject qua itself for natural science.}—but as a natural scientist interested in the being of natural things, whose ways of being demand a discussion of time.\footnote{Roark calls Aristotle a philosophical optimist because Aristotle is willing to define time (Roark 2011, 11). Without intending to take anything away from Aristotle, I would disagree with Roark on this point. Aristotle is in fact not defining time as the abstract concept we have come to know in contemporary discourse. Why would Aristotle’s naturalist account of time as the number of the motion of natural things be over-reaching? He had no motive for saying any more about time than his project warranted. Similarly, Coope defends her study of Aristotle’s account of time, insisting that while Aristotle’s problems with time are not our problems, she notes that he asks different questions than those of the “modern philosopher,” understanding his questions could help us to better understand our own assumptions and problems with time (Coope 2008, 4-5). In addition, Coope seems to take the opposite approach to what I suggest here when she insists that Aristotle was not interested in the beings in time.}

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13 See also Bolton page 2 (in Judson 2003) on the importance of a contextualized understanding of the Treatise on Time.
14 Aquinas (Aquinas 1961, 2) seems to be making a similar claim, though not explicitly, when he writes that natural science “deals with those things which depend on matter not only for their own existence, but also for their definition.” According to Aquinas’s prior argument, subjects like number, magnitude, and figure depend on matter for their existence but not for their definition. By deduction, since time is a number for Aristotle, it would not be a proper subject qua itself for natural science.
15 Roark calls Aristotle a philosophical optimist because Aristotle is willing to define time (Roark 2011, 11). Without intending to take anything away from Aristotle, I would disagree with Roark on this point. Aristotle is in fact not defining time as the abstract concept we have come to know in contemporary discourse. Why would Aristotle’s naturalist account of time as the number of the motion of natural things be over-reaching? He had no motive for saying any more about time than his project warranted. Similarly, Coope defends her study of Aristotle’s account of time, insisting that while Aristotle’s problems with time are not our problems, she notes that he asks different questions than those of the “modern philosopher,” understanding his questions could help us to better understand our own assumptions and problems with time (Coope 2008, 4-5). In addition, Coope seems to take the opposite approach to what I suggest here when she insists that Aristotle was not interested in the beings in time.
Thinking backward, time (chronos) is an attribute of motion or change, (kinēsis), for Aristotle (219b1-2). Aristotle’s interest in time and in that which is required in order that there be motion, e.g. infinity, place, and void (200b12), come from his interest in motion itself, and motion only because he sought in the Physics comprehensive understanding of the fundamental principles of natural beings. His analysis of time, then, comes from his interest in the study of natural being. If we can read Aristotle’s account of time in this way, then we will be able to see that his account of time cannot be an account of time qua time.

I will begin with a careful reading of Physics i 1 in an effort to emphasize the importance of acquiring a sense for the scope, goals, and method of Aristotle’s project as preparatory to reading subsequent arguments in the work. In particular, I will propose that, contrary to the typical polarized readings of this section, Aristotle’s method in the Physics is necessarily a combination of dialectic and demonstration. I will then continue my reading of book 1, highlighting the potentiality (dunamis) /actuality (entelecheia) distinction in Aristotle’s account of natural change, gignomenon and kinēsis, in substantial natural beings. I will suggest that this distinction is quite important for Aristotle’s conclusions about the principle of natural beings in Physics ii (192b13-22) and that understanding these conclusions entails that the potentiality/actuality distinction is preparatory to a correct reading of the definition of motion Aristotle advances in Physics iii 1 (201a10-11) and to his subsequent explanations of the infinite (iii 4-8), place (iv 1-5), void (iv 6-9), and especially time in the Physics. Namely, Aristotle is going to argue that the natural scientist must think radically differently about the ontological status of motion and the terms of motion, i.e. they are not self-subsistent natural beings. The
following chapter will thus be divided into the following subsections: (1) Physics: Scope, Access, Goals, and Method; (2) Nature and its Archai; (3) The Role of Kinēsis in Nature; (4) From Kinēsis to Chronos.

I. Physics: Scope, Access, Goals, and Method

Aristotle’s Physics is a book about nature (φύσις, phusis). It is an inquiry into nature itself, but this means an inquiry into the objects of nature in so far as these objects seem to reveal what nature is, i.e. the principle of their motion.

The first line may be one of the most important in the entire work, as it introduces the scope of the project. Aristotle tells us in i 1, “When the objects of any inquiry (πάσας τὰς μεθοδοὺς), in any department, have principles (archai), causes (aitia), or elements (stoikeia), it is through acquaintance with these that knowledge and understanding is attained” (184a10-12). It is apparent from the start that Aristotle’s goal is not a subjective objective to overcome skepticism; rather, he is searching for comprehensive understanding.¹⁶ Such comprehensive understanding is by way of getting to know the principles, causes, and elements of the subject of inquiry. If nature generally, i.e. nature qua nature, is Aristotle’s subject, then such an acquaintance seems rather implausible. A project with such a large scope seems rather Platonic.¹⁷ Instead, it seems that his real subject must be the nature of the various natural beings. The objects of nature can be

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¹⁶ According to Aquinas (1961), Physics i 1 is a preface to the rest of the work.
¹⁷ Elsewhere, Aristotle explicitly distances himself from Platonic-style natural philosophy. See 203a16 and Meta 1001a12 on this point. As Ross points out, Pythagoreans and Plato were “thought of as being a priori theorists rather than genuine students of nature” (Ross 1936, 545).
investigated, probed, and analyzed for the grasp of the natural principle involved in each kind of natural being.

Aristotle continues, announcing that the first task in the present inquiry, which he names a science of nature (φύσεως ἐπιστήμης), will be to “determine what relates to its principles” (184a15-16). The question here at the beginning of the Physics is not only about the scope of inquiry, but also about access to the subject. To know the principles, one must make a determination about what concerns them. Aristotle’s point here is subtle, but if acquaintance with the principles, causes, and elements of natural beings is the scope, and if comprehensive understanding is the goal, the natural scientist must have both (1) the potentiality for perception of that which concerns the principles of nature, and (2) a faculty of judgment in order to acquire knowledge of them.

Scope and access must be buttressed by a clear method. Aristotle famously outlines a method, but what exactly he intended to convey is disputed. He will gather knowledge of these principles moving “from what is better known to us to what is better known by nature” (Πέρικαι δὲ ἐκ τῶν γνωριμωτέρων ἡμῖν ἢ ὀδὸς καὶ σαφεστέρων ἐπὶ τὰ σαφέστερα τῆ φύσει καὶ γνωριμώτερα) (184a16). On one reading, “what is better known to us” may mean endoxa, or those ideas that are commonly held. On this reading, the method Aristotle proposes is dialectic (see also Topics viii 5), and the ideas about nature whence he would be starting would have been those advanced by his predecessors, e.g. Plato, the atomists, the sophists, and the Eleatics. On another reading, “what is better known to us” may mean endoxa, or those ideas that are commonly held: “His method is the method of dialectic, by which (in theory at least) the philosophical inquirer started from the accumulated material of common-sense intuitions, previous opinions of philosophers, and observed facts relevant to the subject, and ascended by a process of
known to us” is that which is more readily perceived. The discrepancy over interpreting this passage is pertinent because the way one understands Aristotle’s method grounds the way one reads the rest of the work. When there has been little or no attention to *Physics* i 1, and instead an interest only in later books, this essential topic is left unacknowledged. Is Aristotle primarily a philosopher concerned with adjudicating the ideas of his predecessors, or is he a natural scientist, looking for clear demonstration of the nature of natural beings? Having left this question unanswered, and indeed unasked, some modern readers have supposed that Aristotle’s *Physics* is inconsistent in method—changing between metaphysics of nature and an epistemology.

As was aforementioned, the potential for perception and judgment are both pertinent to achieving the goals Aristotle has laid out. If sense perception is indeed integral to the project, he is going to acquire knowledge of the nature of natural beings at least in part by way of demonstration. Consider, for example, Aristotle’s general account of perception and knowledge in *De anima* ii 5 (417b17-28) where he asserts that scientists must have access to external perceptibles in order to acquire knowledge of things generally. Because there is no one place to start an inquiry into nature when the rational criticism and generalization to the correct account of the subject, which would usually be enshrined in a definition of the central term” (ix).

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19 See Bolton (in Judson 2003), for a very well argued take on this view. For Bolton, *Physics* i 1 is a parallel account to *Posterior Analytics* ii 19. According to these accounts, “the conclusion of our reasoning and our inquiry gives us a principle which *explains* (and gives us a firm delineation of) the perceptible phenomena which we use to reach it. But no rule of general dialectic or of any type of dialectic which Aristotle discusses is designed to guarantee conclusions of this sort. So if dialectic does reach conclusions of this type it is accidental and not due to the method of dialectic itself” (13).

20 In an effort to laud the development of the scientific method in the sixteenth century, modern physicists oversimplify Aristotle’s project stating that he had no method of demonstration and relied entirely on dialectic to obtain conclusions about nature.
subjects of the inquiry exist external to the scientist,\(^1\) with what the scientist begins her inquiry—with endoxa or confused perceptions—should not be a disjunction. Instead, it seems that it should be a conjunction; the two are perhaps inextricable in natural science.

Aristotle provides further detail about his method. These paragraphs are notoriously difficult to interpret because Aristotle uses the terms universal and particular equivocally. Since he has just insisted that we begin with things more knowable to us, he then qualifies this point saying: “For the same things are not knowable relatively to us and knowable without qualification” (οὐ γὰρ ταὐτὰ ἠμῖν τε γνῶριμα καὶ ἀπλοῦς) (184a18).\(^2\) Read one way, “knowable relative to us” refers to the natural scientist’s access to external perceptibles. The scientist obtains knowledge about universals, meaning genera, by experience with different kinds. The external perceptibles we encounter through sense perception are the particular instantiations of universals whence we acquire general knowledge.\(^3\) Read another way, “knowable relative to us” refers to the ideas commonly held prior to this investigation. How we read Aristotle’s proposition here affects how we understand his subsequent conclusion. If he formerly intended to

\(^{21}\) Being a self-subsistent natural being herself, the natural scientist could be a subject to herself, but this is not likely what Aristotle had in mind.

\(^{22}\) Aquinas (1961) explains the difference between knowable to us and knowable by nature/without qualification with an appeal to the fact that humans begin from potency and from a point of view of science and nature’s telos is something to be learned. I disagree with Aquinas on this point. It seems a Christianized reading of Aristotle here, separating humans from the natural order, and especially from God. Aquinas’s conclusions may be the first source of commentary reading Aristotle as part epistemology (studying what we can know) and part metaphysics (studying what is).

\(^{23}\) This passage could be misread to suggest that Aristotle is differentiating what is possible for us to know, or an epistemology, and what is, a metaphysics. This is not the case. He is not insinuating that there is, to use a Kantian term, a noumenal aspect of nature that escapes our grasp. Instead, he is introducing his understanding of knowledge acquisition as (1) perception of particular instantiation of a genus (2) knowledge of universal (genera) from experience with the particular.
say that we garner knowledge of genera by way of experience with kinds, his conclusion
that his method will: “advance from what is obscure by nature, but clearer to us (ἐκ τῶν
ὕσαφεστέρων μὲν τῇ φύσει ἠμῖν δὲ σαφεστέρων), towards what is more clear and more
knowable by nature (ἐπὶ τὰ σαφέστερα τῇ φύσει καὶ γνωριμότερα)” (184a19-21), means
that the scientist will begin with the individual natural beings whose general nature she
wants to know better. If, however, Aristotle meant that we begin with ideas commonly
held, then the conclusion announced about his method entails working from the ideas of
predecessors. In this case, the method does not clearly involve scientific observation or
investigation.

Aristotle adds here that we will get at the first principles by starting with “rather
confused masses” (tà συγκεχωμένα μᾶλλον) (184a22), or, as Ross renders it, “the
confused data we start with” (Ross 1936, 15), and by subsequent analysis, we will
achieve the anticipated elements and principles (ὕστερον δ’ ἐκ τούτων γίγνεται γνώριμα
tà στοιχεία καὶ αἱ ἄρχαι διαφοροῦσι ταῦτα) (184a22). Again, one could understand
“confused masses” to mean either endoxa or first perceptions and “analysis” to refer to
dialectic or demonstration. But, what Aristotle writes next points us to the latter
explanation. He clarifies that we first come to know universals (καθόλου) and then
particulars. Of course, universal is used here in a sense different from the one just
discussed, i.e. universal as genera. Here, universal refers to a whole, and that is
contrasted with particular, meaning part of the whole. These universals, or wholes, are
better known to sense than particulars (Διὸ ἐκ τῶν καθόλου ἐπὶ τὰ καθ’ ἐκαστὰ δὲὶ
προϊέναι· τὸ γὰρ ὅλον κατὰ τὴν αἴσθησιν γνωριμότερον, τὸ δὲ καθόλου ὅλον τί ἔστι·
pολλὰ γὰρ περιλαμβάνει ως μέρη τὸ καθόλου) (184a23). What is better known to us,
then, is what is better perceived by us; and, wholes are perceived before parts. To illustrate this point, Aristotle uses the example of the child first associating the name “father” with all men and then later determining that only one of those men is his own father. Similarly, a child learns “dog,” “cat,” “chair,” “table,” and only over time learns what distinguishes one instance of these universals from another. The demonstrative, “that cat” or “this chair” develops into a more specific identification: “the adirondack chair my grandfather owned” or “the black labrador retriever named Wolfgang.” Even as adults, when we first experience objects, we do not immediately distinguish among various instantiations of them. We see a starling for the first time, and subsequent sightings of different starlings are indistinguishable from the first.

For Aristotle, this fact is explained analogously by the difference between names and definitions. Names, he clarifies, do not differentiate among wholes themselves, whereas definitions differentiate wholes into particulars, i.e. a definition associates a species with a genus and also differentiates the species from other kinds of the genus. Therefore, our perceptions do not immediately differentiate among that which is of the same kind. It is our analytical abilities that organize and categorize. But, this is not just a point about language. For Aristotle, the confused perceptions we first notice are compounds (184a23).24 We see the whole, the parts together as one, and then later we perceive the detail. With regard to the science of nature, we will come to know nature by intentionally analyzing our immediate perceptions in order to learn about particulars not...

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24 As Aquinas (Aquinas 1961, 5-6) points out, that Aristotle formerly said confused and not compound is significant, as he is using universal equivocally: integral sensible, universal intelligible, universal sensible.
immediately clear to us. Following the logic here, then, in order to know the first principles of nature, we will analyze our perceptions of natural beings.

This is the end of the first chapter of book 1 and so too of the discussion of scope, access, goals, and method. On my reading, then, Aristotle’s method in the *Physics* is more complex than the ones either of the two usual positions attribute to him. Further, holding him to one or the other is likely a false dichotomy. It seems clear that he was a natural scientist setting out to demonstrate the nature of natural beings in so far as this is consistent with his aforementioned scope, goals, and requisite access to the subject of inquiry. But, it does not seem likely that he would not have found it necessary to engage with the commonly held ideas at his time. In fact, I would suggest that he had an onus to contend with the ideas of his predecessors. He was arguably the first natural scientist because he was not simply providing conjecture about nature. But, in being the first, the scope of his project took on an implied second dimension, i.e. he needed to show that his new way of explaining nature was valid. This is not to say that Aristotle would have denied the importance of thinking through ideas logically, but just that he set himself apart from his predecessors because he saw the parallel importance of justifying scientific conclusions with demonstrable evidence based on experience. Drawing attention to this debate in *Physics* i 1 and attempting a non-polarized reading of it establishes certain expectations with regard to Aristotle’s arguments in later books. It prepares us not only for Aristotle’s complementary use of dialectic and demonstration, but also prevents us

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25 Aquinas (Aquinas 1961, 3) believes that already in the first line of the work we see Aristotle wedging a difference between understanding and science, disclosing the importance of both definitions and demonstrations to natural science.
from reading these later arguments in modern terms, i.e. as “metaphysics” at one turn and then as “epistemology” at another.

Aristotle will now begin his explorations to uncover the principles of the nature of natural beings. Already in the next chapter we will see him switching between demonstrations from experience, beginning with confused perceptions, and dialectic, beginning with endoxa. Having now suggested that Aristotle’s method is not strictly in one vein or the other, I will point out his movement between them in my following discussion of his arguments.

II. Nature and its *Archai*

After establishing the scope, goals, access, and method for natural science, Aristotle sets out to know the principles of nature of natural beings. I will now present a reading of the rest of *Physics* i in an effort to highlight the potentiality/actuality distinction in Aristotle’s account of natural change, *gignomenon* and *kinēsis*, in substantial natural beings. The role potentiality and actuality have to play in Aristotle’s observations of and conclusions about the nature of natural beings are important to correctly reading his later discussions of the infinite, place, void, and especially time. Aristotle works up to a discussion of potentiality/actuality by way of an investigation into the principles of the nature of natural beings.

He begins in *Physics* i 2 with a significant assumption; one that has been supposed prior to his announcement in *Physics* i 1 that his goal is to determine what relates to the principles of the nature of natural beings,\(^\text{26}\) namely, that there is in fact a

\(^{26}\) Aristotle made a quick switch from the hypothetical to the actual at the start of this
principle of natural science. Aristotle states: “There must be either one principle or more than one” (Ἀνάγκη δ’ ἢτοι μίαν εἶναι τὴν ἁρχὴν ἢ πλείους) (184b14-15). Determining whether the principle is one or more will not be a matter of analyzing perception, but of weighing the logic of various endoxa. Either, the principle is one and unchanging, a view attributed to Parmenides and Melissus, or the principles are more than one and subject to change, various examples of which are advanced by the natural philosophers. If the principles are more than one in number, then they are either limited in number or unlimited in number, and they are either all the same or different in kind. These are not propositions based on experience. Rather, they are based on logical possibilities. But, this is not to suggest that Aristotle will conduct the entire examination as a conversation with the endoxa. Rather, these are the positions with which he must contend before he can use perceptibles to try and establish a different view. On this point, Aristotle writes:

Now to investigate whether what exists is one and motionless is not a contribution to the science of nature. For just as the geometer has nothing more to say to one who denies the principles of his science—this being a question for a different science or for one common to all—so a man investigating principles cannot argue with one who denies their existence. For if what exists is just one, and one in the way mentioned, there is a principle no longer, since a principle must be the principle of some thing or things…To inquire therefore whether what exists is one in this sense would be like arguing against any other position maintained for the sake of argument…We, on the other hand, must take for granted that the things that exist by nature are, either all or some of them, in motion—which is indeed

work: “when the objects of an inquiry…have principles…it is through acquaintance with them that knowledge and understanding is attained” to “in the science of nature…our first task will be to try to determine what relates to its principles” (184a10-16).

27 Bolton (in Judson 2003) argues that Aristotle’s use of endoxa here does not undermine his promised engagement with perceptibles in Physics i 1. I agree with his conclusion that engaging with the endoxa in Physics i 2 is complementary to his otherwise demonstrative methodology. Specifically, Bolton supposes Aristotle to be exercising the following point: “the natural scientist cannot use a scientific, that is a demonstrative, argument to refute someone who denies that the natural world of changing things exists. In natural science it is an indemonstrable first principle that the natural world of changing things exists…one can only refute this denial dialectically, or peirastically” (15).
Aristotle thus belies the endoxa by arguing that the scope of his project requires a method of investigation different from the one used by his predecessors. Aristotle reemphasizes here that the subject of his inquiry is natural beings. These beings are known by perception and understood by analysis and discrimination. Perception allows the natural scientist to observe that natural beings are in motion. It is perception that allows for Aristotle’s brand of natural science, no longer an a priori science. And, it is perception that allows for the situation Aristotle describes above; relying on perception as opposed to speculation creates a situation whereby he is talking past the theories of the endoxa. If he cannot debate with the endoxa on their own terms, he has to rely instead on an alternative method. With regard to the principles of the nature of natural beings, Aristotle tells us that the principles are clearly more than one. Surely, we could pontificate about various possibilities for the number of principles of nature, but induction settles the score when it shows us that there must be more than one.

According to Ross (Ross 1936, 487), in our current chapter divisions, it is in *Physics i 5* that we get the beginning of Aristotle’s analytic of the first principles.28 Starting with 188a19, I will trace Aristotle’s entire analytic in the rest of *Physics i*. Aristotle defends the point that the principles must be at least two. In so doing, he concludes that contraries (τάναντία) are the principles, reinvoking the endoxa to show that both Parmenides and Melissus, and the natural philosophers, allow for this to be the

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28 I will continue to highlight that Aristotle reserves his own thoughts on the various topics of natural science until after having contended with the endoxa. We will see this pattern in his subsequent discussions of nature, motion, the infinite, place, void, and time.
case. It is in this chapter that we see Aristotle really moving between his proposed method of progressing from first perceptions or wholes to discriminating parts and weighing endoixa. He begins showing that the monists agree that contraries are principles because they posit fire and earth. Aristotle likens this to a commitment to principles of hot and cold. Likewise, he cites a belief in the dense and rare and then the atomist belief in the full and empty (188a20-25). After establishing that all agree contraries are principles, Aristotle clarifies what this means. Namely, he writes that “the principles must come neither from one another nor from anything else, and everything else must come from them” (δεῖ γάρ τὰς ἀρχὰς μήτε ἐξ ἄλληλων εἶναι μήτε ἐξ ἄλλων, καὶ ἐκ τούτων πάντα: τοῖς δὲ ἐναντίοις τοῖς πρώτοις ὑπάρχει ταύτα, διὰ μὲν τὸ πρῶτα εἶναι μὴ ἐξ ἄλλων, διὰ δὲ τὸ ἐναντία μὴ ἐξ ἄλληλων) (188a26-28). And, these are the primary contraries. Aristotle then announces what will be a turn to logical considerations. We will determine the need for primary contraries not by way of considering what is the case in our perceptions, but by thinking through what would or would not make sense to conclude about the character of contraries.

Aristotle uses examples from experience. He has us think about the qualities of paleness and knowing music and asks rhetorically how it could be possible that the latter come from the former (188a36). He uses what his reader would readily admit from experience to demonstrate the difference between logical contraries and logical complements. White does not come from any not white, he writes, and what he means is that white does not simply come from not white. For example, a mean person is not white, but it is not not-white, which is reserved for a color other than white, especially the

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29 See Ross (Ross 1936, 487) for evidence that Aristotle probably mistook what was said in Parmenides’s poem for Parmenides’s own views.
contrary, black. Aristotle explains further that the “white” can come from an intermediary of it and its contrary, in this case black. But, white does not come from a complement, i.e. a non-color in this case, something merely non-white. He continues, but it is unclear whether he is speaking from experience, or if he is explaining in terms of what makes sense. Nothing changes into something categorically different, except by chance. White does not turn into mean or musical; it changes into its contrary or something between the two (188b4-8). Rather, the thing—such as a pale person—may become musical or mean.

But, this is not the only sense in which one contrary becomes another. When we are talking about a change from white to not white, we convey a change in predication of a substantial being. But, we can also talk about general not being changing into being. Ross (1936, 489) calls these contraries “the thing produced,” i.e. harmony (ἡμοσιμένον) and “that from which it is produced,” i.e. disharmony (ἀνάρμοστον). Aquinas explains that these contraries are called primary contraries because in order for the latter to be principles, they would require principles themselves (Aquinas 1961, 48).³⁰ To illustrate this point, Aristotle discusses compound being that comes to be from a state in which it was not. A house is built from materials that when grouped together as they lie on the ground are “not a house.” But, this is quite different from a bunch of chemistry equipment lying on the ground, which also constitute things that are not a house, but now in a complementary sense. They have no possibility of ever being a house. For Aristotle:

It does not matter whether we take attunement, order, or composition for our illustration; the principle is obviously the same in all, and in fact applies equally to the production of a house, a statue, or anything else. A house comes from certain things in a certain state of separation instead of conjunction, a statue (or

³⁰ See also Aristotle on this point at 189a30-35.
any other thing that has been shaped) from shapelessness—each of these objects being partly order and partly composition (Διαφέρει δ’ οὐθὲν ἐπὶ ἀρμονίας εἰσεῖν ἢ τάξεως ἢ συνθέσεως; φανερὸν γὰρ ὅτι ὁ αὐτὸς λόγος. Ἀλλὰ μὴν καὶ οἰκία καὶ ἀνδρίας καὶ ὠστὸν ἄλλο γίγνεται ὁμοίως ἢ τε γὰρ οἰκία γίγνεται ἐκ τοῦ μὴ συγκεῖσθαι ἀλλὰ διηρήθησαν ταὐτὶ ὡδί, καὶ ὁ ἀνδριάς καὶ τὸν ἐσχηματισμένῳ τι ἐξ ἁσχημοσύνης καὶ ἐκαστὸν τοῦτον τὰ μὲν τάξις, τὰ δὲ σύνθεσις τις ἔστιν) (188b15-20).

The two senses of contrary here, and thus the two senses of change that have emerged, will foreshadow Aristotle’s later discussion of accidental formal change and substantial change. On the one hand, we see him developing a theory about accidental formal change. When something, e.g. the pale person, is white and undergoes qualitative change, it becomes not white, meaning it moves either closer to its contrary, black, or it moves completely to black. There is a principle of accidental change, but the substance is already in place. For example, the person is now unmusical and then musical. On the other hand, above we see Aristotle describing a principle of moving between contraries where the contraries signal generation and corruption, instead of accidental formal change. Here, we see that the coming into being of a complex substance requires both the material components and then imposition of the form. And, certain forms require certain materials, or the substance cannot come into being. Aristotle concludes that everything coming to be naturally is either a contrary or a product of contraries (188b24-26). In all cases, as Aristotle works to show, contraries are the source of change.

As Aristotle goes on to note, his predecessors would not have disagreed that the archai are contraries. Yet, while most of his predecessors have asserted what they believed to be principles as contraries, what exactly the contraries end up being varies

31 This distinction may indicate Aristotle’s early thoughts on the difference he will make in Physics v between kinêsis, usually rendered “motion” but generally meaning accidental or predicative change, and metabolê, which includes kinêsis but also substantial change, i.e. generation and corruption.
widely (188b37-189a2). And again, we see a distinction being made between confused perception, here called “the order of sense” (κατὰ τὴν αἴσθησιν) and logical reasoning, or, “the order of explanation” (κατὰ τὸν λόγον). Aristotle assigns the coming to know via explanation to the universal and the coming to know of the particular to the order of sense: “The universal is more knowable in the order of explanation, the particular in the order of sense: for explanation has to do with the universal, sense with the particular” (τὸ μὲν γὰρ καθόλου κατὰ τὸν λόγον γνώριμον, τὸ δὲ καθ’ ἐκαστὸν κατὰ τὴν αἴσθησιν ὁ μὲν γὰρ λόγος τοῦ καθόλου, ἢ δ’ αἴσθησις τοῦ κατὰ μέρος) (189a5-9). Of course, Aristotle is using universal and particular equivocally again. Here, he uses the same sense of universal that we saw in his general account of perception and knowledge from De anima ii 5, i.e. universal as genera. We come to know universal as genera through experience with particulars, or kinds; we distinguish the form from the material. This sense of universal is obviously different from the meaning Aristotle intended when he said in i 1 that the child first calls all men father. In this case, we only know the confused whole until we discriminate it into parts.

When Aristotle is talking about endoxa, he differentiates among those predecessors who named the principles as contraries more knowable by sense and those that are more knowable by explanation. Thus, Aristotle himself is separating theories that have arrived at principles by way of different methods. The theories that have unobservable unified concepts as principles—Plato’s great and small, for example, or Empedocles’s love and strife—have based their physics on universal principles that allow us to account for the whole. The theories that have basic observable phenomena as principles—Anaximenes’s account of the dense and the rare, for example—allow us
to conjecture something about the whole based on experience of whatever is in front of our senses. For Aristotle, these accounts are analogous; both are providing a scheme for the order of things in nature. But the nature of the accounts marks a difference among them, and it signals the difference I am working to highlight in Aristotle’s own treatment. While Aristotle sees a value and a necessity in contending with physics based on theory, his analytical work is based on what can be perceived.

Aristotle concludes this discussion, clear that the archai are contraries. His view has been justified using appeals to experience as well as rational explanation. In addition, he has corroborated his claim with the wide range of endoxa from his time. So, he begins a new discussion with a follow-up question. Even if the principles are contraries, are they two or more than two (Ἐχόμενον δ’ ἀν εἰὴ λέγειν πότερον δύο ἢ τρεῖς ἢ πλείους εἰσίν) (189a11)? He proceeds to argue that they are more than two, but finite in number.

This portion of Aristotle’s argument is quite important because it is here that he introduces both the idea of an unchanging element of nature, ὑποκείμενον, which Aristotle will develop later when he defines nature as a principle of motion, and the issue of multiple causes, which Aristotle will famously develop in Physics ii. As Aristotle begins to suggest that the principles are more than two, yet finite, he uses examples where it is unclear if he is speaking from experience or from a point of view of logical necessity. He says, for example that, “it is difficult to see how either density should be of such a nature as to act in any way on rarity or rarity on density” (189a22-23). He then supports this view invoking a second example from the endoxa: neither can love and strife gather one another up and make something out of each other. It seems apparent that there must be some “third thing” (ὑποτιθέναι τι τρίτον) (189a25). Recall that
Aristotle has been discussing contraries in two different ways: as true contraries, e.g. white and black, and as primary contraries, e.g. what Ross calls “the thing produced” and “that from which it is produced.” Thus, this third thing is going to mean something different for each of these sets of contraries.

Aristotle wants to posit a third thing, similar in the vein of Pre-Socratic philosophers of nature (189b1-2). More than three would be inefficient because we would end up with more than one contrary, and we would thus require an intermediary for both. But, he will not do that here. First, he provides his own account, retracting his arguments from endoxa and effectually supplanting them with arguments from confused perceptions. He will now turn to the “natural order of inquiry,” i.e. from common characteristics to particular cases (ἔζηη γὰξ θαηὰ θύζηλ ηὰ θνηλὰ πξ῵ηνλ εἰπόληαο νὕησ ηὰ πεξὶ ἕθαζηνλ ἴδηα ζεσξεῖλ) (189b31-33).

Now, we see Aristotle writing explicitly about the difference between what are commonly called in the literature, “accidental” and “substantial” change, which we noted just earlier that he had been foreshadowing in his differentiation between primary contraries and true contraries. Here he talks about change in terms of ὑγινμενον (becoming) and not in terms of κινῆσις or μεταβολή. This is an important distinction because Aristotle is still at the early stages of his inquiry. He is still deriving the archai and has not yet introduced language of motion and change. Aristotle first discusses becoming in the sense of predicative change. This seems to be the type of becoming easily observed with the senses, e.g. the pale person becoming tanned or the man becoming musical.
When we talk about a man becoming musical, Aristotle asks whether we are talking really about the man becoming musical, about the non-musical becoming musical, or about the non-musical man becoming a musical man. He then wishes to point out that in the first two instances, i.e. the man becoming musical and the non-musical becoming musical, what becomes is simple; whereas, in the third instance, i.e. when the non-musical man becomes musical, what becomes is complex (φαμέν γὰρ γίγνεσθαι εἷς ἄλλου ἄλλο καὶ εἷς άτερον άτερον ἢ τά ἀπλά λέγοντες ἢ τά συγκείμενα. λέγω δὲ τούτο ώδί. ἐστι γάρ γίγνεσθαι ἄνθρωπον μουσικόν, ἐστι δὲ τό μή μουσικόν γίγνεσθαι μουσικόν ἢ τόν μή μουσικόν ἄνθρωπον ἄνθρωπον μουσικόν. ἀπλοῦν μὲν οὖν λέγω τό γιγνόμενον τόν ἄνθρωπον καὶ τό μή μουσικόν, καὶ δέ γίγνεται ἄπλοὺν, τό μουσικόν? συγκείμενον δὲ καὶ δέ γίγνεται καὶ τό γιγνόμενον, ὅταν τόν μή μουσικόν ἄνθρωπον φῶς ἔνθελ γίγνεσθαι μουσικόν ἄνθρωπον) (189b36-190a4). There is a difference between the first two instances, however. Aristotle is quick to point out that while both are instances of simple things becoming, in the first instance, the simple thing remains; whereas, in the second instance, the simple thing is destroyed. This is to say that the man himself remains in the qualitative change from non-musical to musical. The substance remains with the acquisition of the accidental form. The quality of non-musical, however, does not remain in the change to musical. For this reason, Aristotle concludes that there must always be an underlying third thing that is itself becoming. In addition to the contraries—one that survives while the other does not, and one that is potentially existent while the other is actually so—there must be a thing that is not a contrary, which survives all becoming so that there is something that withstands alteration (ἐάν τις ἐπιμελήσῃ ὅσπερ λέγομεν, ὥστε δὲ τί ἂει ὑποκείσθαι τό γιγνόμενον) (190a13). Aristotle notes that the form is one
numerically but more than one (καὶ τὸ τὸ εἰ καὶ ἄριθμῳ ἐστὶν ἐν, ἀλλ’ εἰδει γε οὐχ ἐν) (190a15), as there is both the substance and the accident. This third thing is the natural substantial being, i.e. the person becoming tanned after having been previously pale, or the man becoming musical from having been previously not musical.

But, talking about accidental or predicative change is not the only way to speak about change. This is where Aristotle is going to correlate his earlier discussion of different types of contraries with a discussion of different types of coming to be. Aristotle differentiates the way we commonly speak about becoming: sometimes we say, “come to be” (γίγνεσθαι) and sometimes we say, “come to be so-and-so” (τὸ δὲ τι γίγνεσθαι) (190a31-32). Our language correlates to the difference between substantial and accidental change, respectively. Substances “come to be” without predication, but they “come to be so-and-so” with regard to a change in quality, quantity, relation, time, or place (190a34-36 and cf Categories). This means that the becoming in the first instance is a generation; whereas, the becoming in the other cases is a motion from a privative to a positive form. Aristotle’s point here is that with accidental change, a subject or substantial being is always presupposed. It is crucial to see where he is going with this and what he is beginning to build here. It may seem that this is an obvious point, but it has been overlooked by those who single out Aristotle’s treatise on time and other later topical sections of the Physics. Without substantial being, accidental change, which has to do with alterations, quantities, place, relation, and time, does not exist.

Of course, as Aristotle adds, substances come to be from something too. The implication here is that something never comes from nothing. But, this point, which is a challenge to Parmenidean monism, does not undermine the distinction between
substantial becoming and accidental change. Both types of becoming require something whence they emerge. Aristotle reminds us, for example, that both animals and plants come originally from seed (ὅτι δὲ καὶ αἱ οὐσίαι καὶ ὀσα [ἄλλα] ἀπλῶς ὄντα ἐξ ύποκειμένου τινὸς γίγνεται, ἐπισκοποῦντι γένοιτο ἄν φανερόν. ἀεὶ γὰρ ἐστὶ ὁ ὑπόκειται, ἐξ οὖ τὸ γιγνόμενον, οἰον τὰ φυτὰ καὶ τὰ ζῴα ἐκ σπέρματος) (190b3). There is a material whence the form comes to be. But, the real difference here is that the latter is conditional on the former having already occurred. Kinēsis (usually rendered “motion”), which is a type of metabole (usually, “change”), requires substantial natural being. In order for substance to exist, it must have come to be by way of generation, which is another kind of metabole. Aristotle makes this point when he explains that, “everything comes to be from both subject and form” (ὅτι γίγνεται πᾶν ἐκ τοῦ ύποκειμένου καὶ τῆς μορφῆς) (190b19-20). The subject is the substance, which is composed of substantial matter and form, and the form is the accidental form. He reminds us of the musical man. The musical man is a complex thing; it is composed of a man, which is a subject, and the quality of musicality, the accidental form.

Thus, based on his own account, Aristotle is able to conclude that the archai are sometimes two and sometimes three (190b29-30). On the former account, it is the contraries themselves, the privative and the positive accidental form, which are the principles of nature. On the latter account, the underlying subject of change is taken into account.

Having touched on the idea of privative form, Aristotle is ripe to discuss the place of non-being in the fundamental principles. He acknowledges the ancient quandary that

32 Spontaneous generation is also possible (cf. HA vi 15, 569a13-19, 25-26, HA vi 16, 570a3-10, GA iii 11, 763a24-763b5), but it is not discussed here.
it is impossible to understand the paradox of becoming: either a thing becomes from what is or from what is not. If something is not, nothing can come from it, and if something is, it already exists and can no longer come to be. Aristotle seems to return to a common sense argument based on experience—not confused perceptions, but analyzed and clear perceptions—that subjects can “be” in various ways. He uses the example of a doctor who exists already as a doctor, but he becomes other things apart from his identity as doctor (191b1-2). He turns gray, not as a doctor, but as a dark haired thing. He builds a house, not as a doctor, but as a house builder. With these examples, Aristotle shows that the Pre-Socratic paradox of becoming is a problem not based on common sense or experience. Instead, it is based on a strict logic of non-contradiction, which ignores or is ignorant of the way natural beings actually exist. This is remedied by two important distinctions Aristotle makes with regard to the being of nature. On the one hand, there is this important difference between substance, or subject, and accidental form. I can exist as a woman and yet become many different things: wife, dog-owner, student, teacher, house-rehabber, etc. The predicates do not come from nothing; they come from their contraries, which Aristotle names a privative form. On the other hand, Aristotle notes a second explanation, which he has entertained in both Metaphysics iv 7 and viii, concerning the difference between being actually and being potentially.

It is certainly not a coincidence that Aristotle spends so much time partially defending, but largely contending, with the endoxa. There was something basic that his predecessors got right: there is an interplay between contraries at the heart of nature’s fundamental principles. But, what they did not get right was the absolute necessity of positing “the negative part” or privative form at the heart of all accidental change, and
thus of the nature of natural beings. Aristotle is able to grasp what they did not because he has been willing in part to demonstrate his conclusions about the principles of the nature of natural beings based on experience. Aristotle explains the oversight of his predecessors:

Now we distinguish matter and privation, and hold that one of these, namely the matter, is not-being only in virtue of an attribute which it has, while the privation in its own nature is not-being; and that the matter is nearly, in a sense is, substance, while the privation in no sense is. They, on the other hand, identify their Great and Small alike with not being, and that whether they are taken together as one or separately. Their triad is therefore of quite a different kind from ours. For they got so far as to see that there must be some underlying nature, but they make it one-for even if one philosopher makes a dyad of it, which he calls Great and Small, the effect is the same, for he overlooked the other nature. For the one which persists is a joint cause, with the form, of what comes to be—a mother, as it were. But the negative part of the contrariety may often seem, if you concentrate your attention on it as an evil agent, not to exist at all (ἡμεῖς μὲν γὰρ ἄλλον καὶ στέρησιν ἐπερῶν φαμέν εἶναι, καὶ τούτων τὸ μὲν ὕποκ ὄν εἶναι κατὰ συμβεβηκός, τὴν ἄλλον, τὴν δὲ στέρησιν καθ’ αὐτήν, καὶ τὴν μὲν ἐγγὺς καὶ σωσίαν πως, τὴν ἄλλον, τὴν δὲ σωσίαν οἴ δὲ τὸ μὴ ὄν τὸ μέγα καὶ τὸ μικρὸν ὤμοίως, ἢ τὸ συναμφότερον ἢ τὸ χωρίς ἐκάτερον. ὡστε παντελῶς ἐπερῶς ὁ τρόπος ὄντος τῆς τριάδος κάκεινος. μέχρι μὲν γὰρ δεύορο προήλθον, ὅτι δεῖ τινὰ ὑποκείσθαι φύσιν, ταύτην μέντοι μίαν ποιωύσιν καὶ γὰρ εἶ τις διώδα ποιεῖ, λέγων μέγα καὶ μικρὸν αὐτήν, οὐθὲν ἤτον ταύτῳ ποιεῖ τὴν γὰρ ἐπέραν παρείδειν. ἢ μὲν γὰρ ὑπομένουσα συναιτία τῇ μορφῇ τῶν γιγνομένων ἐστίν, ὡσπερ μήτηρ ὁ ἐκέρα μοῖρα τῆς ἐναντίωσεως πολλάκις ἂν φαντασθῇ τῷ πρὸς τὸ κακοποίον αὐτῆς ἀπενιζοῦντι τὴν διάνοιαν οὐδὲ εἶναι τὸ παράπαν) (192a4-15).

Being and becoming are logically straightforward terms, but they are easily equivocated and/or oversimplified when not discussed in terms of what is possible and/or not possible for actual natural beings. In natural beings there are two senses of not-being, which necessarily exist as part of the being of natural beings. On the one hand, the underlying nature, or matter, of natural substantial beings, i.e. of the subject undergoing change, is always “not-being” in the sense that it is always “not-x,y,z” where x,y,z represent various qualitative predicates that it is only in potentiality but not in actuality. The man is not musical, but in not being musical, he is potentially musical. In this sense, not being is not
actual non-existence in a substantial sense. Rather, not-being in this sense signifies a potentiality for that which is not-yet. The other sense of not-being is in the privation itself, which is half of the contrary and one of the principles or archai of the nature of natural beings. The privative form has no substantial existence. It is only when the privative form is understood in conjunction with the underlying subject, i.e. with the matter, that it becomes for the matter not-being with the potential for being.

Aristotle further discusses the relationship between matter and privative form (192a25-33). Namely, he explains that the privative form is contained in the matter, and, as such, it both (1) comes to be and ceases not to be, i.e. in the sense that the privative form, when in the matter, is a potentiality for the positive form and this potentiality allows for the matter to constantly become what it is not-yet, and (2) it does not come to be and cease to be, i.e. substantially it remains what it is. Regarding the sense in which it does not come to be and cease to be, Aristotle explains that if it did substantially come to be and cease to be it would require a primary substratum, an underlying thing, itself. Since he defines matter as “the primary substratum of each thing, from which it comes to be without qualification, and which persists in the result” (λέγω γὰρ ὅλην τὸ πρῶτον ὑποκείμενον ἐκάστῳ, ἐξ οὗ γίγνεται τι ἐνυπάρχοντος μὴ κατὰ συμβεβηκός) εἶτε φθείρεται, εἰς τοῦτο ἄφιξεται ἔσχατον, ὡστε ἐφθαρμένη ἔστω πρὶν φθαρῆναι (192a33-34), it would not be possible that matter required a matter since the character of matter to provide this substratum is precisely what makes it special. Aristotle concludes this discussion asserting that an investigation into the first principle of form is outside of the scope of a science of nature (περὶ δὲ τῆς κατὰ τὸ ἐνδος ἀρχῆς, πότερον μία ἢ πολλαὶ καὶ τίς ἢ τίνες εἰσίν, δι’ ἀκριβείας τῆς πρώτης φιλοσοφίας ἔργων ἐστιν διορίσαι, ὡστ’ εἰς
We might assume that this is precisely because the scientist has no empirical access to this subject, and natural science, as Aristotle has ably demonstrated to us, requires not just explanation, but demonstration.

He then reaffirms the scope of his inquiry: the natural, i.e. perishable, forms (περὶ δὲ τῶν φυσικῶν καὶ φθαρτῶν εἴδῶν) (192b1). Put another way, Aristotle’s subject here is natural beings in so far as they undergo accidental change.

In sum, Aristotle has set up three absolutely crucial points in Physics i: (1) becoming is a general term that we need to differentiate. Aristotle will do this primarily in Physics iii 1 and in iv; (2) being is a general term that needs to be understood in terms of substantial and accidental form, or in terms of potentiality and actuality; (3) in order to understand these important distinctions in natural beings, we have to heed the external stimuli that puts our perceptual faculties into motion. Otherwise, we could find ourselves making perfectly valid or sound arguments in the order of explanation that immediately do not follow when tested in the order of sense. Likewise, we need the order of explanation to flesh out our immediate and confused perceptions, lest we be unable to distinguish specific instantiations of a kind.

The final line of Physics i leads Aristotle’s reader nearly to a re-beginning of the work. When Aristotle has finished his treatment of the archai, he announces that it is time for a “fresh start” (διωρίσθω ἡμῖν οὕτως πάλιν δ’ ἄλλην ἄρχῃν ἀρξάμενοι λέγομεν) (192b4). He begins Physics ii with one of the most important definitions in the entire work. Aristotle defines nature, and he establishes for his reader what exactly sets apart a natural object—the subject of investigation—from a non-natural object. The difference between natural objects and non-natural objects is a difference in cause: natural objects
come into being by way of “natural” causes, and non-natural objects come into being by way of other causes (Τὸν ὄντων τὰ μὲν ἐστὶ φύσει, τὰ δὲ δὴ ἄλλας αἰτίας) (192b9).

Natural objects have an inner principle of motion and rest with regard to the possibilities for accidental change: (1) with respect to place, (2) with respect to quality, (3) with respect to quantity (τούτων μὲν γὰρ ἐκαστὸν ἐν ἑαυτῷ ἁρχὴν ἔχει κινῆσεως καὶ στάσεως, τὰ μὲν κατὰ τόπον, τὰ δὲ κατ’ αὔξησιν καὶ φθίσιν) (192b13-22). Nature is something that inheres in something, and by this Aristotle means this principle of motion and rest, i.e. of contraries and the substance to which these contraries are predicated. Nature, then, is the capability for self-locomotion, alteration, and increase/decrease, but this is only so because the being with these capabilities is a natural substantial being, a subject. Nature is two-fold. And, to investigate it, the physicist must attend both to the underlying subject and also to the way it changes (κινέσις).

III. The role of Kinésis in Nature

In Physics iii, Aristotle’s reader begins to reap the benefit of understanding Aristotle’s emphasis on scope, access, and method as well as the potentiality/actuality distinction in the very being of natural beings in Physics i and how that led him to his definition of nature as an inner principle of motion and rest in Physics ii. The subject of motion, (κινήσις, kinésis), in Physics iii clearly comes directly and inextricably out of Aristotle’s previous discussions. Aristotle writes: “Nature is a principle of motion and change, and it is the subject of our inquiry. We must therefore see that we understand what motion is; for if it were unknown, nature too would be unknown” (἖πει δ’ ἡ φύσις μὲν ἐστὶν ἁρχὴ κινῆσεως καὶ μεταβολῆς, ἡ δὲ μέθοδος ἡμῖν περὶ φύσεως ἐστι, δεῖ μὴ...
If the scientist aims to know better the subject of her inquiry, i.e. the nature of natural beings, and if the nature of natural beings is an inner principle of motion and rest, then she ought to investigate what motion or accidental change (kinēsis) is and just how it happens.

In addition to a discussion of kinēsis, Aristotle likewise intends to study those things that may be related to or conditions of kinēsis. Aristotle explains, “When we have determined the nature of motion, our next task will be to attack in the same way the terms which are involved in it” (διορισμένας δὲ περὶ κινήσεως πειρατέον τὸν αὐτὸν ἐπελθείν τρόπον περὶ τῶν ἔφεξῆς) (200b15). These terms involved with motion are thus involved with natural beings insofar as it is the nature of natural beings to move. He will deal with the infinite (ἄπειρον) because “motion is supposed to belong to the class of things which are continuous (δοκεῖ δ’ ἢ κίνησις εἶναι τῶν συνεχῶν); and the infinite presents itself first in the continuous—that is how it comes about that ‘infinite’ is often used in definitions of the continuous; for what is infinitely divisible is continuous.” After the infinite, Aristotle will deal with three additional terms, place, void, and time (ηόπνθαὶ θελνῦ θαὶ ρξόλνπ) because they “are thought to be necessary conditions of motion” (ἀνεῳ...κίνησιν ἀδόνατον εἶναι) (200b16-21). It may be the case that Aristotle’s claims about the relationship between motion and the infinite, place, void, and time, and thus his claim that he should treat these topics in his physics, are presuppositions from the

33 The sense of this passage is that Aristotle will attempt to deal with the things that come after kinēsis insofar as they become topics for physics because kinēsis is a topic for physics. “Terms,” as the ROT calls these things, is not a perfect way of talking about them. Nevertheless, for lack of a better name, I will refer to them as terms.

34 A more literal translation here would be simply that without place, void, and time, motion is impossible (ἀδόνατον).
endoxa. Ross (Ross 1936, 534) explains, for example, that, “It is not Aristotle’s own opinion that motion implies a void; he does not believe in the existence of a void…the implication of a void is one of the endoxa, since it was insisted on by the atomists.”

Judging by the language alone, this conclusion is not clear. Aristotle uses the term, “δοκεῖ” to suggest a relationship between kinêsis and things that are continuous, but this could simply mean “it seems” based on first perceptions and is not necessarily a reference to what others believed. But, when we consider both (1) the likelihood that Aristotle’s approach to investigating kinêsis will be parallel in method to his investigation of the archai, which did begin with an examination of the endoxa, and (2) some of Aristotle’s predecessors did indeed espouse the relationship among motion and continuity, and motion, the infinite, place, void, and time, we might conclude that the impetus for Aristotle to treat the topics of the infinite, place, void, and time is indeed to contend with the endoxa. Accordingly, he will proceed to temper their explanations with demonstrations in order to come up with what appear to be the true conclusions.

Before moving on to speak first about kinêsis, Aristotle explains that the infinite, void, place, and time are all common to the present inquiry and asserts that they will each be dealt with in turn (δῆλον οὖν ὡς διὰ τε ταῦτα, καὶ διὰ τὸ πάντων εἶναι κοινὰ καὶ καθόλου ταῦτα, σκεπτέον προχειρισμόνως περὶ ἐκάστου τούτων) (200b21-24). Hussey (1983, 56) thinks that Aristotle intends to include kinêsis here as those things common to the study of nature. For Hussey, Aristotle needed to justify the inclusion of these topics in his general work on nature. But, given that Aristotle has just asserted the certain relationship between nature and motion at 200b12-14, there seems no need to justify a discussion of kinêsis, in particular. We have just supposed the other topics to be a carry
over from the endoxa; Aristotle will later show us which of these are indeed appropriate for inclusion in his physics.

Aristotle introduces his discussion of *kinēsis* with a characterization of three different ways things exist: “(1) what exists in a state of fulfilment only (ἐστι δῆ [τ]ι τὸ μὲν ἐντελεχείᾳ μόνον), (2) what exists as potential, (3) what exists as potential and also in (τὸ δὲ δυνάμει καὶ ἐντελεχείᾳ), one being a ‘this’, another ‘so much’, a third ‘such’, and similarly in each of the other modes of the predication of being” (τὸ μὲν τόδε τι, τὸ δὲ τοσόνδε, τὸ δὲ τοιόνδε, καὶ τῶν ἄλλων τῶν τοῦ ὄντος κατηγοριῶν ὁμοίως) (200b25-28). We see at the start, then, how Aristotle’s emphasis on the interplay between potentiality and actuality in the being and becoming of natural objects is going to have immediate application in his inquiry into the nature of *kinēsis*. Notice, though, that the second category above, “(2) what exists as potential” does not exist in the Greek.\(^35\) Ross (1936, 534-535) explains “the absence of the first τὸ δὲ δυνάμει as due to haplography”; the scribe simply forgot to write the phrase again. If we can explain the exclusion of the phrase, and if Aristotle really did intend to distinguish a category of things that are just in potential, Ross notes that this is a departure from his general doctrine. This is to say, that what we see here is Aristotle deliberately adapting his general doctrine of potentiality, i.e. that the nature of potentiality is to be fulfilled, to his physics. Ross suggests that Aristotle does this in preparation to explain the infinite and the void. I will later argue that Aristotle’s allowance here will help to explain his theory of time as well. Since Aristotle will shortly present us with his definition of *kinēsis*, Ross (Ross 1936, 535) believes it relevant that Aristotle here opposes the unchangeable and the changeable: “τὸ μὲν

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\(^35\) According to the apparatus, τὸ δὲ δυνάμει does appear in the commentary tradition.
ἐντελεχεία μόνον is that which is always actually what it ever is, in respect of substance, size, quality, and the other categories (b27-28); τὸ δὲ δυνάμει καὶ ἐντελεχεία is that which passes from a state of potentiality to one of actuality in any of these respects.” The difference between the two, then, is that the changeable is in part potentiality. Recall that Aristotle previously emphasized the aspect of non-being in matter, insofar as matter has the potential to change in any number of ways.

The differentiation Aristotle makes between the unchangeable and the changeable then brings him to discuss the nature of *kinēsis*. *Kinēsis* is not a substantial being itself with principles, elements, and causes to demarcate. Instead, he explains, “there is no such thing as motion over and above the things. It is always with respect to substance or to quantity or to quality or to place that what changes changes” (οὐκ ἐστὶ δὲ κίνησις παρὰ τὰ πράγματα μεταβάλλει γὰρ ἀεὶ τὸ μεταβάλλον ἢ κατ᾽ οὐσίαν ἢ κατὰ ποσὸν ἢ κατὰ ποιὸν ἢ κατὰ τόπον) (200b32). *Kinēsis* is nothing over and above the natural beings; it describes the principle way of being for natural beings—as both *dunamis* and *entelecheia*. Motion is that which nature does, by its very definition. And, it is our observation of motion that alerts us to the nature of natural beings. The wording Aristotle holds onto in *Physics* i, of a more general notion of becoming (*gignomenon*), exists over and above nature, but *kinēsis* in this context does not. When Aristotle famously defines motion in *Physics* iii first as “The fulfilment of what exists potentially, in so far as it exists potentially, is motion” (ἡ τοῦ δυνάμει ὄντος ἐντελέχεια, ἢ τοιοῦτον, κίνησις ἐστίν) (201a10-11), then as “It is the fulfilment of what is potential when it is already fully real and operates not as itself but as movable, that is motion” (ἡ δὲ τοῦ δυνάμει ὄντος <ἐντελέχεια>, ὅταν ἐντελεχεία ὑπὸ ἐνεργῆ ὁὐχ ἢ αὐτὸ ἄλλ’ ἢ κινητόν, κίνησις ἐστίν)
(201a27-29), and finally as, “the fulfilment of the movable qua movable” (ἡ κίνησις ἑντελέχεια τοῦ κινητοῦ, ἤ κινητόν) (202a7-8), he is not describing an abstract concept only tangentially related to nature.

How to understand Aristotle’s use of the term entelecheia in the definition of kinêsis is debated in the literature, i.e. what Aristotle meant to convey in defining motion (in part) as dunamis ontos entelecheia. Deciding what entelecheia means here is crucial to recognizing the emphasis Aristotle is placing on potentiality in his definition of kinêsis. Entelecheia was traditionally translated, “actualization” (see for example Ross 1936, 537). This translation renders the first definition of kinêsis: “The actualization of what exists potentially, in so far as it exists potentially.” For Kosman (Kosman 1969, 40), “‘Actualization’ is an inelegant and in many ways misleading rendering of entelecheia” and understanding entelecheia in this way leads to, “two independent and unhappy accounts of Aristotle’s definition of motion. On one account, Aristotle is under-stood to be defining motion as the actualization (process) of a poten-tiality into an actuality; on the other, he is understood to be defining motion as the actuality (product) of a potentiality to be in motion” (Kosman 1969, 45). According to Kosman (Kosman 1969, 46), the way out of the traditional and problematic reading of entelecheia in Aristotle’s definition of motion is to, “construct an account more svelte which (1) recognizes that Aristotle’s definition talks about the actuality of a potentiality, (2) recognizes that potentiality as a potentiality to be, e.g. the potentiality of bricks and stones to be a house, but (3) yields motion and not its result, i.e., the act of building and not the house which is its product.” Sachs (Sachs 2010, 8), who agrees with Kosman, also illustrates the importance of highlighting the potential aspect of kinêsis: “The growth of the puppy is
not the actualization of its potentiality to be a dog, but the actuality of that potentiality as a potentiality.” The emphasis here is on potentiality as a kind of being, an actual state of being. Kosman (Kosman 1969, 56) wants us to understand Aristotle’s definition of motion therefore as: “the functioning, the full manifesting of a potentiality qua potentiality, or more precisely, the functioning of a being which is potential as that potential being.” Aristotle’s definition of kinêsis calls attention to the realness of potentiality—when something is in motion, it is actually a potentiality and not only a process of becoming something else.36

In his discussion of the definition of kinêsis (201a10-202b29) Aristotle elaborates on the relationship between potentiality/actuality in natural beings, emphasizing the character of potentiality in the ways these beings exist, and explains the relationship between the mover and the moveable in kinêsis. He demonstrates these concepts with three paradigmatic examples, (1) the subject of sickness and health, (2) the house being built, and (3) the simultaneity of teaching and learning. He begins then with the potentiality/actuality relationship: “the same thing can be both potential and fulfilled, not indeed at the same time or not in the same respect, but e.g. potentially hot and actually cold” (ἐπεὶ δ’ ἔληα ηαὐηὰ θαὶ δπλάκεη θαὶ ἐληειερείᾳ ἐζηίλ, νὐρ ἅκα δὲ ἢ νὐ θαηὰ ηὸ αὐηό, ἀιι’ νἷνλ ζεξκὸλ κὲλ ἐληειερείᾳ ςπρξὸλ δὲ δπλάκεη) (201a20-21). Highlighting the aspect of potentiality, so crucial to kinêsis, Aristotle solves the Pre-Socratic problem of non-contradiction. The fire can be hot and cold at the same time, for example, if we understand it to be potentially one and actually the other. Aristotle is harking back to his argument in Physics i 5 where he defended the Pre-Socratic claim that principles are

36 Broadie (1982), Hussey (1993), and Coope (2008) all defend this view as well.
contraries. Here, he advances this defense, but he now shows explicitly (previously, he referenced *Meta. theta*) that contraries can exist simultaneously, given that they are understood to exist in two different potencies. When the fire is actually hot, it is potentially cold. But, the implication here is that it is not at rest being hot; rather, it is in motion on its way to being cold. It is actually hot, but it is also actually potentially cold.

It is this reasoning that allows Aristotle to connect his arguments about *kinēsis* to his argument from *Physics* i 7 about the fundamental principles of nature. If the archai of natural objects are three, and if nature is an inner principle of motion and rest, then he needs to show that the principles somehow require *kinēsis*. After all, *kinēsis* is so integrally important to nature that it is only by way of *kinēsis* that one knows the nature of natural beings and yet only by way of things that *kinēsis* exists. When he is explaining the definition of *kinēsis*, then, it is no surprise that Aristotle shows contraries to exemplify perfectly the way *kinēsis* works with the principle of non-contradiction. He demonstrates this point with the first of three paradigmatic examples in this section:

> To be capable of health and to be capable of illness are not the same; for if they were there would be no difference between being ill and being well. Yet the subject both of health and of sickness—whether it is humour or blood—is one and the same (δῆλον δ’ ἐπὶ τῶν ἐναντίων τὸ μὲν γὰρ δύνασθαι ὑγιάνειν καὶ δύνασθαι κάμνειν ἔτερον-καὶ γὰρ ἂν τὸ κάμνειν καὶ τὸ ὑγιάνειν ταύτὸν ἦν—τὸ δὲ ὑποκείμενον καὶ τὸ ὑγιάνον καὶ τὸ νοσοῦν, εἰθ’ ὑγρότης εἰθ’ αἷμα, ταύτὸν καὶ ἑν) (201a33-201b2).

Again, we see the three principles, which were argued for in *Physics* i: two contraries and the underlying subject. Whatever is said to be healthy or ill stays the same, but the qualities of actual health and potential illness are two, i.e. they are not the same. To be actually one and potentially the same are two separate qualities. If they were two parts of
the same quality, then Aristotle could have been content calling the contrary principles, “one” instead of “two.”

The potentiality exists as an actuality itself, not as an actualization. Aristotle demonstrates this in terms of his famous house-building example (201b6-15):

For each thing of this kind is capable of being at one time actual, at another not. Take for instance the buildable as buildable. The actuality of the buildable as buildable is the process of building. For the actuality of the buildable must be either this or the house. But when there is a house, the buildable is no longer buildable. On the other hand, it is the buildable which is being built. The process then of being built must be the kind of actuality required. But building is a kind of motion, and the same account will apply to the other kinds also (γὰρ ἐκαστὸν ὁτὲ μὲν ἐνεργεῖν ὁτὲ δὲ μὴ, οἷον τὸ οἰκοδομητὸν, καὶ ἡ τοῦ οἰκοδομητοῦ ἐνέργεια, ἡ οἰκοδομητῶν, οἰκοδόμησις ἐστὶν (ἡ γὰρ οἰκοδόμησις ἡ ἐνέργεια τοῦ οἰκοδομητοῦ ἡ ὁ οἰκία ἀλλ’ ὅταν οἰκία ἡ, οἰκέτ’ οἰκοδομητὸν ἐστὶν οἰκοδομεῖται δὲ τὸ οἰκοδομητὸν ἀνάχθη οἷον οἰκοδόμησιν τὴν ἐνέργειαν εἶναι) ἡ δ’ οἰκοδόμησις κινήσις τις. ἀλλὰ μὴν ὁ αὐτὸς ἐφαρμόσει λόγος καὶ ἑπὶ τῶν ἄλλων κινήσεων).

The actuality of the process of building exists simultaneously with, yet is different from, the potentiality for the materials to become a house. In the process of building, the house does not fully exist in actuality; it is as yet incomplete. The house exists in potentiality even in the building materials, and the process of building with these materials is the actuality of this potentiality.

In the background here is another distinction between the relations that make motion possible, namely the relationship between the mover and the moveable. Without both, there can be no kinēsis. We know that natural objects are capable of kinēsis, for motion means nothing over and above these objects. For this reason, Aristotle writes that “motion is in the moveable. It is the fulfillment of this potentiality by the action of that which has the power of causing motion” (202a12-15). The potentiality for kinēsis, is always already in that which can be moved. When there is motion, there is an actuality
of this potentiality, which aligns with the actuality of that which moves the moveable.

The actuality of the potentiality for what can be moved and the actuality of that which moves are thus simultaneous but in the sense that they are two sides of one coin, i.e. they are both directed toward one end. Aristotle indicates this unusual relationship between mover and moved when he writes (202a15-20):

\[ \ldots \text{and the actuality of that which has the power of causing motion is not other than the actuality of the mover (καὶ ἢ τοῦ κινητικοῦ δὲ ἐνέργεια οὐκ ἃλλη ἐστὶν); for it must be the fulfillment of both (ἐντελέχειαν ἄμφοῖν)... Hence there is a single actuality of both alike, just as one to two and two to one are the same interval, and the steep ascent and the steep descent are one—for these are one and the same, although their definitions are not one (ἀλλ’ ἐστιν ἐνέργητικον τοῦ κινητοῦ, ὡστε ὁμοίως μία ἢ ἄμφοῖν ἐνέργεια ὥσπερ τὸ αὐτὸ διάστημα ἐν πρὸς δύο καὶ δύο πρὸς ἕν, καὶ τὸ ἄναντες καὶ τὸ κάταντες ταῦτα γὰρ ἐν μὲν ἐστιν, ὁ μέντοι λόγος οὐχ εἰς ὁμοίως).} \]

Again, Aristotle puts himself in a situation where he seems to be advocating a logical impossibility, contrary to what the endoxa would have argued. He goes on to explain, however, that while there is a sense in which the action of the mover (agent) and the moveable (patient) are one and the same, they are fundamentally different. The difference lies in the source, i.e. the potentiality and actuality for moving something lies in the agent, and the potentiality and actuality of movement lies in the patient. And the source relates directly to the sense in which Aristotle means actuality here. Namely, actuality of two things can be the same in any given instant, if actuality is meant in two different senses. This is the same argument we saw Aristotle advancing in *Physics* i 7 with regard to contraries. He is playing with the principle of non-contradiction in that he is showing that there is a fundamental difference in being between potential and actuality.

Aristotle appeals to the example of teaching and learning (202b3-10). Teaching requires a relationship between someone teaching and someone being taught. The
teacher has a potentiality to teach and the learner has the potentiality to be taught. In this scenario, the teacher is the agent, and the learner is the patient. When the teacher actually teaches the student, the effect is that the student actually learns something. To say that teaching and learning is the same does not mean that to learn and to teach are the same thing; rather, the teaching and the learning are occurring simultaneously. The learning is happening because the teaching is happening, but the teaching could not be happening if the potential for learning were not already in the learner, nor if the learner were absent. Learning happens in so far as the agent/patient relation between teacher and student exists in actuality.

Aristotle rounds out his discussion of kinēsis with a sample definition of qualitative motion: “alteration is the fulfillment (entelecheia) of the alterable as alterable (or, more scientifically, the fulfillment of what can act and what can be acted on, as such)” (202b24-26). He then concludes that all kinds (e.g. quantitative, locomotive) of motion will be defined in a similar fashion.

IV. From Kinēsis to Chronos

In Physics iii 4 Aristotle turns to the first common term thought to be associated with kinēsis, the infinite (ἀπειρον, apeiron). He will then go on to discuss place, void, and time. As he transitions from his discussion of kinēsis to his investigation of these topics, he echoes his statements at 200b21-24 that these subjects are of concern to the science of nature. He confirms that his support for this comes from the tradition; all previous natural philosophers had considered the infinite to be not only a topic of their study, but also a principle of beings (σημεῖον δ’ ὅτι ταύτης τῆς ἐπιστήμης οίκεία ἢ
It is crucial to understand Aristotle’s study of the infinite, as it will be with all subsequent topics thought to be related to motion, within the context of his previous arguments. Aristotle has essentially argued that natural science must take account of the principle role potentiality plays in the being of natural self-subsistent beings. Whereas, this fact may have eluded an a priori philosopher of nature, Aristotle has used examples from empirical experience to show that potentiality, while not always actualized, is actual (entelecheia) in nature. If we do not understand the interplay between potentiality and actuality, we are at a loss for understanding the archai of nature, the distinction between Aristotle’s three types of beings—actuality only, potentiality only, and that which is both potentiality and actuality (cf. 200b25-28), the definition of kinêsis, and so too, the important distinction between moveable and moved. If we miss the relative novelty of what he has been arguing regarding potentiality and actuality, especially that he sets himself apart from the endoxa in the emphasis he places on potentiality—both that there are beings that are just potentiality and that the potentiality inherent in the matter of natural beings allows them to be what they are, i.e. to change, then we fall into the trap of the Pre-Socratic physicists who saw only contradiction in the face of topics where something could exist alongside its contrary. What Aristotle is going to show here is that these terms thought to be associated with, and perhaps conditions (cf. 200b20) of kinêsis, thought to be so crucial in the study of nature, exist largely, if not always as is the case with infinity and void, as potentiality. He is going to steer us away from thinking of the
infinite, place, void, and time as being in some sense self-subsistent natural beings
(oûsiaν auτo ov) themselves.

Aristotle will treat the infinite first precisely because it was previously thought to
be an archē of beings, and if motion, place, void, and time are all beings, then we might
believe them to be infinite beings. Aristotle will oppose the view that the infinite is an
archē of beings and argue that the infinite is in fact nothing “real” at all. Likely due to its
relative importance for understanding the other terms thought to be associated with
kinēsis, Aristotle’s treatise on the infinite is the longest when compared with his treatises
on place, void, and time.

His treatment of the infinite begins with a line of questioning that we will find
standard in his entire treatment of the terms of kinēsis: whether or not there is such a
thing as the infinite (202b35-36). 37 This question of course recalls the doctrine of the
endoxa, which has taught that motion, infinity, void, place, and time are all real, i.e.
actual self-subsistent natural beings qua themselves. Aristotle asks whether there is such
a being, for each in turn, as a rhetorical question because he will show that there is not
such a being in the sense that the endoxa has agreed that there is. He will follow up that
question inquiring into the manner of its existence and what it is.38

37 I think Heinemann (Heinemann 2012, 5) rightly suggests that Aristotle’s approach here
follows Posterior Analytics ii 1, 89b24-5: “We seek four things: the fact, the reason why,
if it is, what it is” (ζητοῦμεν δὲ τέταρτα, τὸ ὄτι, τὸ διότι, εἰ ἔστι, τί ἐστιν.). Heinemann
writes, “Aristotle’s point in asking the question as to “if it is” is just to secure some
subject matter of inquiry to exist.”

38 At the start of his discussion of kinēsis, we do not find this question. The question as
to whether motion exists was not asked, since it had been previously established that the
principle of nature was an inner principle of motion and rest (192b13-22). “Nature is a
principle of motion and change, and it is the subject of our inquiry. We must therefore
see that we understand what motion is; for if it were unknown, nature too would be
unknown” (Ἐπεὶ δ’ ἡ φύσις μὲν ἔστιν ἄρχη κινήσεως καὶ μετὰ βολῆς, ἡ δὲ μέθοδος ἠμῖν
Aristotle’s treatise on the infinite, not unlike his previous arguments for (1) the archai of the nature of natural beings and (2) the definition of kinēsis, begins with the endoxa, will first consider the explanation of the endoxa and then add demonstration to arrive at true conclusions about the science of nature.

The Pythagoreans and Plato both held the infinite to be a “self-subsistent substance” (οὐσίαν αὑτὸ ὄν) instead of an attribute of something else (συμβεβηκός τιν) (203a4-5). The Pythagoreans believed that the infinite could be found in natural objects accessible to the scientist’s investigation; the Platonists agreed with this general idea and for the latter it could be found both in these objects as well as in the Forms. For the Pre-Socratic physicists, the infinite is likened to the divine, reported by Aristotle to have been thought of as ‘immortal and imperishable’ (ἀθάνατον καὶ ἀνώλεθρον) (203b13-14).

Aristotle dismisses these ideas and cites five plausible arguments for the existence of the infinite: (1) from time; (2) from the division of magnitudes; (3) as the source of all generation and corruption; (4) against ultimate limits, since limits are always relative; (5) with regard to number, mathematical magnitudes, and that which is outside the heavens—infinite body (203b15-25). He goes on to show problems present themselves whether one is arguing for or against the existence of the infinite. First of all, there are different senses in which the infinite might be said to exist, e.g. as a substance, as an accident, or as something else altogether. He will begin by arguing against that the infinite can exist as substance separate from natural objects. The argument, which I have set out in standard form below, goes as follows (204a8-29):

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περὶ φύσεως ἔστι, δει μή λανθάνειν τί ἐστι κίνησις ἀναγκαῖον γὰρ ἁγνουσιμένης αὑτῆς ἀγνοεῖσθαι καὶ τὴν φύσιν) (200b12-14). Thus, it was clear that motion exists. Aristotle needed then to establish in what way it existed.
Now it is impossible that the infinite should be a thing which is itself infinite, separable from sensible objects. If the infinite is neither a magnitude nor an aggregate, but is itself a substance and not an attribute, it will be indivisible; for the divisible must be either a magnitude or an aggregate. But if indivisible, then not infinite, except in the sense (1) in which the voice is ‘invisible’. But this is not the sense in which it is used by those who say that the infinite exists, nor that in which we are investigating it, namely as (2) ‘that which cannot be gone through’. But if the infinite exists as an attribute, it would not be, qua infinite an element in substances, any more than the invisible would be an element of speech, though the voice is invisible. Further, how can the infinite be itself any thing, unless both number and magnitude, of which it is an essential attribute, exist in that way? If they are not substances, a fortiori the infinite is not. It is plain, too, that the infinite cannot be an actual thing and a substance and principle. For any part of it that is taken will be infinite, if it has parts: for ‘to be infinite’ and ‘the infinite’ are the same, if it is a substance and not predicated of a subject. Hence it will be either indivisible or divisible into infinites. But the same thing cannot be many infinites. (Yet just as part of air is air, so a part of the infinite would be infinite, if it is supposed to be a substance and principle.) Therefore the infinite must be without parts and indivisible. But this cannot be true of what is infinite in full completion: for it must be a definite quantity. (Χωριστὸν μὲν οὖν εἶναι τὸ ἀπειρὸν τὸν αἰσθήτων, αὐτὸ τι ὅν ἀπειροῦ, οὐχ οὖν τε. εἰ γὰρ μῆτε μέγεθος ἔστιν μῆτε πλῆθος, ἀλλ’ οὐσία, αὐτὸ ἐστὶ τὸ ἀπειρὸν καὶ μὴ συμβεβηκός, ἀδιαίρετον ἔσται (τὸ γὰρ διαιρεῖται ἡ μέγεθος ἔσται ἡ πλῆθος) εἰ δὲ τοὐστὸν, οὐκ ἀπειροῦ, εἰ μὴ ὡς ἡ φωνὴ ἀόρατος, ἀλλ’ οὐσία, οὕτως οὕτε φασίν εἶναι οἱ φάσκωντες εἶναι τὸ ἀπειρὸν οὕτε ἡμεῖς ζητοῦμεν, ἀλλ’ ἡ ἀδιαίρετον, εἰ δὲ κατὰ συμβεβηκός ἔστιν τὸ ἀπειρὸν, οὐκ ἢν ἐπὶ στοιχεῖον τῶν ὄντων, ἢ ἀπειροῦ, ὡσπερ οὐδὲ τὸ ἀόρατον τῆς διαλεκτοῦ, καὶ τοῦ ἡ φωνὴ ἐστὶν ἀόρατος. ἔτι πῶς ἐνδεχέται εἶναι τι αὐτὸ ἀπειροῦ, εἴπερ μὴ καὶ ἀρίθμον καὶ μέγεθος, ὅν ἔστι καθ’ αὐτὸ πάθος τι τὸ ἀπειροῦ; ἔτι γὰρ ἤπειρον ἀνάγκη ἡ τὸν ἀρίθμον ἢ τὸ μέγεθος. φανερὸν δὲ καὶ ὅτι οὐκ ἐνδεχέται εἶναι τὸ ἀπειρὸν ὡς ἐνεργείᾳ οὐν καὶ ὡς οὐσίαν καὶ ἄρχῃ ἐσται γὰρ ὅτι οὐν αὐτὸ ἀπειροῦ τὸ λαμβανόμενον, εἰ μεριστὸν (τὸ γὰρ ἀπειροῦ εἶναι καὶ ἀπειροῦ τὸ αὐτὸ, εἰπερ οὐσία τὸ ἀπειροῦ καὶ μὴ καθ’ ὑποκειμένου), ὥστ’ ἡ ἀδιαίρετον ἢ εἰς ἀπειρὰ διαιρεῖτον πολλά δ’ ἀπειρὰ εἶναι τὸ αὐτὸ ἀδύνατον (ἄλλα μὴς ὅσπερ ἀέρος ἢ μέρος, οὕτω καὶ ἀπειροῦ ἀπειροῦ, εἰ γάρ οὐσία ἔστι καὶ ἄρχῃ) ἀμέριστον ἀρα καὶ ἀδιαίρετον. ἀλλ’ ἀδύνατον τὸ ἐντελεχεία ὅν ἀπειροῦ ποσὸν γὰρ τι εἶναι ἀναγκαῖον.

P1: Whatever is divisible is a magnitude (μέγεθος) or multitude (πλῆθος).
P2: If the infinite is neither a magnitude nor a multitude, but substance (οὐσία) and not accident (συμβεβηκός), it will be indivisible (ἀδιαίρετον).
P3: If something is indivisible it is not infinite. Therefore, the infinite cannot exist qua substance.

P1: The infinite is a property in itself of number (ἀριθμὸς) and magnitude (μέγεθος).
P2: There is no number qua itself, nor magnitude qua itself.
P3: There is even less necessity for the infinite to exist qua infinite as for number or magnitude to exist qua themselves. Therefore, the infinite cannot exist qua itself, i.e. as substance.

P1: If the infinite is substance and not predicated of a subject, to be infinite and the infinite are the same. Therefore, the parts of what is infinite are also infinite.

P1: The parts of what is infinite are also infinite
P2: The same thing cannot be many infinites.
P3: The infinite must be a definite quantity.
Therefore, the infinite will be without parts and indivisible, so it cannot be an actual thing, substance, or principle.

Since Aristotle concludes that the infinite cannot be an actual thing, substance, or principle, he next considers that the infinite could exist accidentally, as a predicable being. Aristotle quickly shows that this is impossible, as that which is accidental cannot be an archē (ἀλλ’ εἰ οὕτως, εἴρηται ὅτι οὐκ ἐνδέχεται αὐτὸ λέγειν ἀρχήν, ἀλλ’ ὁ συμβέβηκε, τὸν ἀέρα ἢ τὸ ἀρτιον) (204a30-31). A principle, as he argued earlier (203b4-5), is a source and cannot be traced back further to a more primordial source. Thus, Aristotle successfully contends with the endoxa—in this case the Pythagoreans whose characterization of the infinite Aristotle shows to be self-contradictory: “With the same breath they treat the infinite as substance, and divide it into parts” (ἀμα γὰρ οὕσιαν ποιοῦσι τὸ ἀπειρον καὶ μερίζουσι).

Finally, Aristotle wonders whether the infinite could exist in an alternative way, e.g. “present in mathematical objects and things which are intelligible and do not have extension” (εἰ ἐνδέχεται ἀπειρον καὶ ἐν τοῖς μαθηματικοῖς εἶναι καὶ ἐν τοῖς νοητοῖς καὶ μηδὲν ἔχουσι μέγεθος) (204a35-204b1). There is suddenly a bit of confusion, however, as Aristotle wants to stick to the aim of his treatise and subject of his inquiry, i.e. to natural objects. Again, he works to show that there are no natural objects known by
sense that can increase infinitely. A body cannot be infinite, if we define body as
“bounded by a surface” (204b5-6) and infinite as “boundlessly extended” (204b20), nor
can number since for Aristotle and the Greeks (see Klein 1969), number is not a symbolic
expression, but that which is numerable.\(^{39}\) A second argument goes as follows, with the
standard form set out below (204b11-24):

The infinite body must be either (1) compound, or (2) simple; yet neither
alternative is possible. (1) Compound the infinite body will not be, if the
elements are finite in number. For they must be more than one, and the contraries
must always balance, and no one of them can be infinite. If one of the bodies falls
in any degree short of the other in potency—suppose fire is finite in amount while
air is infinite and a given quantity of fire exceeds in power the same amount of air
in any ratio provided it is numerically definite—the infinite body will obviously
prevail over and annihilate the finite body. On the other hand, it is impossible that
each should be infinite. ‘Body’ is what has extension in all directions and the
infinite is what is boundlessly extended, so that the infinite body would be
extended in all directions ad infinitum. Nor (2) can the infinite body be one and
simple, whether it is, as some hold, a thing over and above the elements (from
which they generate the elements) or is not thus qualified. (οὔτε γὰρ σύνθετον
οἶν τε εἶναι οὐτε ἀπλοῦν. σύνθετον μὲν οὖν οὐκ ἔσται τὸ ἀπειρὸν σῶμα, εἰ
πεπερασμένα τῷ πλήθει τὰ στοιχεῖα. ἀνάγκη γὰρ πλείω εἶναι, καὶ ἵππαι ἂεί
tάναντια, καὶ μὴ εἶναι ἐν αὐτῶν ἀπειρον (εἰ γὰρ ὑποστηθέντως λείπεται ή ἐν ἓν
σώματι δύναμις διάτερον, οἶνον εἰ τὸ πῦρ πεπέρανται, ὃ δ' ἄπειρος, ἔστιν δὲ τὸ
ἰδίον πῦρ τοῦ ἰδίου ἀέρος τῇ δύναμει ὑποστηθεῖσιν, μόνον δὲ ἄριστον τινα
ἔχον, ὡμος φανερόν ὅτι τὸ ἀπειρὸν ὑπερβαλεῖ καὶ φθερεῖ τὸ πεπερασμένον)
ἐκαστὸν δ' ἀπειρον εἶναι ἀδύνατον σῶμα μὲν γὰρ ἔστιν τὸ πάντη ἔχον διάστασιν,
ἀπειρον δὲ τὸ ἀπεράντως διεστηκός, ὅτε τὸ ἀπειρὸν σῶμα πανταχύ ἔσται
diεστηκός εἰς ἀπειρόν. ἀλλὰ μὴν οὐδὲ ἐν καὶ ἀπλοὺν εἰναι σῶμα ἀπειρον
ἐνδέχεται, οὔτε ὡς λέγουσι τίνες τὸ παρὰ τὰ στοιχεῖα, ἐξ οὗ ταῦτα γεννώσιν, οὖθ' ἄπλως.)

P1: The infinite can be either compound, or simple.
P2: If the elements are finite in number, the infinite will not be compound.
P3: The elements must be finite in number.

\(^{39}\) As Ross (Ross 1936, 541) notes, “When Aristotle says (Met. 987b27) that the
Pythagoreans identified real things with numbers, it is not to be supposed that they
reduced reality to an abstraction, but rather that they did not recognize the abstract nature
of numbers. What they were doing was little more than to state that the characteristics of
things depended, to a large extent, on the number and the numerical relations of their
components.” Hussey (Hussey 1983, 88) reminds us that Aristotle is only talking about
positive integers here.
Therefore, the infinite cannot be compound.

P4: If one element were infinite, the others by now would have ceased.

P5: There is no existent thing alongside the elements, which is itself infinite.

Therefore, the infinite is not simple either.

Having thus dismissed the possibility that the infinite is either a simple or compound body, seemingly ruling out that it is any kind of body at all, Aristotle nonetheless provides additional arguments as to why the infinite cannot be a sensible body. A sensible body has many things predicated of it: quantity, quality, place, relation. What is infinite is not predicated in these ways, as categories are limits and the infinite is by definition unlimited. Finally, he concludes: “It is plain from these arguments that there is no body which is actually infinite” (ὅτι μὲν οὐν ἐνεργείᾳ οὐκ ἔστι σῶμα ἄπειρον, φανερὸν ἐκ τούτων.) (206a7-8). Thus, he begins again to consider that infinity exists in some other way. It must be the case that it does, Aristotle claims, as the consequences of its non-existence are impossible to imagine (Ὅτι δ’ εἰ μὴ ἔστιν ἄπειρον ἁπλῶς, πολλὰ ἀδύνατα συμβαίνει): (1) that there is a beginning and end to time; (2) a magnitude will not be divisible into magnitudes; (3) number will not be infinite (δῆλον. τὸ τε γὰρ χρόνον ἔσται τις ἁρχὴ καὶ τέλευτη, καὶ τὰ μεγέθη οὐ διαμετατέχει εἰς μεγέθη, καὶ ἀριθμὸς οὐκ ἔσται ἄπειρος. ὅταν δὲ διωρισμένον οὐτός μηδετέρως φαίνηται ἐνδέχεσθαι, διαιτητοῦ δεῖ, καὶ δῆλον ὅτι πῶς μὲν ἔστιν πῶς δ’ οὖ.) (206a9-11). What this amounts to, then, is that while, per Aristotle’s arguments, there is a sense in which the infinite does not exist, i.e. as a sensible body, substance, or predicate, there is also a sense in which the infinite does exist. When we consider this in terms of the division of being Aristotle initially set out—actuality only, potentiality only, and that which is both potentiality and actuality (cf. 200b25-28)—it seems clear that we can rule out two possibilities. The
infinite is in no way actuality, neither actuality itself, nor actuality and potentiality. Therefore, the infinite must exist as potentiality exclusively.  

The difference between potentiality in the case of the infinite, as opposed to the ways in which any substantial being can potentially change itself to be predicated by any contrary from whatever is a current actual predication (e.g. a non-musical man is potentially musical), is that whatever is infinite will never become actualized. Aristotle illustrates this point when he admonishes, “but we must not construe potential existence in the way we do when we say that it is possible for this to be a statue—this will be a statue, but something infinite will not be in actuality” (Οὐ δεῖ δὲ τὸ δύναμεν ὰν ἀλμβάνειν, ὃσπερ εἴ δυνατὸν τοῦτ’ ἀνδριάντα εἶναι, ὥς καὶ ἐσται τοῦτ’ ἀνδριάς, οὕτω καὶ ἄπειρον ὃ ἐσται ἐνεργεία.) (206a19-21). The infinite is only ever actual in potentiality; there is no point of actualization. Rather, what Aristotle means by “infinite” is similar to the sense of being one intends when saying, “it is day or it is the games” (206a22). Aristotle is thus demonstrating his claim that the infinite is not a substantial being, principle, or sensible body; it is not a subject, i.e. “a this” (τὸ ἄπειρον οὐ δεῖ λαμβάνειν ὡς τὸδε τι), but “a process of coming to be or passing away” (ἄλλ’ ἀεὶ ἐν γενέσει ἢ φθορᾷ, πεπερασμένον) (206a29-33). Aristotle thus describes the infinite as that which, “has this mode of existence: one thing is always being taken after another, and each thing that is taken is always finite, but always different” (Ὅλως μὲν γὰρ οὗτος ἐστιν τὸ ἄπειρον, τὸ ἀεὶ ἄλλο καὶ ἄλλο λαμβάνεσθαι, καὶ τὸ λαμβανόμενον μὲν ἀεὶ εἶναι

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40 It is for this reason that one may say that for Aristotle there is a sense in which the infinite does not exist; see for example Heinemann 2012, 5.

41 Following Ross, 206a29-34 is bracketed in the ROT. Since Ross excises the bracketed sentence as an alternative version of 206a18-29 (ROT, 351), I refer to the sentence seemingly out of order to help explain what Aristotle is saying at 206a23-25.
In this sense, what Aristotle describes as infinite seems to name an intrinsic aspect of the nature of natural beings—there is ever the possibility of accidental change as long as they exist.

Insofar as the infinite is for Aristotle a characterization of a potentiality of a thing, the infinite, like *kinēsis*, never exists over and above natural subsistent being. Sorabji (Sorabji 1983, 210) is right to point out here that Aristotle’s account of the infinite is highly original, as it defines the infinite in terms of the finite. According to Sorabji, there are two upshots to Aristotle’s argument: (1) “infinite is connected with a *process*” (his emphasis) and, (2) “infinity is always what has something outside of it.” This is to say that the infinite is a potential aspect of the nature of natural being, and as such, always exists in conjunction with these things. This, as Sorabji notes, is a view antithetical to those of Aristotle’s predecessors who thought that the infinite was, “something which is so all-embracing that it has nothing outside of it.” The ways in which something can be said to be always, “taken after another…always different” are clearly numerous. Unsurprisingly, then, we can talk about different sorts of things as being “infinite,” and we will find that different sorts of things are infinite in likewise different ways (cf. 207b22). For example, *kinēsis* is called infinite because, in the case of locomotion, the ground covered is always finite but each time different. Similarly with alteration and growth, what changes is finite, but there is always more change to come until the substance ceases to be. Time is said to be infinite in the sense that it is of *kinēsis* (207b24).

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42 Recall 200b33: “There is no such thing as motion over and above the things.”
In addition, Aristotle talks about the infinite in terms of “the potentially infinite,” in the sense that beings can be potentially endlessly divided (206b5-6, 206b17-18). If infinite division is possible, in what sense could this be so? Sorabji (Sorabji 1983, 211) gives two possible interpretations: (1) Aristotle thinks that these infinite divisions are actually materially possible, and (2) Aristotle’s infinity means the recognition of endless potential division, what Sorabji names “the finitist view.” I am in agreement with Sorabji, who assigns the latter to Aristotle, arguing that, “certainly, Aristotle would allow only a finite number of actually existing divisions.” But, Sorabji questions whether or not this would be the case for “potentially existing divisions” (his emphasis). He allows that the question is ambiguous, and, after weighing possible replies, concludes that, “Aristotle cannot there [in the Physics] afford to admit any collections which are more than finite, if his analysis of infinity is to surmount the problems which it is intended to surmount.”

Aristotle’s account of the infinite is an account of possibility; it controversially argues for the unreality of the infinite, i.e. a being that is only ever potentiality. It was covered first because of the Pre-Socratic assumption that it was an archē of other being. Now that Aristotle has disabused his reader of such a notion, he will move on to a discussion of the other terms. Let his treatment of the infinite be a paradigm of sorts for what is to come; Aristotle is defeating the views of the endoxa with an eye to pointing out the role of potentiality in nature.

Aristotle begins Physics iv with an inquiry into the being of place (τόπος, topos) or magnitude. The first question is expected: whether there is such a thing as place (208a28). And, this is our indication that Aristotle will now deal with the endoxa.
Aristotle tells us that people suppose everything is somewhere and nothing is nowhere. Certainly, as he reminds us, locomotion requires place. In order to change places, place must exist in some way. So too, it seems that place exists over and above the things in place because according to the endoxa: (1) the contents of a place can be replaced by different content, e.g. water in a vessel can be emptied and replaced by air (208b6-7); (2) elements seem to have a proper place, as fire rises and earth descends (208b9-10); (3) the theory of void requires a theory of place since void is place without body (208b25). It is interesting to note as well that in Aristotle’s discussion of proper place, he makes a distinction between relative place, or position, and proper place, or power. He says that to us, “up and down,” “left and right” change given our relative position; whereas, they remain the same in nature. “Downward,” for example, is a force or power evidenced by the fact that some things by nature move toward the earth, i.e. down. This is not an epistemological/metaphysical distinction, however, as Aristotle is only pointing out that our perspective is sometimes at odds with nature’s perspective. This echoes his claim from Physics i 1, that some things are clearer to nature, while others are clearer to us. Part of studying nature, when one is a part of nature, is to recognize this difference without inappropriately singling oneself out as somehow outside of the bounds of the investigation.

Other concerns about the possibility that place is a body itself include: (1) if it were, there would be two bodies in the same place (209a5-7); (2) place is not the cause of anything else (209a20-22); (3) if everything has a place, then place would have a place and so on ad infinitum (209a23-25); (4) place has a size, but its size must grow since there are things in place, which themselves grow (209a26-28). So, Aristotle sets out first
to say whether place might be matter or form. If it were the former, it would be the extension itself of the magnitude, and if it were the latter, it would be the limit of the body in place (209b1-10). He then cites Plato as the only thinker to actually try and say what place is and not just that it is. According to Aristotle’s reading, Plato, in the Timaeus, shows that matter is identical to space because the space that a body is in is the body itself.\textsuperscript{43} Aristotle concludes saying that place is neither matter, nor form. Matter and form, as we have seen, are inseparable from a natural object. Place, on the other hand, is separable from the object (209b21-30). This then leads Aristotle to the new premise that place is a vessel or container. The implication of such a view is that place is indeed something, and this points Aristotle’s inquiry to ask what sort of thing it is.

Important to note here is that Aristotle is explicit about the fact that place is something that, although separable from natural objects themselves, is not a natural object itself. Instead, it is in some sense an attribute of motion and relation (210a1-4). This will begin with a look to the meaning of “in” with regard to what it might mean to be “in” something, e.g. “in place.” Aristotle highlights a function of “in,” that as Hardie and Gaye point out, does not quite capture the Greek preposition, ‘ἐν,’ which is in use here. The sense here is the way we mean “in” when we say, “in a vessel”; it usually means “inside” (Πάντων δὲ κυριώτατον τὸ ὡς ἐν ἄγγείῳ καὶ ὀλὼς ἐν τόπῳ) (210a24). Aristotle brings in examples from experience, which marks a brief turn from what has been mostly

\textsuperscript{43} As Hussey (Hussey 1983, 105) remarks, this is a careless reading of Plato’s Timaeus 48e-52d. Aristotle seems to have left out sufficient differences between his idea of matter (hyle) and Plato’s receptacle (chóra), thus embellishing the similarities needed for a proper analogy. Hussey explains, “Aristotle interprets Plato’s receptacle as playing the same role as Aristotelian matter…the existence and whereabouts of a piece of Aristotelian matter are always dependent on those of the body of which it is the matter, whereas the Platonic receptacle seems to be an independent entity of which the parts cannot change their relative positions.”
arguments from the “order of explanation,” in contention with the endoxa to show that a thing containing other things does not have to be either the form, the matter, or the same thing as that which is contained (210b7-30). In Physics iv 4, he will go on to explain the sense in which place is a vessel.

He begins by stating his assumptions: (1) that place is what contains that of which it is the place, and is no part of the thing; (2) that the primary place of a thing is neither less nor greater than the thing; (3) that place can be left behind by the thing and is separable; (4) that all place admits of the distinction of up and down; (5) each of the bodies carried to its appropriate place and rests there, and this makes the place either up or down (210b36-211a5). And, then, he returns to the previous point that the topic of place has come up only because there is motion with respect to place (211a11-12). Since locomotion is a movement from one place to another, place becomes a topic for the natural scientist. It is not a topic qua itself; it is requisite for locomotion. Since the heavens are in constant movement themselves, Aristotle concludes that they must also be in place. Another type of kinēsis relevant to place is change in quantity, as increase and diminution require change in size of place.

Aristotle raises a puzzle in which he creates an analogy between place and the underlying thing, or hypokeimenon, which he discussed in Physics i. Place, he argues seems to remain as natural objects change place. A vessel has air at point a, which is replaced by water at point b. The place inside the vessel remains. The analogy is only partially effective, however, as underlying matter neither separates from the natural object, nor does it contain the object (211b30-212a2). Place, thus, is “the boundary of the containing body at which it is in contact with the contained body” (ἀνάγκη τὸν τόπον
Aristotle then retakes up a topic he had suggested earlier; namely, that some things are potentially in place, while other things are actually in place. Things are potentially in place when they are parts of a homogenous continuous substance (212b5-6). They are actually in place when they are separated but in contact (212b6-7). And, some things are per se in place, while others are accidentally in place. The former includes all bodies that move from one place to another or bodies that increase or decrease in size. The latter includes the soul, which since it is contained in a body, is only ever in place by virtue of the fact that the body is in place.

Aristotle concludes his treatise on place asserting once again that only moveable bodies are in place. This challenges the view of the endoxa that place is a substantial being itself. Place exists, but not qua itself. Instead, place serves as the limit of a moveable body, only potentially existent unless a body exists to help actualize it. Place can be anywhere, so long as a moveable body is there, too. If something is not movable, either intrinsically, i.e. natural objects, or by propulsion, e.g. artifacts, then it is not “in place” (Kaì èstiv ó tòpòs kai pòu, oûh òc ên tòpòw ðè, ãllò òc tò pèrâc ên tò pêperaçìmènò. Óù γàpì pàn tô ðè ên tòpòw, ãllà tô kînîtòn sòmâ) (212b27-30).
Aristotle’s final move in his discussion of place is to suggest that it is an analogue to matter. First, he starts with a place-whole analogy: “that which is in place has the same relation to its place as a separable part to a whole, as when one moves a part of water or air; so, too, air is related to water, for the one is like matter, the other form—water is the matter of air, air as it were the actuality of water” (καὶ γὰρ τὸ μέρος, τὸ δὲ ἐν [τῷ] τόπῳ ὡς διαμετέν μέρος πρὸς ὅλον ἐστίν, οἶνον ἄταν ὕδατος κινήσῃ τις [213a] μόριον ἡ ἀέρος. Οὕτω δὲ καὶ ἂν ἔχει πρὸς ὕδωρ·) (212b36-213a2). We can imagine a container filled with water. The space inside the container is the whole, and the water is a separable part of it. When the space is filled with water, the container and the contained appear to be one. There is no part yet to be filled. But, when some of the water escapes, there is a vacant part, which is filled with air. As parts of the whole, the water is potentially air. When any more water escapes, the vacant place will come to contain air; the water will be re-placed by the air. As both Hardie and Gaye and Aquinas, in his commentary (Aquinas 1961, 239), instruct, Aristotle will not fully explain the relationship between the elemental bodies until his more narrow work of natural philosophy on generation and corruption. Here, he concludes, “for water is potentially air, while air is potentially water, though in another way…if the matter and the fulfillment are the same thing (for water is both, the one potentially, the other in fulfillment), water will be related to air in a way as part to whole. That is why these have contact: it is organic union when both become actually one” (οἶνον ὑλὴ γάρ, τὸ δὲ εἴδος, τὸ μὲν ὕδωρ ὑλὴ ἀέρος, ὃ δὲ ἂν οἶνον ἑνεργεία τις ἑκείνου· τὸ γάρ ὑδωρ δυνάμει ἂν ἐστίν, ὃ δὲ ἂν δυνάμει ὕδωρ ἄλλον τρόπον…ἀσαφῶς δὲ νῦν ῥηθέν τότε ἔσται σαφέστερον. Εἰ οὖν τὸ αὐτὸ [ἡ] ὑλὴ καὶ ἐντελέχεια (ὕδωρ γάρ ἄμφω, ἄλλα τὸ μὲν
According to *De Generatione et Corruptione*, water is potency to air simply. The air is likewise potentially water, because water could be added to re-place the air. Water is the matter, ready at any time to take on the form of air. It is potentially air, and yet it is water. As water, it has become one with its place in the vessel, i.e. with air.

Aristotle’s treatise on void (κενός, *kenos*) follows his analytic on place quite naturally. After all, void is thought to be a place without a body (213b31). Aristotle shows that if body is presupposed to be something tangible, with properties of heavy and light, then by deduction it appears that there are places with nothing in them (214a1-5). But, as he has just shown, the elemental bodies are “in place” because they move and change. If place is a limit of a body, and if bodies that are immoveable are not in place, and if all moveable bodies are in place, then there can be no place without a body (216a24-26). The concept of void, in fact, can only exist in a conception where place is believed to be a thing separate from the bodies it contains. If place is a self-subsistent natural being itself, then there could presumably be places that exist without containing anything. These places would be void, i.e. empty. Similarly, if we are basing our conclusions on experience in the world, we can imagine observing any given space occupied by many objects. We might say that the areas in the space where objects exist are filled places; whereas, the places where no objects exist could be considered “empty places.” This is of course to ignore the air that it in place around the substantial objects. So, too, it may suggest again that one is thinking of place as something separate from body, which can be filled or unfilled. Place for Aristotle is a container; but, it is a
container in which the contained and the container become one. It is the limit of the thing “in place.” Thus, there is no separate void ("Ὅτι μὲν τοίνυν οὐκ ἐστὶ κεχωρισμένον κενόν, ἐκ τοῦτων ἐστὶ δῆλον") (216b20).

After considering the endoxa that has void existing as the source of movement, (cf. “Ἐκ δή τῶν εἰρημένων φανερῶν ὡς οὔτ’ ἀποκεκριμένον κενόν ἐστιν, οὗθ’ ἀπλῶς οὔτ’ ἐν τῷ μανῶ, οὔτω δυνάμει, εἰ μή τις βούλεται πάντως καλεῖν κενόν τὸ αἰτιὸν τοῦ φέρεσθαι") (217b20-22), Aristotle concludes that the only sense in which void could be said to exist is “the matter of the heavy and the light, qua matter of them” ("Ὅτω δ’ ἥ τοῦ βαρέως καὶ κούφου ὠλῆ, ἥ τοιαῦτη, εἴη ἂν τὸ κενόν") (217b23), meaning that “void” is the name for the very tension existing naturally among the archai of nature. Void would be then the possibility that some substantial being could change accidental form as a matter of nature, i.e. a being that, like the infinite, is a being only in potentiality. If we do not want to name this aspect of nature, “void,” then void exists neither actually, nor potentially in Aristotle’s physics.

That concludes our examination of Aristotle’s scope, access, goals, and method in the Physics, his arguments for the number and kind of principles in nature, and his definitions of nature, motion, the infinite, place, and void in Physics i-iv 9. I have stressed that Aristotle’s emphasis on the interplay between potentiality and actuality in nature, and especially that he allows the modality of potentiality a unique ontological status to which he ends up assigning the infinite, and, in a sense, void, significantly sets him apart from the endoxa. In the next chapter, we will complete the transition from

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44 Coope (Coope 2008, 57 n22) does not seem to recognize the sense in which void can exist potentially. She asserts without argument that void does not exist for Aristotle and refers her reader to the treatise on void.
kinēsis to chronos with an examination of Aristotle’s (1) puzzles of time, and (2) his analytic of time, to include his definition of time. Based on the questions Aristotle asks about time and the method he employs to answer these questions, we will determine that Aristotle’s Treatise on Time is a parallel investigation to the ones explored here. Thus, based on the claim that Aristotle’s time section is highly contextualized with respect to (1) Aristotle’s scope, access, goals, and method, and (2) the manner in which he has conducted the entire investigation thus far, I will claim that time, not unlike the infinite, place, and void, for Aristotle is not, as the endoxa suppose, a “real” or actual self-substantive natural being itself. Instead, I hope to show that it is a being always in potentiality unless certain conditions are met in order that it be actualized.
Chapter 2: Physics iv 10-11 in Context

Given the context of the Physics just explored, i.e. the method Aristotle has employed in his treatises on the principles of nature, *kinēsis*, the infinite, place, and void and the emphasis he has placed on the modal category of potentiality in these terms, I will now provide a reading of *Physics* iv 10-11 with the aim of showing that *chronos* here has to do with time as an attribute of motion, as an interval, i.e. the type of time that, as Aristotle describes at 218a1, “is taken” (λαμβανόμενος χρόνος). The alternative type of time, which Aristotle also discusses at 218a1, “infinite time” (ἄπειρος χρόνος) seems outside the scope of Aristotle’s arguments here in the *Physics*. As we shall see, references to infinite time seem relegated to *Physics* iv 10. My thesis is then that chapter ten of the Treatise on Time is analogous in purpose to the initial chapters of each foregoing treatise, e.g. on the *archai* of nature, *kinēsis*, the infinite, place, and void. Namely, it serves to

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45 Interpreting *Physics* iv 11 is difficult, and the literature is divided on interpretation. I agree with Shoemaker 1969, Sorabji 1983, Hussey 1981 that time for Aristotle requires perception of *kinēsis*. Roark (Roark 2011, 56) claims that readers of Aristotle in this camp have not defended why Aristotle would hold this view here in the Treatise on Time but nowhere else. My defense is that I read the Treatise on Time as highly contextualized and parallel in structure to Aristotle’s foregoing arguments about the terms of *kinēsis*. Time, like the infinite, place, and void is not considered a being qua itself in Aristotle’s philosophy of nature here in the *Physics*. Recall, the Treatise on Time may have been the end of Aristotle’s initial work on nature.

46 Many thanks to Prof. Dr. Gottfried Heinemann for pointing out the importance of the time interval vs. other ideas of time. Already, in the very idea of “the time taken,” there is a nod to the fact that time requires a “taker.” Otherwise, time cannot be “taken.” This seems a foreshadowing of the subsequent arguments about time and the soul in *Physics* iv 14.

47 Coope (Coope 2005, 17) also mentions the similarity in structure between the beginning of Aristotle’s Treatise on Time and the way he began his account of place (209a2) and his account of the infinite (iii 4-5), but adds in n. 1 that while puzzles about the infinite are answered by Aristotle (iii 8), he wrongly claims that he has solved all of
discuss the endoxa as preparatory to Aristotle’s actual analytic of time, which begins at 219a1-3: “It is evident, then, that time is neither movement nor independent of movement. We must take this as our starting-point and try to discover—since we wish to know what time is—what exactly it has to do with movement” (Ὅτι μὲν οὐν οὔτε κίνησις οὔτ’ ἄνευ κινήσεως ὁ χρόνος ἐστί, φανερόν). In this chapter, I trace the development of Aristotle’s analytic from this starting point until he both defines chronos at 219b1 (ἄριθμός κινήσεως κατὰ τὸ πρότερον καὶ ὑστερον) and then, after some argument, reaffirms his definition at 220a25 (Ὅτι μὲν τοῖνυν ὁ χρόνος ἀριθμός ἑστιν κινήσεως κατὰ τὸ πρότερον καὶ ὑστερον). I attempt to show, by way of a proposal that the “now” for Aristotle is not only (1) non-temporal, as Coope (Coope 2005, 29) has suggested, but also (2) a name for existing self-subsistent natural beings undergoing kinēsis, that the best reading of this analytic is to understand Aristotle’s position on time to be that time is only ever potentially real, and by consequence only ever potentially a continuum, unless it is apprehended as such. This claim rests on the assumption that nothing is actually named or referred to unless it is perceived. I support this reading by contrasting the way Aristotle dismisses that time could be a self-subsistent being composed of real parts in chapter 10 and then argues that time is in some sense continuous, i.e. presumably a whole composed of parts, in chapter 11. For Aristotle, time that is taken as a whole, or continuum, has to be dependent on (1) kinēsis and (2) something to apprehend the kinēsis insofar as time’s “parts” are only ever potentially existent, requisite on the (1)

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48 Roark (Roark 2011, 53) supports the theory that Physics iv 11 begins Aristotle’s analytic of time, in Roark’s words, “Aristotle’s positive account of time.”
49 I offer a reading of Physics 11 despite that the order of arguments is challenging to understand in a coherent way (see for example Hussey (Hussey 1983, 145) on the strange arrangement of the section).
apprehending and (2) naming of beings undergoing *kinēsis*. Details regarding the actualization of time and the kind of beings who can count, apprehend, or "take" time will be discussed in chapter three.

Aristotle begins his Treatise on Time as he did with the other terms of motion see (chapter 1 n. 37); he will examine the endoxa and attempt to understand the difficulties of his subject—here, time (Ἐχόμενον δὲ τῶν εἰρημένων ἐστὶν ἐπελθεῖν περὶ χρόνου. πρῶτον δὲ καλὸς ἔχει διαπορήσαι περὶ αὐτοῦ καὶ διὰ τῶν ἐξωτερικῶν λόγων, πότερον τῶν ὄντων ἐστὶν ἢ τῶν μὴ ὄντων, εἴτε τις ἢ φύσις αὐτοῦ) (217b29-30). Commentators commonly refer to such difficulties as the "paradoxes" or "puzzles" of time:50

(1) Does time exist or not?
(2) What is the nature of time?

Aristotle will begin by considering the arguments for the non-existence of time. Or, if not the non-existence of time, the relative obscurity of whatever time is (Ὅτι μὲν οὖν ἦ ὅλως οὐκ ἐστὶν ἢ μόλις καὶ ἀμυδρός, ἐκ τῶν δὲ τις ἢ ὄντων ἐστὶν, τὸ δὲ μέλλει καὶ οὖπω ἐστὶν) (218a1-2). He implies that time is a whole composed of parts when he brings up the commonly known "parts" (μέρη) of time: past and future. Past does not exist because it "has been and is not," and the other part "is going to be and is not" (Τὸ μὲν γὰρ αὐτοῦ γέγονε καὶ οὖκ ἐστὶν, τὸ δὲ μέλλει καὶ οὖπω ἐστὶν) (218a2-3). But, then, Aristotle backtracks to state that any time "is made up of these" (218a4). Aristotle continues to argue that since in order for something divisible to exist it is necessary that all or some of its parts exist, but

50 Coope (Coope 2005, 17) adds Aristotle’s subsequent question, “What is time’s relation to the present, or ‘now’?” to the puzzles.
then seemingly exempts time from this conditional saying: “but of time some parts have been, while others are going to be, and no part of it is, though it is divisible” (τοῦ δὲ χρόνου τὰ μὲν γέγονε τὰ δὲ μέλλει, ἐστὶ δ’ οὐδέν, ὁντος μεριστοῦ) (218a5-6). It is unclear, however, whether Aristotle actually believes that time necessarily is composed of these two parts, or if he is merely appealing to the endoxa. For Plato, in the Timaeus, days, nights, months, and years are all parts (μέρη) of time; the past (what “was”) and future (what “will be”) are not parts, but forms (εἴδη) of time (37e). It is thus unclear, if he is appealing to endoxa here, the source of the idea that “past” and “future” are parts of time. But, if Aristotle is not appealing to endoxa, the argument seems circular. This is to say that if Aristotle is positing non-existent parts of time as a premise from which to conclude that time does not exist, he has already assumed that time is a whole, thus is composed of parts. The whole idea that time is a whole is problematic when we consider the arguments Aristotle has just made with regard to the kind of being he attributes to the infinite, place, and void. These are terms of kinēsis and not actual self-subsistent beings. Why then might Aristotle begin his Treatise on Time with the assumption that time is a whole?  

51 Aristotle will argue in Physics 11 that time is continuous. Since the essence of continuity for Aristotle is that something is a whole with parts, that these parts are touching, and that there is the potential for infinite divisibility of the whole, it seems to make sense that he begins with this assumption. But, if his Treatise on Time is an investigation in the same vein as his previous queries into the terms of kinēsis, i.e. in the form of APo ii 1, 89b24-5, and beginning with endoxa in the order of explanation and proceeding to demonstrate that the term of motion is not a self-subsistent being itself, this assumption seems impetuous. If Aristotle’s puzzles are not just rhetorical, how can we assume something is continuous when we have not yet established whether or not it exists? Indeed, in her reply to Miller (Miller 1974, 139-41), Coope (Coope 2005, 20) raises a similar point when she says that Miller’s suggestion that the puzzles of time could have been solved if Aristotle had said, “to be is to be surrounded by time,” would not work because assuming that being is surrounded by time is to already assume that
Aristotle clarifies that there are two kinds of time: (1) infinite time (ἄπειρος χρόνος), and (2) time taken (λαμβανόμενος χρόνος) (218a1). Now, Aristotle has already shown that the infinite exists only to the extent that the potentiality for it exists, e.g. in the possibility for infinite divisibility. What are we then to make of the idea of “infinite time,” mentioned here without explanation or definition? On my reading, Aristotle’s reference to infinite time could mean two things: (1) it could be a reference to the ‘time’ of his predecessors, that is, to Platonic time, whose emphasis on number may be traced back to the Pythagoreans, or (2) an idea, whether from Plato or elsewhere, presupposed about the possibility for endless time (aion), given that certain heavenly motions seem time exists, and whether or not time exists is the question Aristotle poses. Yet, Coope does not raise this same issue with regard to Aristotle’s assumption that time is a whole composed of parts, i.e. is continuous.

52 Coope (Coope 2005, 81) cites Generation and Corruption (338b9-11) to argue that Aristotle elsewhere posits “a pretemporal order that is both infinite and (in the relevant sense) linear,” and she believes that Aristotle could have used this notion in the Physics to provide a temporal basis for the before and after, thus defending “his assumption about time’s linearity.” I will discuss shortly that Aristotle did not need a temporal basis for the before and after in his account of time in the Physics and that in fact before and after are not inherently temporal concepts.

53 In the Timaeus 37d-38c, Plato defines time (chronos) as a type of number: as the number according to which the universe, or Living Creature, moves (ποιεῖ μένοντος αἰόνος ἐν ἐνι κατ’ ἀριθμὸν ιδοῦσαν αἰώνιον εἰκόνα, τούτον ὑδ’ ἰχόνον όνομάκαμεν) (37d) and as that which “imitates eternity and circles according to number” (κατ’ ἀριθμὸν κυκλομένου γέγονεν εἰδή) (38a). Later, he affirms that there are numbers of time (38c). So, he appears to be inconsistent regarding the relationship between time and number. The universe, or “Living Creature” has a mostly eternal nature, but cannot be fully eternal due to the fact that it was created. That which comes into being must also perish from being. So, it is said to have been modeled after eternity; yet, it is truly sempiternal. As such, despite having been generated, it will be for all time. As Helena Keizer (Keizer 1999, 88) points out, Aristotle seems to be referring to the Timaeus 38c1-3 in De Caelo i 10, 280a28-32. Here, Aristotle questions the idea that something can be both generated and existing for all time. In short, Aristotle calls into question the whole notion of sempiternity. Cf. also Physics viii 1 251b15-20 where Aristotle challenges Plato’s claim that time was created.

54 Keizer (Keizer 1999, 90) highlights the sense in which aion cannot be endless, i.e. it is “a completeness which is an end (telos) in all its fullness.”
to be ceaseless and that the possibility exists (at least in the intellective faculty of the soul) for motion qua motion to continue forever.

In Plato’s *Timaeus*, there is a differentiation made between (1) unchanging motion that continues forever and (2) becoming in the world of sense (τὸ δὲ ἀεὶ κατὰ ταύτα ἔχον ἀκινήτως οὔτε πρεσβύτερον οὔτε νεώτερον προσήκει γίγνεσθαι διὰ χρόνου οὐδὲ γενέσθαι ποτὲ οὐδὲ γεγονόναι νῦν οὐδ’ εἰς αὖθις ἔσεσθαι, τὸ παράπαν τε οὐδὲν ὁσα γένεσις τοῖς ἐν αἰσθήσει φερομένοις προσήψεν) (*Timaeus* 38a). These two types of motion correspond with Aristotle’s distinction between time as infinite and time as taken insofar as for both thinkers, time seems to be related to motion. Plato makes the connection between motion and time already here in the *Timaeus* when he concludes that these things becoming in the world of sense do so in time. Time (chronos) is the circling number, which imitates eternity (aion) (ἄλλα χρόνου ταύτα αἰῶνα μιμουμένου καὶ κατ’ ἄριθμον κυκλομένου γέγονεν εἴοθ) (38a). If time as infinite refers to that which is unchanging and not becoming, it is not the kind of time we would expect Aristotle to discuss in the *Physics*.\(^{55}\) We have seen his emphasis on becoming from the beginning of the work. Contrast that with the fact that there has been no mention whatsoever about the unchanging movement of the heavens.\(^{56}\) Indeed, it would be beyond the access permitted to the natural scientist. This ever-continuous time is not the time, which is a term of

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\(^{55}\) Though some have argued that *aion* is timeless (cf. Sorabji 1988, 126 n. 122 where he mentions Leyden 1964 and Keizer 1999, 89), Sorabji (Sorabji 1988, 126-127) appeals to *de Caelo* i 9, 279a12-b3 to argue that Aristotle does not mean “timelessness” when he writes *aion*; but, rather, “everlasting duration.” This is not to say, as Sorabji concludes, that Aristotle considers “possessors of this sort of *aion*” to be in time. Instead, Sorabji notes the “special sense” of time that Aristotle presents in the *Physics*.

\(^{56}\) Aristotle will of course famously broach this topic in *Physics* viii, but one could argue that, in the spirit of many of Aristotle’s treatises, the topics of the last book are preparatory to a subsequent topic of study. On this reading, Aristotle prepares us for the *de Caelo* at the end of the *Physics*.
kinēsis insofar as it refers to the nature of natural beings. Instead, it might be a subject for a more speculative thinker, perhaps a cosmologist. In both cases, then, the idea for infinite time (ἄπειρος χρόνος), seems outside the scope of Aristotle’s arguments here in the Physics; they would be beyond the scope, access, method, and goals of this inquiry. Instead, Aristotle will focus on time that comes to concern us because it is a term of kinēsis—the time of this sort is a time interval—time taken (λαμβανόμενος χρόνος).

First, Aristotle investigates what appears to be a third part of time, the “now.” But, “now,” what we commonly think of as the present tense of time, is not going to be a part of time for Aristotle. Parts, he instructs, are measures of wholes, and parts themselves have parts (218a6-7). But, time for Aristotle is not made of nows, at least in the temporal sense. Aristotle is rejecting the idea that time could be represented as a string of points. We could imagine a string of beads to illustrate this commonly held view of time. Placing a finger on one bead isolates it as the “present”—whatever beads exist to the left of the finger are “the past,” and the beads to the right are “the future.” In one’s actual experience of life, the now seems elusive. When can it be said actually to occur? Is it now? Now? Now? How about, now? No, it is always already gone. The future slides into the past before we can really acknowledge it. It takes great intention to experience each moment as it arrives.

But, this is not at all how Aristotle is thinking of “now,” precisely because for him time is not going to end up being a linear continuum existing as a subsistent being itself, independent of natural objects. The treatment of what are commonly held to be “parts of

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57 Sorabji (Sorabji, 1983, 126) has noted that it does not seem that infinity can be a number. Since time is going to end up being a number (arithmos) for Aristotle, the idea that time could be both a number and infinite is self-contradictory.
time,” i.e. past, present, and future, then is meant to show the absurdity of understanding time in this way. Or, if not the absolute absurdity, at least that such an understanding of time does not derive from the preceding theory of nature. Aristotle easily demonstrates that the past and future do not actually exist as real, i.e. we can clearly think about them, but they cannot be perceived, and now Aristotle sets out to understand “now.”

He writes that the now seems to be bound by past and future and then wonders whether it is always the same or each time different (218a9-10). It seems to me that the arguments he then puts forth to show that neither is possible are not arguments made in earnest. On the contrary, he is disclosing the logical inconsistencies required to understand the present, “the now,” as a real part of time. After giving arguments against each possibility, he concludes that there are “difficulties about the attributes of time” (περὶ μὲν οὖν τῶν ὑπαρχόντων αὐτὸ τοσαῦτ’ ἔστω διηπορημένα) (218a30). At this point in the text, this conclusion is easy to infer. There are clearly internal inconsistencies with the position that holds time to be a whole, composed of two parts that do exist, and the now, which is not a part but acts as a marker between the two parts that do not exist, and is neither always the same, nor always different. Aristotle is peeling us away from holding the traditional view of time as a being itself, presupposed in our common understanding of nature and nudging us toward an internally consistent, sound, view of time as the “time taken.” Let us have a look at the arguments for the impossibility of the now as ever same or as ever different:

If it is always different and different, and if none of the parts in time which are other and other are simultaneous (unless the one contains and the other is contained, as the shorter time is by the longer), and if the ‘now’ which is not, but formerly was, must have ceased-to-be at some time, the ‘nows’ too cannot be...

58 “Attributes” is not a perfect translation of τῶν ὑπαρχόντων, literally “possessions.”
simultaneous with one another, but the prior ‘now’ must always have ceased-to-be. But the prior ‘now’ cannot have ceased-to-be in itself (since it then existed); yet it cannot have ceased-to-be in another ‘now’. For we may lay it down that one ‘now’ cannot be next to another, any more than point to point. If then it did not cease-to-be in the next ‘now’ but in another, it would exist simultaneously with the innumerable ‘nows’ between the two—which is impossible. Yes, but neither is it possible for the ‘now’ to remain always the same. No determinate divisible thing has a single termination, whether it is continuously extended in one or in more than one dimension: but the ‘now’ is a termination, and it is possible to cut off a determinate time. Further, if coincidence in time (i.e. being neither prior nor posterior) means to be ‘in one and the same “now”’, then, if both what is before and what is after are in this same ‘now’, things which happened ten thousand years ago would be simultaneous with what has happened to-day, and nothing would be before or after anything else.

(ὁ δὲ χρόνος οὐ δοκεῖ συγκείσθαι ἐκ τῶν νῦν. ἔτι δὲ τὸ νῦν, ὃ φαίνεται διορίζειν τὸ παρελθόν καὶ τὸ μέλλον, πέστερον ἐν καὶ ταῦτά ἄει διαμένει ἡ ἄλλο καὶ ἄλλο, οὐ ράδιον ἰδεῖν. εἰ μὲν γὰρ αἰεὶ ἔτερον καὶ ἔτερον, μηδὲν δ᾽ ἐστὶ τῶν ἐν τῷ χρόνῳ ἄλλο καὶ ἄλλο μέρος ἁμα (ὅ μη περίεχε, τὸ δὲ περίεχεται, ὡσπερ ὁ ἐλάττων χρόνος ὑπὸ τοῦ πλείουν), τὸ δὲ νῦν μὴ ὧν πρότερον ὃν ἄναγκη ἐφθάσθαι ποτὲ, καὶ τὰ νῦν ἁμα μὲν ἄλληλαις ὅων ἔσται, ἐφθάσθαι δὲ ἄναγκη ὃι τὸ πρότερον. ἐν αὐτῷ μὲν ὃν ἐφθάσθαι ὁμ ὃν ὁδ τε διὰ τὸ εἶναι τότε, ἐν ἄλλῳ δὲ νῦν ἐφθάσθαι τὸ πρότερον νῦν ὃν ἔνδέχεται. ἔστω γὰρ ἄδυναν ἐχόμενα εἶναι ἄλληλαις τὰ νῦν, ὡσπερ στιγμῆν στιγμῆς. εἴπερ οὖν ἐν τῷ ἐφεξῆς ὅων ἐφθάσθαι ἄλλα' ἐν ἄλλῳ, ἐν τοῖς μεταζύ ὃοις νῦν ἀπείροις οὕσοιν ἁμα ἐν εἰ' τούτῳ δὲ ἄδυναν. ἄλλα μὴν οὐδ᾽ αἰεὶ τὸ αὐτὸ διαμέέαν δυνατὸν· οὐδὲνος γὰρ διατεύης πεπερασμένον ἐν πέρας ἐστιν, οὔτε ἄν ἐφ' ἐν ἡ συνεχεῖς οὔτε ἄν ἐπι πλείῳ τὸ δὲ νῦν πέρας ἐστίν, καὶ χρόνον ἔστι λαβεῖν πεπερασμένον. ἔτι εἰ τὸ ἁμα εἶναι κατὰ χρόνον καὶ μήτε πρότερον μήτε ὑπέρον τὸ ἐν τῷ αὐτῷ εἶναι καὶ ἐν [τῷ] νῦν ἐστιν, εἰ τὰ πρότερον καὶ τὰ ὑπέρον ἐν τῷ νῦν τοῖς ἐστίν, ἁμα ἐν εἰ' τὰς γενόμενα μυριστὸν τοῖς γενομένοις τήμερον, καὶ οὔτε πρότερον οὔτε ὑπέρον οὐδὲν ἄλλο ἄλλου) (218a12-29):

P1: If the now is ever different, and if none of the parts in time are simultaneous, and if the “now” ceased to be at some point, then the “nows” too cannot be simultaneous.

P2: (assumed) The now is ever different.

P3: None of the parts of time are simultaneous (from above) because the past has been and the future will be.

P4: The now does not exist; it is “not”; but, it formerly was. Therefore, the “nows” too cannot be simultaneous.

If “nows” cannot be simultaneous, it follows that when the present now “is,” the prior now must have ceased to be.
P1: If the now did not cease to be in the next now, but it did cease to be in another now, then it would exist simultaneously with the innumerable nows between the two.
P2: The prior now must always have ceased to be.
P3: Since the now never actually existed, the prior now cannot have ceased to be in itself.
P4: By analogy, since one now cannot be next to another now, as it is with points, the prior now cannot have ceased to be in another now. Therefore, since the nows cannot exist simultaneously (from above), it is impossible that they exist simultaneously with the innumerable nows between the two.

The arguments against the possibility for ever-different nows suggest, on the one hand, that the “now” does not actually exist. Look at P3 in the final argument above. The now cannot cease to be in itself because this entails that it must have existed. But, Aristotle never denies that the now exists. As we noted, it seems demonstrable by way of perception, even if the perception requires intention, to show that it does. But, he understands it as akin to a point, i.e. without parts itself. If it cannot have parts itself, then it cannot be part of a whole. Thus, as we saw, it is not a part of time.

P1: No determinate divisible thing has a single termination despite the ways it is extended.
P2: (from above) The now is like a point, indivisible.
P3: The now is a termination.
P4: It is possible to cut off a determinate time. Therefore, the now cannot be always the same.

Aristotle thus shows that the “now” is neither always the same, nor always different. Following which, he openly dismisses the “difficulties” dealt with in this preliminary chapter and remarks that, “the traditional accounts give us as little light as the preliminary problems which we have just worked through” (ὁμοίως ἐκ τῶν παραδεδομένων ἄδηλον ἐστίν, καὶ περὶ ὅν τυγχάνομεν διεληλυθότες πρῶτερον) (218a31-32). After announcing this conclusion, he proceeds to challenge the endoxa explicitly—
(1) time is a movement of the whole; (2) time is a sphere; (3) time is motion and a kind of change. He readily dismisses the first two. Regarding the first view, Aristotle turns entirely away from the idea of time as infinite time and instead takes up the idea of time as that which is taken (from 218a1) in order to show that time cannot be the *kinēsis* of the whole itself. On the one hand, he states that part of the *kinēsis*, or revolution, is a time (218b2). Thus, the revolution cannot be that which is taken (218b3). On the other hand, if time were the *kinēsis* of the whole and if there were more than one whole, each one revolving would be time. Aristotle waves this off as nonsensical, since this would allow for the existence of multiple times at the same time (218b4-5). In this rebuttal, there seems to be an equivocal use of the term “*chronos*.” It seems plausible that Aristotle has been talking about the time taken, i.e. the time of natural objects, but now he refutes the idea that time is the *kinēsis* of the whole based on an idea of infinite time. The time taken, after all, can be simultaneous with other times taken. Whereas, infinite time is time of the actual whole.

Regarding the second view that time is the sphere of the whole itself, Aristotle supposes that this idea is based on the logic that (1) all things are in the sphere of the whole and (2) all things are in time (218b7). He dismisses this out of hand as naïve, and he moves on to the only theory of his predecessors that seems worthwhile to discuss.

That time is “supposed to be motion or a kind of change” (*ἐπεὶ δὲ δοκεῖ μάλιστα κίνησις εἶναι καὶ μεταβολή τις ὁ χρόνος*) is taken up next (218b10-11). He reasons that time is not *kinēsis* because *kinēsis* is in the thing that changes and where the thing, which moves, is (218b12-13). Time, on the contrary, is “present equally everywhere and with all things” (ὁ δὲ χρόνος ὁμοίως καὶ πανταχοῦ καὶ παρὰ πᾶσιν) (218b13-14). Again, it
seems strange that Aristotle differentiates time from *kinēsis* with this logic because “*chronos*” is again used ambiguously. It seems that he wants to understand the time appropriate to physics, but as we have noticed, he refutes the endoxa on the grounds that they are inconsistent ways to understand time. It seems to me that Aristotle is being ambiguous here because he is contending with views of time that are outside the scope of his purposes. This is to note that all views of time in Aristotle’s time were views of infinite time. Because he would be the first to define time as that which comes out of nature instead of something presupposed by nature, “the time taken,” he has no actual endoxa with which to grapple. But, curiously, he finds it necessary to engage the irrelevant endoxa without distinguishing between the multiple meanings of the word, time.

Despite that commentators have taken Aristotle’s arguments in chapter ten so seriously as part of his analytic on time, it seems clear—when reading it as parallel to Aristotle’s previous treatments of the other terms of motion—that he is here simply exposing the problems with the endoxa and setting himself up to re-understand time as an appropriate topic for physics. If time is to be a subject for physics, and if, as Aristotle has just shown, it is not a natural self-subsistent being itself (it defies the principles of nature previously set out), it will have to be something derived from nature. Indeed, as we have seen, Aristotle considers it a term of *kinēsis*, and he will go on to note here that it will be an attribute of *kinēsis*. In this preliminary investigation, then, he shows us only that time is not a whole composed of real parts, which seems to call into question whether or not time is a continuum, but also that time is not a self-subsistent being itself.
In chapter eleven, Aristotle moves on to his analytic of time. This is where he will take up the question regarding the nature of time despite that he has given his reader no good reason to think that time actually exists. This is an important point to carry over from chapter ten. If time does not really exist, then (1) what can we really say about it, and (2) in what sense could it exist?

Aristotle introduces his analytic with what I consider to be a sort of preamble; first, he establishes time, like infinity, place, and void, to be an attribute of motion. He begins with an argument for the coexistence of time and *kinēsis*. Time does not exist without *kinēsis*, he concludes, because it does not seem to us that time has elapsed when we have not noticed *kinēsis*. He likens this to those fabled to sleep among the heroes of Sardinia who when awakened did not realize that any time had passed. They conflate the “now” they experience when awakened with the “now” experienced before falling asleep. Since they do not perceive the change that has in fact taken place, they fail to notice the time interval (218b21-27). Aristotle continues with an analogy—just as if the “now” were one and the same, time would not exist, when different nows are not perceived as such, it does not seem that the interval separating them is in time (.Orders oὖν εἰ μὴ ἦν ἐτερον τὸ νῦν ἀλλὰ ταύτο καὶ ἐν, οὐκ ἄν ἦν χρόνος, οὕτως καὶ ἐπεὶ λανθάνει ἐτερον ὅν, οὐ δοκεῖ εἶναι τὸ μεταξὺ χρόνος) (218b27-29). Aristotle then reasons that time is not independent of *kinēsis* (218b31); if it is true that there is no realization that time exists when there is no perception of *kinēsis*. Now, this is a peculiar claim because, on the one hand, Aristotle seems to be saying that time does exist independently of perception. When the difference between nows is not perceived, time is not perceived, but Aristotle seems clear here that just because time is not perceived does not mean that it does not
exist. Yet, he supports his conclusion that time does not exist independently of *kinēsis* because time is not perceived without the perception of *kinēsis*; put another way, time perception entails perception of *kinēsis*. So, on the one hand, he explains time as something that exists independently of perception; and, on the other hand, he justifies this on the basis of what is perceived, i.e. on account of the inextricability of time perception with perception of *kinēsis*. These first arguments in Aristotle’s analytic establish the preamble to the rest of his analytic and point to what I argue to be his theory of time as a time interval—a result of an interaction between a being undergoing *kinēsis* and one that is “taking” or apprehending the time of the *kinēsis*.59

The analytic begins in earnest at 219a1 when Aristotle claims that, “it is evident, then, that time is neither *kinēsis* nor independent of *kinēsis*” and then announces that this will be his starting point (ἐπεὶ οὖν οὐ κίνησις, ἀνάγκη τῆς κινήσεως τι εἶναι αὐτόν). His task now, he offers, is to understand what time has to do with *kinēsis* (219a3-4). He begins again to show that we perceive time and *kinēsis* together. The argument (219a4-9) is as follows:

Now we perceive movement and time together: for even when it is dark and we are not being affected through the body, if any movement takes place in the mind we at once suppose that some time also has elapsed; and not only that but also, when some time is thought to have passed, some movement also along with it seems to have taken place. Hence time is either movement or something that belongs to movement. Since then it is not movement, it must be the other. (ἀμα γὰρ κινήσεως αἰσθανόμεθα καὶ χρόνος καὶ γὰρ ἦν ἦ σκότος καὶ μηδὲν διὰ τοῦ σώματος πάσχομεν, κίνησις δὲ τις ἐν τῇ ψυχῇ ἐνή, εὐθὺς ἀμα δοκεῖ τις

59 Hussey (Hussey 1983, 142) claims that, “Aristotle is arguing here from the phenomenology of time and change,” which he notes to be good dialectical method and apparently “carefully non-committal” about whether time is a “content-noun” or a “mass-term.” If Hussey intends the difference between “content-noun” and “mass-term” to be analogous to Aristotle’s differentiation between “time taken” and “infinite time,” respectively, which I suspect he does, I disagree that this ambiguity continues in chapter 11. It seems to me relegated to chapter 10.
Based on his previous separation of *kinēsis* from time, Aristotle immediately denies that time is actually *kinēsis*, thereby concluding that time is an attribute of *kinēsis* (ἀνάγκη τῆς κινήσεως τι εἶναι αὐτόν).

Aristotle then starts in another vein. The subsequent arguments have to do with the relationship of *kinēsis*, thus time, with magnitude. This series of arguments appears ill-placed, but they proceed as follows (219a10-14):

But what is moved is moved from something to something, and all magnitude is continuous. Therefore the movement goes with the magnitude. Because the magnitude is continuous, the movement too must be continuous, and if the movement, then the time; for the time that has passed is always thought to be as great as the movement. (ἐπεὶ δὲ τὸ κινούμενον κινεῖται ἔκ τινος εἰς τι καὶ πάν μέγεθος συνεχές, ἀκολουθεῖ τῷ μεγέθει ἡ κίνησις· διὰ γὰρ τὸ τὸ μέγεθος εἶναι συνεχές καὶ ἡ κίνησις ἔστω συνεχῆς, διὰ δὲ τὴν κίνησιν ὁ χρόνος· ὅση γὰρ ἡ κίνησις, τοσοῦτος καὶ ὁ χρόνος αἰεὶ δοκεῖ γεγονέναι)

P1: What is moved is moved from something to something.
P2: All magnitude is continuous.
Therefore, *kinēsis* entails the magnitude.

P1: The *kinēsis* entails the magnitude.
P2: The magnitude is continuous.
Therefore, the *kinēsis* is continuous.

P1: *kinēsis* is continuous.
P2: (from 219a9) Time belongs to *kinēsis*
P3: The time that has passed is always thought to be as great as the *kinēsis*.
Therefore, it seems that time is, at least in some way, continuous.
Having now established the relationship of time to magnitude, Aristotle continues then to transpose the distinction of “before” and “after,” one he admits to hold primarily of place and in virtue of relative position (219a15-16), to time. He moves from what he thinks must be the correspondence of “before” and “after” in place to that of \textit{kinēsis} (219a17), and from “before” and “after” in \textit{kinēsis} to that of time (219a18). That Aristotle argues from magnitude to time both in the case of continuity and in the case of “before” and “after” demonstrates the primacy of magnitude to time in his account (on primacy of change in place to all other \textit{kinēsis} see also \textit{Meta.} xii 7, 1073a10-13).

The diversion to establish the primacy of magnitude to time benefits Aristotle’s account because it establishes that there is a before and after in time, but not in the circular sense where temporality has to be assumed in order to conclude the existence of time as an attribute of \textit{kinēsis}.\footnote{My reading here has benefitted greatly from Tony Roark’s account of the “before” and “after” as non-temporal (Roark 2011, 95-119). Roark argues against the majority view that Aristotle’s definition of time is circular because it uses seemingly temporal terms, i.e. “before” and “after” in the definition (Cf. Annas 1975, Owen 1975, Ross 1936 for the alternative view). But, as helpful as Roark’s account is, it does not seem necessary to buy into Roark’s hylomorphic reading of Aristotle’s Treatise on Time to understand Aristotle to intend an underlying material continuum to provide non-temporal “relata” expressed in the relation “before” and “after.” Roark argues that priority and posteriority are already present in Aristotle’s account of \textit{kinēsis} (Cf. Roark 2011, 95). I agree, but they are present only insofar as there is a natural being undergoing \textit{kinēsis}. It is the natural being that undergoes change and is a material continuum itself insofar as it is always becoming.} Instead, before and after are transposed from attributes of magnitude to attributes of time by way of the attributes of \textit{kinēsis} to show that they constitute nothing temporal at all. Instead, they are spatial. Time for Aristotle comes later. The \textit{kinēsis} from before to after is noticed because before, “x,” alters. It no longer exists; it becomes, “x$_1$”—after. It is thus when the \textit{kinēsis} is noticed that time is said to
have elapsed. So, while the potential for the continuity of time exists even at the same level as the continua of magnitude and *kinēsis*, it does not exist in actuality unless the *kinēsis* from before to after is noticed. Thus, time is not the *kinēsis* from before to after.

Once Aristotle accounts for a non-temporal before and after in time, he turns back to his argument for the relationship between time and *kinēsis*:

But we apprehend time only when we have marked motion, marking it by before and after; and it is only when we have perceived before and after in motion that we say time has elapsed. Now we mark them by judging that one thing is different from another, and that some third thing is intermediate to them. When we think of the extremes as different from the middle and the soul pronounces that the ‘nows’ are two, one before and one after, it is then that we say that there is time, and this that we say is time. For what is bounded by the ‘now’ is thought to be time—we may assume this (ἄλλα μήν καὶ τὸν χρόνον γε γνωρίζομεν ὅταν ὀρίζομεν τὴν κίνησιν, τῷ πρῶτον καὶ ὑστέρον ὀρίζοντες· καὶ τὸτε φαμὲν γεγονέναι χρόνον, ὅταν τοῦ πρῶτου καὶ ὑστέρου ἐν τῇ κινήσει αἰσθησιν λάβωμεν. ὀρίζομεν δὲ τῷ ἄλλῳ καὶ ἄλλῳ ὑπολαβεῖν αὐτὰ, καὶ μεταξὺ τι αὐτῶν ἐπερον· ὅταν γὰρ ἔτερα τὰ ἁκρα τοῦ μέσου νοῆσωμεν, καὶ δύο εἴπῃ ἡ ψυχὴ τὰ νῦν, τὸ μὲν πρῶτον τὸ δὲ ὑστέρον, τότε καὶ τοῦτο φαμὲν εἶναι χρόνον· τὸ γὰρ ὀρίζόμενον τῷ νῦν χρόνος εἶναι δοκεῖ· καὶ ὑποκείσθω (219a22-29).  

So, it is the perception and the marking of “before” and “after,” i.e. the perception and marking (*orizei*) of a being undergoing *kinēsis*, by which we seemingly apprehend time.

*Kinēsis*—the alteration, growth or diminution, or locomotion—that which makes “one thing different from another” (ὁρίζομεν δὲ τῷ ἄλλῳ καὶ ἄλλῳ ὑπολαβεῖν αὐτὰ, καὶ μεταξὺ τι αὐτῶν ἐπερον) of a substantial being “some third thing intermediate to the two differences” (ὅταν γὰρ ἔτερα τὰ ἁκρα τοῦ μέσου νοῆσωμεν, καὶ δύο εἴπῃ ἡ ψυχὴ τὰ νῦν) of substantial beings happens regardless of its perception by a third party. Yet, it is this perception and marking, i.e. this apprehension, which seems to create time. This is to say that time, meaning the time taken, appears to exist because it is apprehended by us as a

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61 Hardie and Gaye translate ἡ ψυχή, “mind” in the ROT. To be more precise, I have amended the translation so that ἡ ψυχή is rendered “soul.”
result of (1) the principle of nature, and (2) the apprehension of that principle. “Now,” which is terminology precipitate of the endoxa, takes on a spatial reference here. “Now,” recall, is not a real part of time (see also ahead at 220a18-21); it is merely believed to be a part of time. It is a limit. It delimits the *kinēsis* occurring of existing self-subsistent beings (Recall 211b30-212a2 from Aristotle’s discussion of place. He related place first to the *hypokeimenon*, or the intermediate that undergoes change, and then as a limit). When accidental change is noticed and marked, time is said to have elapsed, at least in some sense.

Aristotle continues, again drawing conclusions about what time *is* with support from the way it is perceived (recall 218b27-29). Time is not thought to have elapsed, he reasons, when the “now” is not perceived to be more than one (219a30-31). But, whereas in the previous argument Aristotle leaves open the possibility that his reader understand him to be saying that time exists regardless of the perception, and that it is only on account of the perception—or lack thereof—when we misapprehend time, here Aristotle makes the stronger claim that the actual perception and subsequent apprehension of the before and after actualizes time. “When we do perceive a ‘before’ and an ‘after,’” he writes, “then we say that there is time. For time is just this—number of motion in respect of ‘before’ and ‘after’” *(ὅταν δὲ τὸ πρότερον καὶ ὢστερον, τότε λέγομεν χρόνον· τοῦτο γάρ ἐστιν ὁ χρόνος, ἀριθμὸς κινήσεως κατὰ τὸ πρότερον καὶ ὢστερον)* (219a34-219b1). Not only do we say “there is time,” when we perceive the change from “before” to “after,” but this time that we proclaim when we have apprehended it is indeed all that time is if we are talking about the time taken. Aristotle’s words that precede his well-known definition of time cannot be brushed aside: “for time
is this” (τοῦτο γάρ ἐστιν ὁ χρόνος). His original puzzle to understand the being of time has properly debunked the endoxa, and in their wake leaves an entirely new way to think about temporality. Not unlike his treatments of place, infinity, and void, we see his clear intention here to associate time with kinēsis and, more primordially, with the beings undergoing kinēsis, to render time a potential derivation of kinēsis when certain conditions are met. I will discuss the conditions in the next chapter.

Predictably, then, Aristotle again concludes that “time is not kinēsis,” and here he adds the clarification that it is, “only kinēsis in so far as it admits of enumeration” (219b3-5). At this point, then, Aristotle has moved through his justification for the conclusion that time does exist despite that it seems impossible that it could. It exists because Aristotle has redefined it. Now, time is to be understood as a number and not as an imagined vessel containing parts that do not exist. And, on my reading, it is to be understood as a number, which demarcates each interval of kinēsis for natural beings when this kinēsis is appreheended. To say that time exists, then, is to significantly qualify what “exists” means. This is where we have to rely once again on the modal category of beings that exists only in potentiality, which Aristotle established in Physics iii.

Aristotle posits a person’s body (219b13-33), which is meant to be a metaphor for the “now.” At this point, we will get Aristotle’s arguments for how we are to understand the “now.” The idea that the now is a being itself, and a perfect being at that, is dismissed. The body is carried from place to place. As the body travels, time progresses. So is the body the same body in each place, at each moment? Or does the body change? Aristotle’s solution is two-fold. It reiterates our earlier point about the way that natural self-subsistent beings undergo kinēsis. On the one hand, the body stays the same because
there is something about the body that is not fundamentally altered as it moves along. In order for *kinēsis* to even exist, there must be something that is undergoing the *kinēsis*. Aristotle calls this aspect of something its substratum. In the case of the body, there is an underlying unity about the body as it is carried along. Its identity remains intact not only in its starting location, but also in each location where it arrives thereafter. On the other hand, the body changes. With its travels, we can imagine it ages in accordance with the succession of its locomotion; it is altered in small—even superficial—ways, e.g. it may become pale, thinner, weaker. The body both remains the same and yet is ever different.

What I think Aristotle’s means here is that the now, like the body, is non-temporal; it is something that exists and changes along the continuum of spatial magnitude. The body is “here” and now it is “there.” The change in the body is noticed as a spatial difference. The body can be moved in any direction—it is not necessarily moved in the typical forward processing temporal direction “left” to “right.” Despite its direction, its change from “here” to “there” is perceived and marked. Just as we become aware of “before” and “after” in the act of the body being carried, yet despite the direction it is moving, we likewise notice the now when we observe spatial change.

The wall was painted blue, and now it is half yellow. There has been a change. “Before”

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62 Coope (Coope 2005, 29) supports that the now is not temporal when she observes, “On the one hand, none of time is except the now. This suggests that time only exists in virtue of the existence of the now. But on the other hand, for the now to exist, it must be a division or boundary of some independently existing continuum. This continuum cannot be time, since time itself is dependent on the now. It follows that there must be some other continuum, prior to time, on which the now depends for its existence” (emphases in original). For Coope, however, the “other continuum” is going to be change. I will ultimately disagree with this conclusion. The more primordial “other continuum” is a “this,” the self-subsistent existing natural beings, “the matter” undergoing the change.

63 See Hussey (Hussey 1983, 143) on “changes ‘along’ magnitudes”; there, he concludes that every change is necessarily a change along a path and thus that there is ontological and logical priority on the path.
the alteration is differentiated from “after” the alteration because a change is perceived. The man was unmusical, and now he is musical; the house was not built, and now it is built; I was on my way to Thessaloniki, and now I have arrived. We typically think of these examples of \textit{kinēsis} as temporally determined. We understand time to be a vessel in which all change occurs according to a predetermined progression, and we think of the “now” as points on the line of this progress. But, this view is precisely what Aristotle is countering. Time is a number apprehended after \textit{kinēsis} is perceived; it is not a vessel or prefabricated line. The “now” is not a point in a series of points on a line; it is a spatial difference, a limit. The “now,” as it is with the body, is both that which remains, i.e. the identity or substratum that is maintained through \textit{kinēsis}, as well as the difference before and after the \textit{kinēsis} (219b26-29). The “now” is every subsistent being, both its substratum and its difference between what it is before and then after \textit{kinēsis}. The man’s unmusicality, yet simultaneous potential for musicality is “before,” and his musicality is “after.” The man is “now,” the unmusicality is “now,” and the musicality is “now.”

Recall, that Aristotle is after comprehensive understanding of nature, and here he writes, “this is what is most knowable; for motion is known because of that which is moved, locomotion because of that which is carried. For what is carried is a ‘this’ (τόδε τι), the movement is not” (καὶ γνώριμον δὲ μάλισται τοῦτ’ ἔστιν· καὶ γὰρ ἡ κίνησις διὰ τὸ κινοῦμενον καὶ ἡ φορὰ διὰ τὸ φερόμενον· τόδε γὰρ τι τὸ φερόμενον, ἡ δὲ κίνησις οὖ) (219b29-31). \textit{Physics} i-ii provided us the \textit{archai} of nature and the nature of natural beings. And \textit{Physics} iii-iv have investigated motion and its terms. Here, we see confirmation from Aristotle that we have indeed been proceeding from what is most knowable to us to what is most knowable to nature. We perceive motion, which alerts us
to investigate nature. When we investigate the nature of natural beings, we find that their nature is the principle of *kinēsis* and stasis. The *kinēsis* is not the being to investigate; but, as discussed in the previous chapter, that we observe *kinēsis* alerts us to the way natural beings exist and, at the same time, because of the way natural beings exist, we observe *kinēsis*. *Kinēsis* exposes the complexity of natural beings, humans included; no natural being, by its nature, is simply static. We proceed from the *kinēsis* we perceive, and we discover that the terms of motion are all—at least to begin with—potentialities and not actualities of being. E.g. contra Zeno, infinity exists only by potential division. The *kinēsis* itself is not the topic of investigation; the “this,” or substantial beings are. The “now” we notice as “before” in this way and “after” in that way is precisely Aristotle’s topic in the *Physics*, as I attempted to show in the last chapter. The kind of being, which remains the same, and yet constantly changes, is peculiar to natural being. This is to say that “the now” is a common name for natural being, and thus an identifier for the *kinēsis* it undergoes.

Aristotle has thus done the work to extricate the temporal character of “now” (*nun*) from the term. To perceive a change from “now” to “now” connotes no change “in time.” Instead, it means simply the actual difference on the path (to use Hussey’s term) of *kinēsis* from “before” (the wall is blue) to “after” (the wall is half yellow). Aristotle’s moving body metaphor is perfect here—the body was “here” and now it is “there.” The temporal component of such *kinēsis* comes as a derivative of the *kinēsis*, i.e. once the *kinēsis* has been apprehended.

With this said, then, we are in a position to correctly interpret Aristotle’s subsequent claim that “if there were no time, there would be no ‘now’, and vice versa”
(φανερὸν δὲ καὶ ὅτι εἶτε χρόνος μὴ εἶη, τὸ νῦν οὐκ ἄν εἶη, εἶτε τὸ νῦν μὴ εἶη, χρόνος οὐκ ἄν εἶη) (220a1). It would be too easy to read this passage to suggest that Aristotle has now contradicted himself, or that my argument is severely flawed, understanding him here to be reverting to a traditional understanding of time as a whole composed of three parts: past, present, and future. And, this would seem to make sense. How could we have time without having “now”? But, what I think Aristotle is getting at here is that to speak of “now” as a common name for an existing self-subsistent natural being undergoing kinēsis is already to be implying perception of the being. Just like the number that Aristotle claims to be time, the “now” refers or names the natural being existing independently of all perception and conceptualization. The “now” does not exist without time and vice versa because both the “now” and time require someone noticing and naming, i.e. apprehending, kinēsis in natural objects. Re-invoking the body metaphor, Aristotle concludes that, “the number of the locomotion is time, while the ‘now’ corresponds to the moving body, and is like the unit of number” (χρόνος μὲν γὰρ ὁ τῆς φορᾶς ἀριθμὸς, τὸ νῦν δὲ ὡς τὸ φερόμενον, οἶνον μονὰς ἀριθμοῦ) (220a4). The number is the name of the change, and the now is the name of the “this”—the existing self-subsistent natural being—observed. That both the thing changing and the change itself are named implies someone or something doing the naming.

The “now” and time have a complex relationship because not only does time seem to be made continuous by the now, i.e. time intervals continue so long as a natural object is in motion, but also time is limited by the “now,” i.e. when change has occurred, the interval numbering the change likewise ends (220a5). To say here that the “now” is both that which makes time continuous as well as that which limits time is really to
equivocate on the term. Or, to be charitable to Aristotle here, it is seemingly to conflate the two senses of “now” just established—(1) the substratum of the natural object and (2) the object “before” and then “after” kinêsis. It is by the first sense of “now” that time is made continuous because the natural object continues to move with periods of rest so long as it exists. It is by the second sense that time is limited.

Aristotle returns to the earlier comparison of the “now” with a point (recall 218a12-29), officially dismissing it here (220a9-14). Whereas a point can be the end of one thing and the beginning of another, essentially making one into two, so long as there is a pause, the “now” taken in the first sense above is the analogue or name of the body constantly moving. It continuously undergoes many individual instances of kinêsis. Thus, it is in this sense always different. It is constantly undergoing kinêsis just as the body is always being carried along.

Aristotle concludes iv 11 asserting that the “now” in indeed not time. It is an attribute of time (iversary point, of χρόνος, ἄλλα συμβεβηκεν). To clarify, though, Aristotle does not intend attribute (συμβεβηκεν, literally “comes together”) here in the sense that time is “an attribute” of kinêsis, i.e. derivative of it. The sense in which the “now” is an attribute of time is “in so far as it numbers, it is number…but number (e.g. ten) is the number of these horses, and belongs also elsewhere” (-yyyy δ’ ἀριθμοῖ, ἀριθμῶς ἃ τὰ μὲν γὰρ πέρατα ἐκείνου μόνον ἐστὶν οὗ ἐστὶν πέρατα, ὁ δ’ ἀριθμὸς ὁ τὸν ἔπος τὸν ἔπος, ἢ δεκάς, καὶ ἄλλοθι) (220a18-21). This is the first time Aristotle will introduce the Greek idea that number is nothing symbolic, but rather that which is named by the number (see also 220b6-9), i.e. “the number of these horses”. Because “now” names the natural object or “this,” and the “this” is constantly undergoing kinêsis, the
number of its *kinēsis* from “here” to “there,” from “before” to “after,” ends up referring to the same thing, though in a different sense, that the “now” names. Number names the things counted, i.e. the “nows,” and the now names, at least in one sense, the natural being at different points of *kinēsis*.

Following the discussion of the relationship between time and “now,” Aristotle concludes iv 11 confidently, saying: “It is clear, then, that time is number of *kinēsis* in respect of the before and after, and is continuous since it is an attribute of what is continuous” (ὅτι μὲν τοῖν ὁ χρόνος ἁριθμός ἐστιν κινήσεως κατὰ τὸ πρότερον καὶ ὀστερον, καὶ συνεχής (συνεχοῦς γὰρ, φανερόν) (220a25-26). 64 Aristotle thus ends the chapter as if he were providing a conclusion immediately following his discussion of the magnitude-*kinēsis*-time relationship at 219a14. Strangely, this abrupt back-step to what he had discussed prior to his arguments for the relationship between the “now” and time make the latter seem as though they were slightly tangential. Perhaps Aristotle wanted to reconcile his definition of time with previous conceptions of the now; if his entire analytic of time would contend with the endoxa, he had to explain too a new way to think about “now,” i.e. as non-temporal. If “now” is non-temporal, then so too are “before” and “after,” and thus there is no circularity in his definition of time, as the number of before and after with regard to *kinēsis*. And, in this last assertion, he brings everything together when he returns to the idea that temporality is an attribute of that which is already continuous, i.e. *kinēsis*, and by way of his discussion of the now, it seems clear

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64 Hardie and Gaye (ROT) render “συνεχής (συνεχοῦς γάρ), φανερόν” as “attribute of what is continuous,” but the idea of “attribute” does not appear in the Greek. It would be more accurate to translate the Greek: manifestly continuous; for of the continuous.
that *kinēsis* is in turn consequent of that which is more primordial to change, i.e. the natural being that undergoes the *kinēsis*.

If Aristotle has then addressed the first puzzle in his analytic of time and has established that time *does* exist, but in a new sense, i.e. as a potential continuum derived from the *kinēsis* beings are undergoing, it is still left to him to be more explicit about its nature. If time needs to be apprehended in order that it exist as real, i.e. as a number identifying the *kinēsis* of a being from before to after, who or what exactly is doing the apprehending? Whence does the number come? In the next chapter, I will highlight the difference between marking (*orizei* *kinēsis*) and counting/numbering (*arithmeiton*) or measuring (*metreiton*) *kinēsis* to argue that as an attribute of motion, time on Aristotle’s account is fully actualized only if *kinēsis* is perceived and counted by an intellective soul.
Chapter Three: Conditions of Actualized Time

As a consequence of Aristotle’s account of the nature of natural beings—their principles, that they undergo *kinēsis*, and that there are terms of this *kinēsis*—in the first half of the *Physics*, and in particular Aristotle’s emphasis on potentiality as a modality of being, he defines the last term of *kinēsis*, time (*chronos*), in terms of *kinēsis*. What is more, insofar as he defines time in terms of *kinēsis*, he defines it likewise in terms of existing self-sufficient natural beings. This is implicitly so by the fact that *kinēsis* is a function of these natural beings, by their very nature, but explicitly because Aristotle defines time outright as the number (*arithmos*) of motion (*kinesis*) with respect to before and after (219b1-2). “Before” and “After,” anteriority and posteriority, is a non-temporal relation between relata, i.e. they describe a relation (*pros tì*) between actual beings. We saw this in the previous chapter. We also saw that time for Aristotle, in the sense that it is “taken” (*λαμβανόμενος*), requires some sort of “taker,” or more precisely, since time is an *arithmos* of *kinēsis* for Aristotle, it requires someone or something to observe the before and after and thus to ascertain the number of the *kinēsis*. This is not to say that time cannot exist potentially insofar as *kinēsis* can exist independently of its apprehension, but only that time requires additional conditions in order to be actualized.

In *Physics* iv 14, Aristotle argues that time is dependent on *nous* (223a25). It is not such a big leap then to conclude that the number of motion with respect to before and after is dependent on *nous*. What might this mean? Because Aristotle famously discusses the relationship between time and the soul, and only once qualifies soul as *nous*, it has been common for readers to underdetermine *nous*, as simply “soul.” This is
problematic because, for Aristotle, there are five main potencies of soul: intellective, locomotive, desiring, sensitive, and nutritive. While he argues that human beings have all five, he also tells us that non-human animals have at least desiring, sensitive and nutritive potencies—usually they also have locomotive—and still plants have the nutritive potency (See De anima ii 3). If *nous* can be collapsed into meaning simply, soul, the implication is that time is dependent on ensouled being generally. The term *nous*, often translated “mind” and not “soul,” is problematic without the added confusion that comes from conflating it with “soul.” Namely, it is both the term Aristotle uses to single out the intellective faculty of soul, which as noted is reserved for human beings, and the term often understood by Aristotle’s readers as that which names God/the first principle and the celestial bodies. In order to follow Aristotle’s definition of (*chronos*), it is necessary to understand how he is using *nous* in Physics iv 14. In this chapter, therefore, I offer two arguments in defense of the view that (1) the *kinêsis* of natural beings along with (2) human beings are the necessary and sufficient conditions for actualized time in Aristotle’s account. I discuss in particular the relationship between number (*arithmos*) and *nous* in Physics iv 14 and Aristotle’s account of sensation in De sensu 436a-437a. Namely, I suggest that the existence of number requires not only (1) a body by which to sense-perceive that which can be counted (recall 219a4-6, we perceive, *αἰζζαλόκεζα*, time with *kinêsis*, and, by extrapolation, we perceive *kinêsis* through bodily senses, *σώματος πάσχωμεν*, and in the soul, ἐν τῇ ψυχῇ), but also (2) a readiness for thinking that can actually count/number (*arithmeitón*) or measure (*metreitón*), as opposed to simply marking (*orizei*) *kinêsis*. These of course are in addition to the being undergoing *kinêsis*. I will proceed with these tasks in sections II “Number Requires
Readiness for Thinking” and III “Seeing and Counting Number.” But, first, in section I “Impossibilities for Real Time,” I will provide a negative account and say more about what I think Aristotle does not mean when he uses *nous* in *Physics* iv 14.

I. Impossibilities for Real Time

In Greek, there is a way in which *nous* means not only “mind,” but also “perception.” While I would argue against the thesis that Aristotle intends a generally unconventional use of “*nous*” in *Physics* iv 14, i.e. meaning “perception” and not “mind,” as he seems to do elsewhere (see *Nic. Ethics* vi), on my reading “*nous*” here means broadly the working together of sense and intellection in that, as we see in *De anima*, the faculties of intellect require sensation. This is important to Aristotle’s definition of time in particular because actualizing time requires not only perception of *kinēsis*, but also counting *kinēsis*. The being undergoing *kinēsis* does so irrespective of the apprehension. But, only a being that can both perceive and count can interact with the being undergoing *kinēsis* in such a way so as to actualize time. Super human beings have neither a faculty (*dunamis*) by which to apprehend *kinēsis*, nor the type of intellect with the potential for counting. Sub-human beings do not have a rational soul with which to count. Aristotle thus could not have meant either that actualized time depends on, on the one hand, a super human being like God or the celestial bodies, or, on the other hand, a sub-human being like non-human animals or plants. In an effort to justify this point, I will provide a reading of relevant passages from *Metaphysics* xii 7 and 9 and *De Memoria* 1, namely to support not only the idea that *nous* is a readiness for thinking for Aristotle, thus cannot refer to God, but also that non-human animals and plants do not have the intellective faculty to number, thus cannot fully actualize time.
The unmoved mover/God is neither in time, nor does God have the potential for change. Thus, some have refuted the traditional reading of *Metaphysics* xii 7 where *nous* is thought to refer to God. Instead, a distinction has been made between *nous*, which is a readiness for thinking (see *De anima* iii 4) and *noesis*, or, thinking itself. It has been argued, thus, that God is not *nous* for Aristotle, as that contradicts the idea that God is pure actuality outside of time, but *noesis* (see Polansky 2011). Further, it has been claimed that God cannot be *noesis* either for Aristotle, since even the act of thinking seems to suppose an element of potentiality in that it requires an object (*noeta*) (see Gabriel 2009). Both have important implications for understanding Aristotle’s account of time, and I agree with the general thrust of both. On the first account, *nous* cannot mean God in *Physics* iv 14 because that would require God, or pure activity, to have the potentiality to number, or count, the “before” and “after” in a being undergoing *kinēsis*. Ironically, this would render God impotent, since he would share the same lack of knowledge that humans, non-human animals, and plants have. On the second account, there is even more to find objectionable, i.e., not only is God’s mind reduced to mere readiness for counting, but also it has an object of its activity, i.e. the *arithmos* of the *kinēsis*. Let us look at the pertinent arguments in *Metaphysics* xii 7 in order that we ascertain further evidence that reference to *nous* here should not be understood as a reference to God.

Aristotle begins *Metaphysics* xii 7 recounting his conclusions from *Physics* viii, that there are eternal heavens set into motion by what must be an unmoved mover. He likens the unmoved mover to objects of thought and desire; they too move without being moved (1072a26-27). Aristotle will demonstrate here that whatever cannot be moved
also cannot be that which is moved by an object of thought. The arguments proceed as follows (1072a26-1072b1):

And the object of desire and the object of thought move in this way; they move without being moved. The primary objects of desire and of thought are the same. For the apparent good is the object of appetite, and the real good is the primary object of rational wish. But desire is consequent on opinion rather than opinion on desire; for the thinking is the starting-point. And thought is moved by the object of thought, and one of the two columns of contraries is in itself the object of thought; and in this, substance is first, and in substance, that which is simple and exists actually. (The one and the simple are not the same; for ‘one’ means a measure, but ‘simple’ means that the thing itself has a certain nature.) But the beautiful, also, and that which is in itself desirable are in the same column; and the first in any class is always best, or analogous to the best.

P1: Thinking is the starting point. Therefore, desire is consequent on opinion rather than opinion on desire.

AND

P1: The apparent good is the object of appetite.  
P2: The real good is the primary object of rational wish.  
Therefore: The primary objects of desire and of thought are the same.

P1: Desire is consequent on opinion rather than opinion on desire.  
P2: The object of desire and the object of thought are the same.  
Therefore, thought is moved by the object of thought.

P1: One side of the list of contraries is in itself the object of thought.  
P2: In the list of contraries, substance is first.  
P3: Of substance, what is simple and exists actually is first.  
P4: (assumed) What is simple and exists actually is unmoved.  
P5: What is actually good, i.e. that which is in itself desirable, is on the same side of the list.
P6: The first in any class is always the best or analogous to the best.
P7: (assumed) What is simple and exists actually is desirable in itself.
Therefore, the best object of thought is itself unmoved and desirable in itself.

This passage differentiates noesis (thinking), nous (readiness, i.e. a potentiality, for thinking) and noeta (object of thought). The term in question is nous, which according to this passage has the capacity to receive objects of thought—a capacity that the unmoved mover could not have—not least of all because that which only “exists actually” has no capacity, i.e. potentiality at all. Consider, for example, that the unmoved mover, as the first mover, is not only the first in its class, but by virtue of this, the best. If the unmoved mover is the best object of thought, it is clearly an object of thought. Objects of thought move thought. Yet, it is impossible that the unmoved mover move itself. The unmoved mover does not have motion. If the unmoved mover is an object of thought, it is thus not also moved by thought.

Further, Aristotle explains, since thought shares the nature of the object of thought, readiness for thinking can think itself. Thought and object of thought can be the same thing (αὕτὸν δὲ νοεῖ ὁ νοῦς κατὰ μετάληψιν τοῦ νοητοῦ) (1072b20-21). But, again, thought (νοῦς) here cannot be reference to the unmoved mover/God. God has no capacity to think itself. Thinking for Aristotle, when human thinking, is not an isolated activity of an intellective capacity; rather, it occurs as a relation between a rational soul (nous) who has the capacity for receiving an object of thought, i.e. perception, and the readiness to think about it, i.e. intellecction. In order to be both that which is thinking and that which is the object of thought, something must have the potential for actual thinking. Nous here refers instead to the intellective faculty of the soul. That the rational soul can
make an object of itself shows that the rational soul is a potentiality of an existing selfsubsistent being, who is itself a natural being. While the actuality of the divine is something toward which nous always strives, it is the potentiality of nous and of all natural objects, which characterizes them as existing self-sufficient natural beings.

For Aristotle, actual rational thought depends on the potentiality (dunamis) for thought, and this is consequent on the capacity (dunamis) to receive the object of thought (1072b21-22). The thinking is actual, which is to say it is in the process of thinking, when it possesses the object (1072b22). It is this active element, which Aristotle calls, God-like (δόξαι ὁ νοῦς θεῖον ἔχειν). The subsequent argument is as follows (1072b24-30):

If, then, God is always in that good state in which we sometimes are, this compels our wonder; and if in a better this compels it yet more. And God is in a better state. And life also belongs to God; for the actuality of thought is life, and God is that actuality; and God’s self-dependent actuality is life most good and eternal. We say therefore that God is a living being, eternal, most good, so that life and duration continuous and eternal belong to God; for this is God (εἰ οὖν οὕτως εὖ ἔχει, ὡς ἡμεῖς ποτέ, ὁ θεός ἀεί, θαυμαστόν: εἰ δὲ μάλλον, ἐπὶ θαυμασίωτερον. ἔχει δὲ ὅδε. καὶ ζωὴ δὲ γάρ ὑπάρχει: ἡ γὰρ νοῦν ἐνέργεια ζωῆ, εἰκείνος δὲ ἡ ἐνέργεια: ἐνέργεια δὲ ἡ καθ’ αὐτὴν εἰκείνου ζωῆ ἀρίστη καὶ ἀῤῥός. σαμὲν δὴ τὸν θεὸν εἰναι ζῷον ἀῤῥόν ἀριστόν, ὡστε ζωῆ καὶ αἰῶν συνεχῆς καὶ ἀῤῥός ὑπάρχει τῷ θεῷ: τούτῳ γὰρ ὁ θεός).

P1: God is in a better state than we are, i.e. God is always pure actuality, thinking.
P2: The actuality of thought is life.
P3: God is that actuality.
P4: God’s essential actuality is life most good and eternal.
P5: Life belongs to God.
Therefore, “God is a living being, eternal, most good” and “…life and duration continuous and eternal belong to God.”

God’s nature then is essentially different from the nature of existing selfsubsistent natural beings. Some natural beings are “God-like” in that they have a rational soul; for Aristotle, these are human beings. God is eternal, whereas humans are mortal,
God is superlative, whereas humans share in a piece of God’s goodness, God is actuality and life, whereas substantial beings are by nature ever potentially other than what they are now; their nature is the potential for *kinēsis*. Aristotle turns to the nature of divine thought in *Metaphysics* xii 9, concluding there that God or “God’s thinking” is “thinking on thinking” (ἐζηλ ἡ λοζηο λνήζεσο λοζηο) (1074b34). In other words, God is pure actuality (*energeia*). Recall that the inherent potentiality for *kinēsis* (and likewise, rest) is the nature of natural beings. The first mover/God is pure actuality and cannot be otherwise; hence, it is not capable of *kinēsis*. Since pure actuality has no readiness to receive perceptibles, and in fact no potentiality whatsoever in its being, it cannot carry out the functions requisite to apprehend or take time.

A reading of *De memoria* indicates that non-human animals experience time. Aristotle begins the treatise announcing that he will now treat memory and remembering. He will consider not only its nature and its cause, but also the part of the soul to which these functions, along with recollecting, belong (449b4-6). The distinction made here between memory and recollecting is important for Aristotle; for example, he goes on to clarify that the former is generally sharper in slow people, while the latter is generally sharper in clever people (449b7-8). The objects of memory, he argues, are relegated completely to things that are past (449b14). The future is not remembered, but expected, and the present is sense perceived (449b10-13). Aristotle demonstrates this to be the case with an example. When one is sensing a white object before him, he would say he is perceiving it, not remembering it. Likewise, when one is contemplating an object of science in a given moment, he would say that he knows it, not that he is remembering it.
When the objects are not being perceived or thought readily, then they are being remembered. Remembering, for Aristotle, reconstitutes previously learned knowledge or previously experienced sense perception in one’s mind (449b15-24). It brings to mind an activity that has since ceased. He concludes that, “memory is, therefore, neither perception nor conception (υπόληψις), but a habit or state of one of these, whenever time has become (ἐξίς ἡ πάθος, ὅταν γένηται κρόνος)” (449b25).

The consequence of Aristotle’s definition of memory is that, “only those animals which perceive time remember, and the organ whereby they perceive time is also that whereby they remember” (ὅσοι ὁσα χρόνον αἰσθάνεται, ταῦτα μόνα τῶν ζῴων μνημονεύει, καὶ τούτῳ ὅ αἰσθάνεται) (449b29-30). Thus, on Aristotle’s account, time perception (κρόνου αἰσθάνεται), which implies the ability either for sense perception or intellection, or for both, is the necessary and sufficient condition for memory. We must determine the organ by or through which time perception happens, then, in order that we understand the types of animals that perceive time. Deciding the organ by or through which time perception happens may also be additional evidence that we can rule out God as a sufficient condition for the actuality of time, since as we have seen, God does not have parts, thus cannot have organs for time perception.

Aristotle appeals to his argument from De anima regarding the necessity of images for thinking. The argument given here is as follows (449b31-450a8):

Without an image thinking is impossible. For there is in such activity an affection identical with one in geometrical demonstrations. For in the latter case, though we do not make any use of the fact that the quantity in the triangle is determinate, we nevertheless draw it determinate in quantity. So likewise when one thinks,

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65 Beare translates ἐξίς, “affection,” seemingly missing the ambiguity of the term, i.e. that it might mean habit or potentiality/disposition. He renders ὅταν γένηται κρόνος, “conditioned by a lapse of time” in the ROT.
although the object may not be quantitative, one envisages it as quantitative, though he thinks of it in abstraction from quantity; while, on the other hand, if it is something by nature quantitative but indeterminate, one envisages it as if it had determinate quantity, though thinks of it only as a quantity. (νοεῖν οὐκ ἔστιν ἄνευ φαντάσματος συμβαίνει γὰρ τὸ αὐτὸ πάθος ἐν τῷ νοεῖν ὀπέρ καὶ ἐν τῷ διάγραφειν ἐκεί τε γὰρ οὐθὲν προσχρώμενοι τῷ τὸ ποσὸν ὀρισμένον εἴναι τοῦ τριγώνου, ὡς ὡσαύτως, λέγεται κἂν μὴ ποσὸν νοῇ, τίθεται πρὸ ὁμοίως ποσόν, νοεῖ δ´ οὐχ ἂ ποσόν ἄν δ´ ἄ φως ἂ τῶν ποσῶν, ὀρίστων δ´, τίθεται μὲν ποσὸν ὀρισμένον, νοεῖ δ´ ἂ ποσὸν μόνον).

P1: In the activity of thinking, there is a habit identical with one in geometrical demonstrations.
P2: In geometrical demonstrations, we do not make any use of the fact that the quantity in the triangle is determinate even though we draw it determinate in quantity.
P3: (by analogy) When we think, we envisage it as a quantity even though it may not be a quantity and we truly think it as an abstraction of quantity.
P4: Even if we are thinking of an indeterminate quantity, we envisage it as if it had a determinate quantity.
Therefore, without an image, thinking is impossible.

Aristotle posits subsequently that, “we cannot think of anything without a continuum or think of non-temporal things without time” (450a9-10), a fascinating admission to which he does not return. It is possible that Aristotle is referencing his claim from *Physics* iv 12 that things not measured are not necessarily “in time,” but only accidentally in time (221b25). Even if non-temporal, which I imagine entails not undergoing *kinēsis*, Aristotle imagines that something can be accidentally “in time” insofar as it exists in concert with things that are undergoing *kinēsis* and being measured. Next, Aristotle builds on his previous argument, now showing that thought and thinking are only incidental to memory. The arguments here are as follows (450a9-14):

Thus it is clear that the cognition of these objects is effected by the primary faculty of perception, and memory even of intellectual objects involves an image and the image is an affection of the common sense. Thus memory belongs incidentally to the faculty of thought, and essentially to the primary faculty of sense-perception. (μέγεθος δ´ ἄναγκαδὼν γνωρίζειν καὶ κίνησιν ὡ καὶ χρόνον· [καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν] ὥστε φανερὸν ὅτι τῷ πρῶτῳ αἰσθητικῷ τούτῳ ἡ γνώσις ἔστιν· ἡ δὲ μνήμη, καὶ ἡ τῶν νοητῶν, οὐκ
P1: One must cognize magnitude and motion by means of the same faculty by which one cognizes time. Therefore, it is clear that the cognition of these objects is effected by the primary faculty of perception.

P1: The cognition of magnitude and motion is effected by the primary faculty of perception.

P2: Memory even of intellectual objects involves an image.

P3: An image is a habit of common sense.

Therefore, memory belongs incidentally to the faculty of thought, and essentially to the primary faculty of sense perception.

The sense in which, then, intellection is only incidental to sense perception in the case of memory is that intellection depends on sense perception, even remotely in the case of intellectual objects since it is impossible to think without having had any experience at all with sense perception. Thus, Aristotle is saying here that there is the possibility for memory, which requires only the faculty of sense perception. Whereas, memory can be aided by intellection derived from sense experience, this is not a necessary condition for memory. This reasoning allows Aristotle then to conclude that, “Hence not only human beings and the beings which possess opinion or intelligence, but also certain other animals, possess memory” (δηὸ θαὶ ἑηέξνηο ηηζὶλ ὑπάξρεη η῵λ δوجب, θαὶ νὐ κόλνλ ἀλζξώπνηο θαὶ ηνῖο ἔρνπζη δόμαλ ἢ θξόλεζηλ) (450a14-15). When we connect this conclusion with the prior claim that animals that sense time also have memory, we are tempted to conclude that animals who have the faculty of sense perception perceive time.

Aristotle next clarifies that memory entails apprehension of before and after (450a19-20), which one assumes if memory entails time sense and if time sense entails apprehension of before and after. He then gets specific when he writes, “if asked, of which among the parts of the soul memory is a function, we reply: manifestly of that part
to which imagination also pertains” (τίνος μὲν οὖν τῶν τῆς ψυχῆς ἔστι μνήμη, φανερόν, ὃτι οὐπερ καὶ ἡ φαντασία) (450a21-22). Aquinas, in his commentary on De Memoria, explains that apprehension of before and after entails (determinate) imagination (phantasia): “For some animals perceive nothing save at the presence of sense objects, such as certain immobile animals, which on this account have an indeterminate imagination, as De anima III says. And on this account they cannot have cognition of prior and posterior, and consequently nor time. Hence they do not have memory.” It is not simply animals with sense perception that have memory, but animals with the ability to determine that “this” perceptible is being perceived “before” or “after” “this” perceptible. It seems that this determination requires an ability to mark (orizei) kinesis in some sense.

Aristotle ends the first chapter writing, “it has been shown that it [memory] is a function of the primary faculty of sense perception, i.e. of that faculty whereby we perceive time (ὅτι τοῦ πρώτου αἰσθητικοῦ καὶ τοῦ χρόνου αἰσθανόμεθα)” (451a16-17). While I am open to thinking that non-human animals may indeed have a weak sense of temporal succession enabled by their ability to sense perceive kinesis, which could mean the additional capability to mark “before” and “after” in change, I insist that Aristotle intended to say here that sense perception is a necessary but not a sufficient condition for time sense. My concern hinges on the difference I see between perceiving and counting number. Time is a number for Aristotle, so insofar as some non-human animals can mark (orizei) before and after in kinesis, in some case perhaps sense-perceiving number, they must have a weak sense of time. But, insofar as the number must be counted or measured, time actualization is left to humans (see Ross 1936, 599 on orizei, that it is not
the same thing as measuring time). I will discuss this further at the end of section two and in the third section.

II. Number Requires Readiness for Thinking

Aristotle’s discussion of the dependence of time on the soul is one of the more famous and debated passages in the time section of the *Physics*. Despite its relative brevity—spanning a mere paragraph of the overall argument—interpreters have disagreed about how to understand the crucial relationship Aristotle posits among time, *arithmos*, soul, and *nous*. The passage reads as follows (223a16-28):

> It is also worth considering how time can be related to the soul; and why time is thought to be in everything, both in earth and in sea and in heaven. Is because it is an attribute, or state, or movement (since it is the number of movement) and all these things are movable (for they are all in place), and time and movement are together, both in respect of potentiality and in respect of actuality? Whether if soul did not exist time would exist or not, is a question that may fairly be asked; for if there cannot be some one to count there cannot be anything that can be counted, so that evidently there cannot be number; for number is either what has been, or what can be, counted. But if nothing but soul, or in soul reason, is qualified to count, there would not be time unless there were soul, but only that of which time is an attribute, i.e. if movement can exist without soul, and the before and after are attributes of movement, and time is these qua numerable. (Ἄμηνλ δ’ ἐπισκέψεως καὶ πῶς ποτε ἔχει ὁ χρόνος πρὸς τὴν ψυχήν, καὶ διὰ τί ἐν παντὶ δοκεῖ εἶναι ὁ χρόνος, καὶ ἐν γῇ καὶ ἐν θαλάσσῃ καὶ ἐν οὐρανῶ. "Ἡ ὅτι κινήσεως τι πάθος ἢ ἔξεις, ἀριθμός γε ὅν, ταῦτα δὲ κινητὰ πάντα (ἐν τῷ γὰρ πάντα), ὁ δὲ χρόνος καὶ ἡ κίνησις ὅμα κατὰ τε δύναμιν καὶ κατ’ ἐνέργειαν; πότερον δὲ μὴ οὕσης ψυχῆς εἶ ἢ ὁ χρόνος ἢ οὐ, ἀπορήσειν ἢν τις. Ἀδύνατον γὰρ ὅτις εἶναι τοῦ ἀριθμησοντος ἄδυνατον καὶ ἀριθμητόν τι εἶναι, ὡστε δῆλον ὅτι οὐδ’ ἀριθμός. Ἀριθμός γὰρ ἢ τὸ ἡρμῆμενον ἢ τὸ ἀριθμητόν. Εἰ δὲ μηδὲν ἄλλο πέρων ἀριθμεῖν ἡ ψυχή καὶ ψυχῆς νοῦς, ἄδυνατον εἶναι χρόνον ψυχῆς μὴ οὕσης, ἄλλ’ ἢ τοῦτο ὁ ποτε ἐν ἔστιν ὁ χρόνος, οὐδ’ εἰ ἐνδέχεται κίνησιν εἶναι ἄνευ ψυχῆς. Τὸ δὲ πρότερον καὶ ὅστις ἐν κινήσει ἔστιν· χρόνος δὲ ταῦτ’ ἔστιν ἢ ἀριθμητά ἔστιν).

I will begin with a general observation. Notice here that Aristotle is recalling his actual definition of time from *Physics* iv 11, talking about time as a number, *arithmos*. 

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And here, he takes a step further to define number. Number is something that has been or can be counted: Ἀριθμός γὰρ ἢ τὸ ἡρωθμένον ἢ τὸ ἄριθμητόν. Contrast this with his previous allusions to “marking” (ὁρίζει) κίνησις. Before moving on to discuss the relation of soul to time, then, I want first to say something about Aristotle’s use both of arithmos, or number, and metron, or measure, in his various definitions and explanations of time leading up to this discussion. In the Treatise on Time, Aristotle uses three different verbs to describe the apprehension of time and their corresponding nominal forms to refer to that which time is. He says that κίνησις is counted, arithmeiton, measured, metreiton, and marked, orizei (see 219a22 “we have marked motion,” 219a25 “we mark them,” and 220b15, “time marks the movement”). But, as just mentioned, orizei is not synonymous with either arithmeiton or metreiton. Because Aristotle uses both arithmos and metron in the time section, it has been argued that he uses them interchangeably (See Annas 1975 99). Since metron, literally “that by which anything is measured,” seems to be a genus of various kinds of “thats,” it has also been argued that Aristotle understands number in this case to be a kind of measure (see Coope 2005, 100). In Metaphysics x 6, Aristotle explains that, “Plurality is as it were the class to which number belongs; for number is plurality (πλείθος) measurable (μετρεῖτον) by one” (1057a3). This passage has been used not only to defend each of the opposing views above, but also to say that for Aristotle, it is one, as opposed to number, which is under the genus of “measure” (see Klein 1969, 108). The potential for equivocation on “measure” runs parallel to the potential for the equivocation on “number”; for, as Aristotle himself points out about “arithmos,” measure can mean both the unit of measure, i.e. the “that,” or the measurement itself (see 219b where Aristotle says that number can mean both the number counted and the number with
which we count). In the first case, we are talking about “one,” and in the second place we are talking about a plurality measured by one. For Aristotle, time is number in so far as it is that which is counted—the plurality and not the one. The impulse to think that the analogous sense of *arithmos* and *metron* are not synonymous here has to do with the idea that Aristotle understands time to be an ordering and not a quantity (see Coope 2005, 104). While I would not have a problem acceding to the claim that there is a non-temporal ordering going on between anteriority and posteriority, it seems important to understand these positions as designating a relation. Yes, relations can connote an ordering, but the fact that such a relation exists does not automatically prohibit that the terms in relation, the relata, exist as a discrete plurality or quantity of things. I thus maintain the standard view that number and measure are synonymous in Aristotle’s treatment, on the basis that I do not think order and quantity are mutually exclusive designations, and I understand them both to refer to the plurality counted and not the unit, one, by which we count.

With that said, I want now to return to the passage on time and the soul. Recalling the first few lines from the passage above, Aristotle introduces the topic with a statement and a quasi-question, he thinks it “is worth considering how time can be related to the soul (ςπρή); and why time is thought to be in everything (ἐλ παλη ἔλ παλη), both in earth and in sea and in heaven.” Aristotle wants to consider how time is related to the soul, here not yet qualified as the rational soul. Time is thought to be in everything, meaning things in on earth, in the seas, and in the heavens. Though, since Aristotle has offered an unconventional definition of time here in the Treatise on Time, the idea commonly held that time is “in everything” is right, but now in a new sense. For Aristotle, time is in
everything because, (1) “it is an attribute, or state (πάθος ἡ ἕξις), of movement (κινῆσεως) (since it is the number of movement),” and (2) “all these things [on earth, in the sea, and in the heavens] are movable (for they are all in place), and time and movement are together, both in respect of potentiality and in respect of actuality.” If time is the number of kinēsis, it is not an intrinsic part of natural objects. Indeed, as I argued in the previous chapter, it has no existence for Aristotle qua itself and unless actualized remains a potentiality of kinēsis. Yet, to the extent that natural beings on earth, in the sea, and in the heavens, undergo kinēsis, and kinēsis is an actualized potentiality because they are first of all actually in place, there is the potentiality for these natural beings to be in time.

Since at this point Aristotle has said only that it is worth considering that time is related to the soul and clarified that time is an attribute of kinēsis because it is a number of kinēsis, the specific relationship of time to soul is not clear, but it does seem clear that it is going to have to have something to do with the sense in which time is a number, and number, as we saw previously, is something counted. At this point in the text, a question could be raised as to whether this counting is done not by anyone in particular, but in accordance with some celestial standard, as it has been argued, or if it results from direct observations and then counting of kinēsis. This difference is parallel to the question raised in the previous chapter regarding whether Aristotle’s analytic of time was an analytic of infinite time or time taken. It is necessary, if seemingly redundant, to address the analog to the previous question we find here. Understanding time as the number in

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66 See Polansky (Polansky 2007, 463 n. 5) on interpretation of hexis. For Polansky, the examples of light and art in De Anima iii as hexis provide support that hexis can mean potentiality or disposition. It seems that chronos as hexis provides further evidence that hexis is a potentiality for possible actualization under certain conditions.
accord with a celestial standard annihilates the possibility that time is actualized by the interaction between the observed and the observer and so too my previous claim that Aristotle is focused here in the *Physics* on the time taken. Instead, time becomes something a priori, namely, what we might take to be infinite time, unaffected by particular instances of existing self-subsistent natural beings undergoing *kinēsis*.

In addition, it seems suspicious that Aristotle would argue for the definition of time that he does, if he just meant to explain time as a pre-established standard—essentially predetermined before any *kinēsis* takes place and unalterable by particular *kinēsis* and observation. Certainly, given the context of his scope, access, method and goals in the *Physics*, it is unclear as to why, if time were really just a set number naming the perfect motion of the heavens, it appears in this context at all.

Returning again to the text, Aristotle asks another question, which at this point seems redundant, namely: “whether if soul did not exist time would exist or not.” But, now we get an explicit answer, “if there cannot be some one to count there cannot be anything that can be counted either.” Whereas someone counting is not requisite so that “anything” exist, it is requisite in order that “anything” be counted. Aristotle here makes a general claim about the relationship between things existing, things being counted, and someone counting. Whereas, the claim that something counted, i.e. number, depends on someone counting may seem like a strange claim (one generally accepts that there can be eight planets in the solar system whether or not they are ever counted), the ideas of counting (by way of the counter) and the counted are intimately related in ancient Greek.

It has been argued that our modern concept of number, which comes from Descartes and Leibniz, is vastly different from the concept of number employed here by
Aristotle (see Sachs 2008, 129). In Greek mathematics, numbers are names given to a discrete plurality of things (see De interpretatione ii on names as convention). They are “natural” and not symbolic expressions (see Sachs 2008 130 and Klein 1969 regarding fractions and negative expressions). Ross (Ross 1936, 541) explains in reference to Meta 987b27 that “the Pythagoreans identified real things with numbers, it is not to be supposed that they reduced reality to an abstraction, but rather that they did not recognize the abstract nature of numbers.” While the plurality of things to be counted exists outside of the fact of someone’s counting them, the name given to the plurality is only potentially so. In order for number, as name, to arise, the plurality—the something to be counted—must be counted, thus named. In the case of time, as we know, the something to be counted is kinesis insofar as there are natural beings undergoing kinesis. The sense in which kinesis becomes numbered, and thus the sense in which time exists at all on this account, has to do with whether or not there is someone counting it. Indeed, since on Aristotle’s definitions, time is a number, and “number is either what has been, or what can be, counted,” number is arrived at by way of counting. It is thus implied that someone or something is doing the counting. Aristotle’s claim here is that the number, i.e. time, necessarily depends on the counter.

It is the “some” of this someone counting—namely, who or what is it—that has caused so much debate over this passage in Aristotle’s Treatise on Time. From the conclusions I draw in section I above, I suggest that this someone could not be any ensouled being, i.e. plants, non-human animals, and humans alike. Unlike the act of simply marking (orizei), counting—really a type of naming—seems to be uniquely human. Looking back to the passage, Aristotle seems to say as much: “But if nothing
else is of such a nature as to count but the soul and the intelligence (*nous*) in the soul. Then it is impossible that time be if soul is not, but only that of which time is an attribute.” The actual existence of time, then, requires not simply soul, as it is often suggested and consequently misunderstood, but the intellective capacity of soul, or *nous*. It is the intellective faculty of the human soul that allows for a readiness for counting or naming, a potentiality, that is not present either in Aristotle’s definition of God or in the souls of non-human beings (compare with *De anima* iii 4 “And indeed, they speak well who say that the soul is a place of forms, except that it is not the whole soul but the intellective soul, and this is not the forms as being-fully-itself, but in potential” 429a). Time is actualized when a human being brings this potentiality to bear on a being actually undergoing *kinēsis*.

Aristotle concludes the passage with a reminder about what is actually being counted: “The before and after are attributes of movement, and time is these *qua* countable.” Whereas, I have emphasized before the notion of “marking” the difference from “before” to “after,” thus not quite counting, here Aristotle uses the term *arithmeiton* instead of *orizei*. One wonders how and/or why the “before” and “after” are sometimes marked, and marked by some non-human animals, and yet sometimes counted, seemingly only by human beings, i.e. those with *nous*. Since number is the name of an existing plurality of things, the difference must come down to the number existing in the plurality. When there is only the difference between “before” and “after” in a particular segment of *kinēsis*, the number of the plurality is the lowest possible, i.e. two. But, when there are many nows, or instances of “before” and “after” in one particular segment of *kinēsis*, the number of the plurality can be quite large. My proposal is that if the number is low,
kinēsis can simply be marked. But, if the number is large, kinēsis must be counted. In the case of marking, i.e. in the case of apprehending short-term or otherwise simple kinēsis, e.g. I walk across the room, an intellective soul may not be required. Indeed, from our reading of De Memoria, and life experience confirms this, it seems that non-human animals can apprehend this kinēsis without a problem. Insofar as they are able to do this, they might have a weak sense of temporal succession. But, in the case of counting, e.g. apprehending my relocation to New Haven from Pittsburgh, an intellective soul is required. The change is too great to mark, and indeed I can affirm that my dogs did not relate to the experience temporally. This explains why Aristotle reintroduces the term arithmeiton when he discusses the relationship between time and the soul and then clarifies nous. I will discuss this difference further in the next section.

Still, there is a question as to how the discrete existing plurality and the potency of the intellective soul come into contact with one another so as to allow for the actualization of time. In order to count or name, which points to the bringing into actuality a potentiality of soul, there must first be sense perception of the before and after. The act of sense perception is not dealt with in Aristotle’s general work on physics. Yet, as we have seen, Aristotle tells us in Physics i 1 that we learn first about nature by way of confused perceptions. We assume, then, that sense perception plays an integral role in our understanding of the being of natural objects, and an adequate account of the relationship of the Greek sense of number and the degree to which it can be sense-perceived—putting the readiness for thinking into actuality—is missing from this work. Thus, we have to look elsewhere to understand the importance of such an argument for a
proper understanding of the time/soul relationship for which Aristotle argues. In the next section we will look at relevant arguments in the *De sensu*.

III. Seeing and Counting Number

In *De sensu*, Aristotle takes up discussions that would have been too specific for his general work on the soul, *De anima*. He refers to these as the “remaining part of our subject” where he means specifics about soul. Here, we are going to get into the details of soul functioning. Despite that we learn in *De anima* about certain faculties of soul, which do not require the body as medium, the soul never functions disembodied. In *De sensu*, Aristotle’s topic turns to a more focused discussion of what he names the most common and important faculties of soul, those that require both soul and body. He explains that these faculties—sensation, memory, passion, appetite, desire, pleasure, and pain—belong to all animals (436a8-10). Indeed, they can be quickly tested to reveal that both soul and body are necessary for their proper operation. One does not see without an eye, but neither does a corpse or a brain-dead animal even with eyes. A disembodied stomach does not desire food, but a person with a very small stomach desires less food. The brain in the vat does not feel pain, but neither do the disemboweled organs. This type of reasoning leads Aristotle to argue (436b1-9):

That all the attributes above enumerated belong to soul and body in conjunction, is obvious; for they all either imply sensation as a concomitant, or have it as their medium. Some are either affections or states of sensation, others, means of defending and safe-guarding it, while others, again, involve its destruction or privation. Now it is clear, alike by reasoning and without reasoning, that sensation is generated in the soul through the medium of body. (ὅτι δὲ πάντα τὰ λεχθέντα κοινὰ τῆς τε ψυχῆς ἐστὶ καὶ τοῦ σώματος, οὐκ ἀδύνατον. πάντα γὰρ τὰ μὲν μετ΄ αἰσθήσεως συμβαίνει, τὰ δὲ δι’ αἰσθήσεως, ένια δὲ τὰ μὲν πάθη ταύτης ὁντα τυχάνει, τὰ δ’ ἔξεσι, τὰ δὲ φυλακαί καὶ σωτηρίαι, τὰ δὲ φθοραί καὶ στερήσεις: ἡ δ’ αἰσθήσεως ὡτι διὰ σώματος γίγνεται τῇ ψυχῇ, δήλον καὶ διὰ τοῦ λόγου καὶ τοῦ λόγου χωρίς).
Sensation, then, is a faculty of soul inextricable from the body through which external stimuli are taken in. Aristotle writes, “Sensation must, indeed, be attributed to all animals as such, for by its presence or absence we distinguish between what is and what is not animal” (τοὺς δὲ ζώους, ἂ μὲν ζωὸν ἐκαστὸν, ἀνάγκη ὑπάρχειν αἴσθησιν· τούτῳ γὰρ τὸ ζώον εἶναι καὶ μὴ ζωὸν διορίζομεν) (436b11-13). But, even if the senses are a natural attribute of the beings, which we call “animal” (zoon), they operate for different functions in different animals. For Aristotle, despite that sense perception is activity (energeia), which is an end in itself, the senses are also a means to an end, and the ends (teloi) differ in accordance with the varied potencies of souls for which he argued in De anima. This difference is seen first with regard to the senses requiring an external medium to operate: smelling, hearing, and seeing (436b18-19). We are told that animals that move locally possess these senses, and for all of them these senses are means for basic survival. Animals can use smell, sound, and sight to find food and/or to be alerted to possible dangers. But, these senses can, “…serve for the attainment of a higher perfection. They bring in tidings of many distinctive qualities of things, from which knowledge of things both speculative and practical is generated in the soul” (τοὺς δὲ καὶ φρόνησις τυγχάνουσι τοῦ ἐνεκα· πολλὰς γὰρ εἰσαγεγέλλουσι διαφοράς, εἶ δὲ εἰ τῶν νοητῶν ἐγγίνεται φρόνησις καὶ ἡ τῶν πρακτῶν) (437a1-4). These higher ends are restricted to animals that have intellect, i.e. to humans.

Yet, whereas the distance senses of seeing, hearing, and smelling allow animals to sense proper sensibles, i.e., that which can be sensed only by being seen, that which can be sensed only by being heard, and that which can be sensed only by being smelled, we learn also of common sensibles (see De anima ii 6 for a parallel account). When things
can be perceived with more than one faculty of sense, they are sensed in common. Aristotle provides the following list: figure, magnitude, motion, rest, and number. Sight allows us the most variability in sensing, and it plays an especially big role in perceiving common sensibles.

Now, these passages leave us with a lot to think about regarding the way sense perception functions to allow animals—both human and non-human—to attain various ends. Both humans and non-humans, in so far as they are capable of locomotion, can see. But, what can they see? By virtue of the fact that Aristotle has them using sight to acquire food, and hardly any animals eat dead animals in the wild, we understand him to mean that non-human animals can sense at least some common sensibles. They would have to sense motion in order to catch prey. In fact, modern animal research tells us that it is quite difficult, or maybe impossible, for some non-human animals to differentiate many still objects from each other. This is why camouflage is a defense tool for many different animals. They protect themselves from each other. Surely, even for humans it is difficult to differentiate a cuttlefish from the backdrop of a piece of coral; they blend in so well. Thus, it is the motion of animals that usually alerts other animals to their presence. This is likewise the case with detecting the approach of one’s own natural predators. The old adage may go, “if you can see, you can be seen,” but the likelihood of our seeing an intruder dressed in all black as he hides in a dark alley is quite slim.

It seems reasonable then that non-human animals can detect motion. But, Aristotle also lists number as a common sensible. It is crucial then to argue that seeing number and counting number are two different things, which require two different potencies of soul. As we have seen, sight is a faculty of the soul and body in conjunction.
It is a means by which animals both human and non-human serve basic ends. And, so too we have seen that non-human animals can see motion. In what sense might they see number? Since number here is nothing abstract that requires high order intelligence, but rather just a name given to a multiple of discrete objects, it seems rather likely that non-human animals see it. Returning to the example of predator and prey, one would not say that the wolf is somehow unaware that he is forging into a herd of deer. In order to catch one, he not only sees the many, but also devises a strategic plan for isolating his anticipated catch. It can hardly be disputed that animals see multiple, but it is not necessarily the case that they see number (see Klein 1969 on the possible intuitive nature of *arithmos*). Even humans seem only to see small numbers. When I see two apples on the table, for example, I can say without thinking that there are two there. When there is a bushel on the table, however, I can only immediately say that there are many. I would have to count them to know exactly how many are there. I suspect that the same is true for non-human animals, except they probably do not count, or name, number at all. A wolf sees the number two, in the Greek sense, when he is faced with two possible antelopes to attack. But, when he is faced with the herd, he sees “many,” not a precise number.

As we have seen, in *De memoria* chapter 1, Aristotle concludes that sense perception is the faculty by which time is perceived (451a18). It seems appropriate then

67 Thanks to Prof. Anna Cremaldi for alerting me to the fact there are studies showing this to be true. According to Cremaldi’s recollection, humans are said to perceive as many as six, but we must count any larger quantities to ascertain the number of the quantity (conversation during Q&A at the 2012 meeting of the Society of Ancient Greek Philosophy (SAGP)).

68 See West and Young (2002) on why non-human animals can understand simple calculations, e.g. two treats are shown and one treat is taken away, so the dog notices the difference between two and one.
to distinguish between time perception based solely on sensation, which seems to be the course of “marking” (orizei) and time perception made more precise by the capacity for enumeration (arithmeiton). As I have already concluded in the previous section, I accept the idea that a non-human animal with the sensitive faculty of soul can perceive a weak version of time, which is to say that there is a degree to which they can perceive and mark small numbers, but I deny that they are the sufficient condition for the existence of actualized time. The potential for time exists in all kinēsis, and it is in some sense recognized by the sensitive soul, but the rational faculty of the soul is required in order to bring time, at least in the case where the number that time names is a large quantity of discreet beings, from a hazy multiplicity to a known quantity. In order to achieve actualized time, there must be an existing self-sufficient natural being with the readiness for thinking, i.e. time as a numeral or name, requires the ability to count and the ability to name.

In conclusion, counting sets humans apart from non-human animals. We can differentiate a multitude by counting. This allows us to move past seeing number, hence employing our souls’ intellective potency to determine the discrete number of items that we sense to be a multitude. Thus, counting looks to require both a body as medium for obtaining sense data and a higher order intellect to discern number. Counting motion, which amounts to the coming into actuality of time, then, requires humans capable of sensing the before and after in motion and, when we are not just dealing with short-term kinēsis or a small quantity of discrete existing beings, a readiness for intellection in order to number, or name, the plurality.

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I started out talking about the place of the time section in the wide aims of the *Physics*. Aristotle’s goal to understand the nature of natural beings brought him from discussing the natural beings themselves to topics derived from the way natural beings naturally are, i.e. their nature is an inner potentiality for *kinēsis*. Since Aristotle’s study of time comes from his interest in nature and time for him is not an existing self-subsistent natural being to investigate qua itself, but something “taken,” it has been difficult for readers of Aristotle to know exactly how to understand what time is for Aristotle. This is particularly the case when we look at other works in Aristotle’s natural philosophy, which add additional details about what he understood time to be. There is something ephemeral about time in that, as Aristotle puzzles about in *Physics* iv 10, it does not really seem to exist. This quality, as we saw, is characteristic of all terms of *kinēsis* for Aristotle. The sense in which time seems clearly to exist, and yet can be said really not to exist has to do with Aristotle’s interest in the modality of potentiality in nature—an interest, I have argued, which defines his natural philosophy and sets it apart from his predecessors. We saw just as is the case with the infinite and place, time is only ever potentially existence—only ever potentially a continuum and a whole with parts—insofar as it derives from that which does actually exist in this way. While place can become actual when there is a natural being occupying magnitude, the infinite and time both require something beyond the materiality of natural beings in order that they be actualized. Infinity is the potentiality for endless divisions of beings that never actually occurs. The sense in which the infinite exists is as an actualized thought about the possibility for continuous beings. It is a consequence of continuity recognized by the rational soul. Similarly, time only ever becomes continuous itself as an actualized
attribute of *kinēsis*, i.e. when the rational soul apprehends *kinēsis* and counts it. When
time is taken the “parts of time” acquire some sort of ontological status in that we use the
terms “past” and “present” to organize our experience of and subsequent counting of,
*kinēsis*. This is not to suggest, however, that humans are divorced or excised from
nature. Humans are certainly natural objects themselves on Aristotle’s account, but they
are unique natural objects in that they have a divine-like faculty, i.e. the rational soul.

Time, then, is not something to discover, or learn about, which explains why it receives
relatively little attention in Aristotle’s corpus. Instead, Aristotle seems to recognize it as
something we use to make sense of things; by way of actualizing it, we better understand
our relationship to other natural beings. The lasting legacy of Aristotle’s *Physics* is thus I
think the relationship he posits among natural beings and that he recognized and
emphasized the modality of potentiality at the heart of the nature of natural beings.

Nearly two hundred years after Newton supplanted Aristotle’s theory of nature,
and thus his theory of time, and more than two thousand years after Aristotle penned the
*Physics*, Kant seemed to grant a similar role to consciousness—the moderns were no
longer talking about rational souls—in his theory of time. Namely, it has been suggested
that Kant, like Aristotle, takes a “consciousness-centered” approach to explaining the
being of time. In the next chapter, however, I will show that Kant’s consciousness-
centered approach to time theory was an adulteration of Aristotle’s Treatise on Time.
Both Aristotle and Kant may agree that time results from the way human beings interact
with nature, but Kant’s theory of time is not derived from his theory of nature. On the
contrary, his theory of time is posited in order to help support his theory of nature.
Chapter 4: Kant’s Adulteration of Aristotle’s Treatise on Time

It has been popular for some modern readers of Aristotle’s Treatise on Time to label him with a certain epistemological orientation. Namely, Aristotle has been called an “idealistic” as a response to interpreters misunderstanding the role of nous, or the requisite “counter,” in his Treatise on Time—this is to say that instead of understanding the intellective soul as a being that actualizes the potentiality for time insofar as time is an attribute of kinēsis, one believes nous on Aristotle’s account to be that which allows for the human experience of kinēsis. This latter reading effectually separates humans from the rest of natural beings and suggests an account of time that designs, instead of derives from, a philosophy of nature. In the Transcendental Aesthetic of his First Critique (Kritik der reinen Vernunft), Immanuel Kant famously argues that time (die Zeit) is an a priori intuition. This is to say, that he posits time as a structure of the rational mind absolutely independent of experience (B3), which allows for experience of the external world at all. For Kant, time could not be derived from a philosophy of nature, i.e. ultimately, from experience, as the consequence of this approach renders time contingent. For Kant, this is unacceptable because it is on the basis of his time concept that he then explains his philosophical program. If the foundation is contingent, whatever is established in terms of the foundation will be contingent as well. Kant was looking for certainty. Thus, despite apparent similarities in both Aristotle and Kant’s emphases on the rational soul, or cognition, respectively, in their accounts of time, I examine relevant passages from Kant’s First Critique to argue here for a fundamental dissimilarity between their two treatments.
In the first lines of the Introduction to Ausgabe B of the *First Critique*, Kant’s approach already reads like an adaptation of Aristotelian natural philosophy. Regarding the conditions for experience, Kant writes:

There is no doubt whatever that all our cognition (*Erkenntnis*) begins with experience; for how else should the cognitive faculty (*Erkenntnisvermögen*) be awakened into exercise if not through objects (*Gegenstände*) that stimulate our senses and in part themselves produce representations (*Vorstellungen*), in part bring the activity of our understanding (*Verstandesfähigkeit*) into motion (*Bewegung*) to compare these, to connect or separate them, and thus to work up the raw material of sensible impressions into a cognition of objects that is called experience? **As far as time is concerned**, then, no cognition in us precedes experience, and with experience every cognition begins (BI).

Our cognitive faculty, which exists prior to experience, is only awakened after experience. This is reminiscent of Aristotle’s claim in *De anima* that thinking requires images. In German, the connection between the words for cognition, *Erkenntnis*, and for the cognitive faculty, *Erkenntnisvermögen*, represent perfectly Kant’s meaning here. Cognition happens because of an a priori ability or capacity (*Vermögen*) for cognition. There is a potentiality for cognition that exists prior to experience and is awakened by experience. He explains that the objects of experience play three crucial roles: (1) they stimulate senses; (2) they produce representations/they appear a certain way to us; (3) they bring the activity (*Tätigkeit*) of our understanding (*Verstandes*) into motion (*Bewegung*). Once the understanding, which heretofore has lain dormant with potentiality, is set into motion, it orders, categorizes, and organizes sense data in order that it become experience. Yet, as Kant goes on to explain, “although all our cognition commences **with** experience…it does not on that account all arise **from** experience” (BI).

Every cognition begins with experience, but cognition requires certain necessary

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69 Emphasis is Kant’s, see footnote c (Guyer and Wood 2009).
structures of the mind, which exist before all possible experience. Time is one of these. Time, thus allows for experience.

Kant tells us that Hume awakened him from a “dogmatic slumber,” and Kant’s response was to create a system of transcendental idealism, a program that effectually blended the merits of realism and idealism. In the Ausgabe A Introduction to the First Critique, which explicitly discussed the idea of transcendental philosophy, a section later excised for Ausgabe B, Kant explains that while, “experience is without doubt the first product that our understanding brings forth as it works on the raw material of sensible sensations…it is far from the only field to which our understanding can be restricted” (A2). He then goes on to explain that anything “borrowed” from experience is uncertain, and only those cognitions, which are internal and independent of all experience, are necessary and certain. Kant observes that the experiences we have are mixtures of sense data with a priori features, which allow for the reception of external sense data at all. Reality, then, is not located either in the external world or in one’s mind; it is never accessible by either, and its appearances are given to us only through a coming together of both. It limits the scope and possibilities for what pure reason can know, but in so doing, as Kant reports, it expands the fields about which we can know more. In a note made in his personal copy of the First Critique, Kant famously likens his approach to Copernicus’s discovery of the motion of the heavenly bodies. Kant writes that these, “would have remained forever undiscovered if Copernicus had not ventured, in a manner contradictory to the senses yet true, to seek for the observed movements not in the objects of the heavens but in their observer” (Bxxii). For Kant, the possibilities for experience of
external objects are located within the observer, but contact with these by way of the bodily sense is required to actualize what he assumes to be potential capacities.

Some readers of Aristotle argue that time for Aristotle is “unreal,” or located in the rational faculty of the soul. This argument sets them up then to make a case that Kant’s treatment of time in the *First Critique* is Aristotelian. Indeed, there are passages in Kant’s treatment of time that sound strangely reminiscent of Aristotle’s treatise. My response to these readings of Aristotle and of the similarities between his Treatise on Time and Kant’s treatment is that they depend both on a fundamental misreading of Aristotle and a subsequent misunderstanding of the Kantian project. Chief among the problems of such a misreading is that the scope and themes of Aristotle’s *Physics* and Kant’s *First Critique* are entirely different. Whereas Aristotle seeks the archai of nature, Kant wants to limit the possibilities of human reason. Since I have argued that Aristotle’s Treatise on Time comes out of his general work on nature, it should be clear that Kant’s treatment of time could not and in fact does not emerge from such a context.

As I have tried to show, actualized time for Aristotle is the result of an interaction between more than one being in nature, thus it is based on a lack of distinction between the human being and the rest of nature. It arises from the meeting of an external object in motion and the perceptive and calculative faculties of a human being. Potential time exists despite perception and calculation, as it is an attribute of movement. For Kant, time is not an attribute of motion at all, and the noumenal world, or reality, exists without time. Time is a way for an observer to sequence events in order to make sense of them, i.e. in order to experience them. There is no possibility on Kant’s account that experience of the external world happens outside of time. It is a condition of all experience, which
happens regardless of whether or not the person making the observations is aware of it or intends it. In short, there is no on/off switch. In the rest of this chapter, I will examine Kant’s treatment of time from the Transcendental Aesthetic (from the Greek *aistheisis*, perception by the senses) in the *First Critique* in an effort to show that it is an unnecessary adulteration of Aristotle’s treatise on time. It obfuscates and generally distorts the advantages of Aristotle’s project.\footnote{Not so long ago, I was a proponent of this view. Thanks to the organizers of the 2011 ATINER conference in Athens for the opportunity to deliver an early draft from my project. There was a lively question and answer period, which allowed me to confront just how Kantian my reading of Aristotle had been. My project then became to read Kant through Aristotle instead of the other way around. Thanks also to the organizers and invited participants of the 2012 International Aristotle Symposium in Thessaloniki, Greece. Over the course of our stay, the issue of the unreality of time in Aristotle was a popular topic for discussion. It was brought to my attention during one of these conversations that opponents to the view that time is “unreal” in Aristotle believe that this is a Kantian reading of Aristotle. This spurred me to try and show that this idea seems to equivocate on “unreal” and prompted me to write a chapter exploring the differences between the two approaches as preparatory to my intended discussion of what I have observed to be certain Aristotelian elements in Schelling’s *Naturphilosophie*.}

I. Context of Kant’s Treatment of Time

Kant’s treatment of time is found in paragraphs four through seven of both the A and B Ausgabe, Section II, Part I, the Transcendental Aesthetic, of the first section of the *First Critique*, entitled the Transcendental Doctrine of Elements. Before we look at his treatment of time itself, however, I discuss its context.

Kant introduces the Transcendental Aesthetic with some important definitions. The term intuition, or Anschauung, means, “whatever way and through whatever means a cognition may relate to objects, that through which it relates immediately to them, and at which all thought as a means is directed as an end” (A19/B33). Cognitions only relate to objects, however, when two sufficient and necessary conditions have been fulfilled: (1)
the object is given to human sensibility, and (2) the object affects the mind by way of
sensibility. The relationship among objects (Gegenstände), thought (Der Verstand), and
sensibility (Sinnlichkeit) is argued as follows (A19/B33):

P1: Sensibility is receptivity to the representations of external objects and
capacity to acquire them. Therefore, objects are given to us via sensibility.

P1: Sensibility gives us the object.
P2: Objects are related to cognition by intuitions. Therefore, sensibility alone affords us intuitions.

P1: Intuitions are thought through the understanding.
P2: Concepts arise via the understanding. Therefore, all thought, whether directly or indirectly is related to
intuitions. And by P2 above, it is related to sensibility, too.

Thus, objects and sensibility allow for intuitions, which come to be experienced by way
of the understanding. Kant defines sensation as “the effect of an object on the capacity
for representation, insofar as we are affected by it”; empirical as “that intuition which is
related to the object through sensation”; and appearance as “the undetermined object of
an empirical intuition” (A20/B34). He then goes on to explain that the appearances of
objects we sense perceive are the “matter” of experience; whereas, the a priori intuitions
that allow sensibility to bring external objects to cognition are the “form.” There is an
important distinction in Kant between epistemology and metaphysics, or a theory of
knowledge and a theory of reality. As I have worked to show, this is a distinction we do
not find in Aristotle, although it is often imposed on his work. For Kant, the nature of
reality is permanently and irretrievably unknown to us. What we can know of the world
is precisely whatever we are able to make of the appearances of external objects in
conjunction with what he argues here to be a priori forms of intuition. Form and matter
no longer mean, as they do in Aristotle, a necessary composition of substantial being. Rather, they amount to what the human being can determine about the world given a priori capacities for knowledge, sense faculties, and the opportunity to encounter objects in the world. This view is a consequence of transcendental philosophy because there is a “real” component to experience, i.e. the appearance, or matter as well as an “ideal” component, i.e. the a priori intuitions, or form.

In what remains of the Transcendental Aesthetic, Kant argues that both space and time are the two a priori forms of sensible intuition, and he works through each in turn. The argument for space (der Raum) is as follows (paragraph 3, B41):

P1: Geometry is a science that determines the properties of space synthetically and a priori.
P2: (assumed) There must be a representation of space, which allows for such a cognition to be possible.
P3: From mere concepts no propositions can be drawn that go beyond the concept.
P4: (from Introduction V) In geometry, propositions can be drawn that go beyond the concept.
Therefore, space must be an intuition (Anschauung).

P1: Space must be an intuition.
P2: All geometric propositions are apodictic, e.g. space has only three dimensions.
P3: (by definition) Only a priori intuitions are pure (rein Anschauung), necessary and not empirical.
Therefore, the intuition of space must be encountered in us a priori.

The consequences of such a view include: (1) “space represents no property at all of any things in themselves nor any relation of them to each other”; (2) “space is nothing other than merely the form of all appearances of outer sense, i.e. the subjective condition of sensibility, under which alone outer intuition is possible for us” (A26/B42). And these amount practically to the fact that, “we can accordingly speak of space, extended beings,
and so on, only from the human standpoint”; outside of which, “the representation of space signifies nothing at all” (A26/B42). But, this is not to say that space for Kant is a figment of the imagination. For him, it exists but only under specific conditions. For this reason, he concludes, “we therefore assert the empirical reality of space (with respect to all possible outer experience), though to be sure its transcendental ideality, i.e. that it is nothing as soon as we leave aside the condition of the possibility of all experience, and take it as something that grounds the things in themselves” (A28/B44). In sum, space does not exist qua itself and has no bearing whatsoever on things in themselves. However, in so far as human beings experience the external world, space as an a priori intuition is requisite for that experience to exist. In so far as space is requisite for the experiences, it exists. When we are no longer talking about external objects in terms of experience, we likewise have no grounds to posit space.

It is important to note here that Kant’s treatment of space is divergent from Aristotle’s account of place in crucial ways. And, we cannot let ourselves be fooled by Kant’s initial entry into the First Critique where it looked as though he shared an important foundation of his inquiry with Aristotle—one with regard to the distinction between potentiality and actuality. First of all, as I have mentioned, it does not come from out of a general examination of nature’s archai, nor more specifically, from the assumption that it is an attribute of motion, which is believed to be the defining characteristic of natural objects. Second, Aristotle does not much mention space and generally seems to believe that space is real and widely existent. Aristotle is interested in place in his natural philosophy to the extent that place, as the outside limit of a body, is anterior to, and in fact allows for, kinēsis. For Aristotle, place is in no sense ideal; it has
for Aristotle what Kant would consider empirical reality both as a potentiality and as an actuality.

II. Kant’s Treatment of Time

Kant begins the section on time with a Metaphysical exposition and then makes a few additions regarding motion in a subsequent paragraph premising the Transcendental exposition. Kant’s arguments for his concept of time are as follows (A31/B46-B49):

P1: Simultaneity or succession would not themselves come into perception if the representation of time (*Die Vorstellung der Zeit*) did not ground them a priori.

P2: One represents that things happen at the same time (simultaneously) or in different times (successively) only after presupposing time. Therefore, time is not an empirical concept (*kein empirischer Begriff*) that is somehow drawn from (*abgezogen von*) an experience.

P1: One cannot remove time from appearances (*Anschauung*).
P2: One can take the appearance away from time. Therefore, time is given a priori.

P1: Time is given a priori.
P2: In time alone is all actuality of appearances possible. Therefore, time is a necessary representation that grounds all intuitions.

P1: It is possible that there are apodictic principles of relations of time, e.g. time has only one dimension.
P2: These principles could not be drawn from experience. Therefore, the a priori necessity of time grounds these principles.

P1: Different times are only parts of one and the same time.
P2: The representation of time can only be given through a single object.
P3: The representation of time is an intuition.
P4: (assumed) There are propositions about time.
P4: Propositions about time, e.g. different times cannot be simultaneous, cannot be derived from a general concept.
P5: Propositions about time are synthetic.
P6: Propositions about time must be contained in the intuition and representation of time.
Therefore, time is a pure form of sensible intuition and not a general concept.

P1: (assumed) There is an infinitude (Die Unendlichkeit) of time. 
P2: The infinitude of time signifies nothing but that every determinate magnitude of time is only possible through limitations of a single time grounding it.
P3: The parts of time known through limitation must be grounded by immediate intuition.
Therefore, the original representation of time must be given as unlimited.

P1: Motion is alteration of place. 
P2: Motion is only possible through and in the representation of time. 
P3: Locomotion is a combination of contradictorily opposed predicates in one and the same object, e.g. a thing’s being in a place and the not-being of the very same thing in the same place. 
P4: If the representation of time were not an a priori intuition, then no concept could make comprehensible the possibility of locomotion. 
P5: Only in time, through succession, can both contradictorily opposed determinations in one thing be encountered. 
Therefore, time as an a priori form of sensible intuition explains the possibility of as much synthetic a priori cognition as is presented by the general theory of motion.

The conclusions of Kant’s view, then, are that (1) time cannot exist qua itself as an object; (2) time is a form of our inner sense, which allows us to relate the representations we receive by way of our senses: and, (3) time is the a priori condition for all appearances and together with space, allows for experience of external objects at all. And, the implications of this view are that time is on the one hand empirically real in that it permits experience of appearances and without it there would be no human perception of external objects. On the other hand, it is itself objectively nothing outside of the apparatus of human perception. It is something inside of the human subject, but it is nothing outside of the human subject (A35/B51).
While some have attributed a similar position to Aristotle, we have seen that for Aristotle time is not a condition of human experience. Since actual time for him requires an interaction between the perceptive and rational faculties of the human being, together with external \textit{kinēsis}, there is the possibility for human error and potential miscalculation of time and/or misapprehension of time. This possibility is explored by Aristotle in \textit{Physics iv 11} when he discusses the fabled heroes of Sardinia. Because time awareness for him requires both perception and intellection of motion, when there is no perception of change, the change cannot be and is not counted. When the fabled heroes awoke, they counted the “now” they experienced as no different than the “now” they experienced upon going to sleep. Because there was no perception of change in the interim, there was no possibility for the bringing into actuality of time. This meant that the fabled heroes did not experience actual time because they did not properly relate to the goings on around them. On the Kantian view, there is no possibility for the fabled heroes to misperceive motion and consequently to misapprehend the passing of time. For Kant, as we saw above, motion is only possible \textit{because} time is an apriori intuition of the subject. Without time as an intuition, he argues, motions are not possible (B54).

Kant’s view is in part intended as a challenge to Newtonian physics, especially Newton’s theory of absolute space-time. Newtonian physics was the most formidable challenge to Aristotelian physics. It is perhaps in part Kant’s contention with Newton that had him seemingly siding with Aristotle and promoting what some misread to be Aristotelian idealism. For Kant, Newtonian space-time makes synthetic a priori propositions impossible because space and time exists objectively qua themselves in the world. Because they exist in the world, they are known to us a posteriori instead of a
priori. The consequence of this is that Newtonian time is neither necessary nor certain, which renders any conclusions based on temporal succession—or, on any other principle or property of time—not absolutely true. In the case of geometric truths, Kant notes, this is wholly damming, as geometric axioms—and really mathematical doctrines in general—become contingent.

Although Kant’s treatment of time is fundamentally different from the account Aristotle proposed, Kant did provoke a school of thought that seems to have returned to what I consider to be an Aristotelian approach, i.e. an approach that developed a theory of time from a theory of nature and emphasized the role of potentiality in both. Early Schellingian Naturphilosophie sought to understand nature as an interrelated and integral system. The approach was a simultaneous rejection of Cartesianism and of Kantian category distinction from Kant’s critical works; mind (Geist) and matter are not two differentiated entities, nor are time and space and attributes of matter given to experience by way of consciousness. Thus, a theory of time derived from such a theory would have to be the result of an interaction among the distinct yet undifferentiated parts of nature; time could not have been considered an independent being that was a natural being itself. Instead, it had to be the name for a type of actualization that comes out of the system of nature. In an effort to provide some evidence of this conjecture, in the next chapter I provide a reading of a portion of F.W.J. Schelling’s 1797 work, Abhandlungen zur Erlaeuterung des Idealismus der Wissenschaftslehre, a work from Schelling’s purported “Kantian/Fichtean” period where Schelling introduces what seems to be an early version of the analytic of nature he would articulate in later works.
Schelling wanted us to understand nature as something to which we are inextricably related—and not just to understand, but to act as such. The divide between subject and object, knower and known, could not simply be maintained. In fact, the two are not separate entities at all. I, as the observer, am of the same substance as that which I observe. There is a problem of first beginnings. Namely, we have to start somewhere, so where is that starting point? How do we first say anything about nature when we are supposedly the same as nature; what position can we take up? When we question the position of knower, we call into question the Kantian view on time. This is to say that if we posit the knower as the one contributing temporal succession to nature, it is hard to understand how we derive time from nature when nature and subject are one and the same. Schelling’s work ultimately posits an absolute whence consciousness and nature eventually emerge as two sides of one entity; they stand together in eternal and ceaseless, yet productive, tension. What this tells us about time, then, is that it is not conceived of as a linear progression. The idea of end or progress in Schelling is overcome by a view that contraries give identity to one another and would thus destroy this identity were one to sublate the other. Instead, Schelling stresses productivity, as opposed to the Hegelian Aufhebung, or preserving negation. Schelling’s view of nature benefits not only from Fichte’s subject-object dualism, though Schelling ultimately rejects Fichte’s dualism on account of the position Fichte grants the subject, but also recaptures the Platonic play.

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71 See Iain Hamilton Grant’s (Grant 2005, 1) proposal that Schelling’s Naturphilosophie is meant to be literally generative, i.e. that through which nature produces itself v. coming to know itself.
between contraries in the *Timaeus*, between same and other. Thus, Schelling’s view of time emerges from his general, yet highly nuanced, understanding of nature as dynamic organism.

In this chapter, my aim is to suggest that Schelling’s early *Naturphilosophie* presupposes his later articulations of time insofar as it sets itself up for a theory of time that comes from a foregoing theory of nature. In this sense, I link Schelling to Aristotle and propose that, though ultimately their philosophies of nature are very different, both thinkers emphasize the modality of potentiality at the heart of the way natural beings are. This potentiality does not simply allow for but demands an ongoing relationship between various parts of nature and subsumes all natural beings under one umbrella, rather than dissociating “mind” from “matter.” Whereas for Aristotle this umbrella was the principle of nature for natural beings, for Schelling it is an original underlying unity. It is then in and through the fundamental relationality of natural beings in nature that allows for a concept of time on both accounts. Though their ideas about time also differ, Schelling demonstrates a return to the fundamental Aristotelian thought that time is nothing real itself and comes from the way natural beings interact with each other, i.e. with the way natural beings exist qua themselves. In what follows, I will (1) situate Schelling’s early *Naturphilosophie* in the context of Kantian critical philosophy and in Schelling’s oeuvre, (2) offer a reading of chapter two of Schelling’s *Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre* (1796/1797),\(^\text{72}\) wherein Schelling introduces a way to understand nature as founded on interactions between potentiality and actuality, form and

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\(^{72}\) Translations are my own. A full translation of the chapter appears as Appendix 1. Citations refer to Schelling’s *Sämtliche Werke* volume I, issue 1 (1856-1861). Page numbers from the *Sämtliche Werke* have been retained in the appended translation.
matter, and subject and object, and (3) conclude with some reflections on the association
I make between Schelling’s early *Naturphilosophie*, which I will argue already points to
the view of time as a relation that, as it has been argued, emerges from Schelling’s
slightly later *Ideas for a Philosophy of Nature*, and the understanding of Aristotelian time
for which I have previously argued.

I. Situating Schelling’s Early *Naturphilosophie*

Schelling was a prolific writer but is generally considered to have been an
inconsistent thinker (Cf. Grant 2006, 5-6: that naturephilosophy is core to, rather than a
phase of, Schellingianism and Snow 1996, 3-4: that the tension between contraries in
Schelling’s system is both the key hermeneutical principle to understanding his thought
and that by which we see Schelling’s work as evolutionary instead of chameleon-like).

Scholars have traditionally organized his writings on the basis of methodology—
Schelling’s early period as the “negative philosophy,” and his more mature period as the
“positive philosophy” (Cf. Grant 2006, 5: “the periodizing tendency…is at best
misleading”). The sense in which negative is intended here refers to the influence of
Kant’s critical philosophy, and so too of post-Kantian critical thinkers like Fichte, on
Schelling’s work. To this end, it has been observed that his earliest philosophy of nature
is a synthesis of Kantian critical philosophy and Fichtean subject-object dialectic—
a dialectic said to have been based on the subject (human beings), which resulted in an
internal problem of the other or object (nature), and as it has been claimed, a “hatred” of

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73 See for example Hatem (Hatem 2008, 9), Stern (in Schelling 1988, xix), Grant (Grant
2006, 3), and Breazeale (in Fichte 1994, xxviii, xxv-xxx) on the early influence of Fichte
on Schelling.
the other. After publishing the first edition of *Ideas for a Philosophy of Nature* in 1797, which was at the time Schelling’s most complete articulation of his analytic of nature, Schelling wrote a second edition that seemed largely to move past the Fichtean influence and instead draw from neo-Platonic themes (Stern in Schelling 1988, xx-xxi).

For Schelling’s work, this meant a departure from an explanation of nature as dialectically created by the subject and an alignment with a theory of differentiation that comes first from an original unity, the absolute (*das Unbedingte*). This theoretical turn has been described as a turn toward monism, beginning from “one,” eternally productive of “many” (Stern in Schelling 1988, xxi). Not unlike the struggle we see with the Milesian Pre-Socratic philosophers Anaximander and Anaximenes, who sought to explain the coming into being of nature, which is to say the differentiation of beings, from a single boundless first element, Schelling posited an absolute whence differentiation in being emerged. Schelling’s interest was not in deciding whether the philosopher should start from a critical or “idealist” standpoint or a dogmatic or “realist” one, as had been Kant and Fichte before him. Schelling argued that either starting point was plausible and instead focused on what he thought to be the true single task of philosophy, i.e. to understand how nature moves from an undifferentiated first beginning to differentiation in being. For Schelling, this would eventually become a matter of identifying three potencies (*Potenzen*) in the unfolding of unity to difference, ultimately an inversion of the triads in Kantian categories. For Schelling, the most important category was relation insofar as Schelling’s rethinking of the organism of nature placed human beings back into nature and made the human mind one element of the greater

74 See Merleau-Ponty’s report of Jasper’s characterization (Merleau-Ponty 2003, 48).
75 See Breazeale (in Fichte 1994, xxv-xxvi, x) on Schelling’s terminology.
community of natural beings.\textsuperscript{76} The turn from Kantian-Fichtean influenced critical philosophy to what has been called an archē philosophy is considered to be Schelling’s turn from \textit{Naturphilosophie} to Identity Philosophy, which occupied him up until he made a final turn to an interest in the philosophy of mythology and to the position of empiricism in philosophy, a period now referred to as his “positive philosophy.”

Schelling’s \textit{Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre} (1796/97), \textit{Treatise Explaining the Idealism of the Science of Knowledge}, is a lesser-known text from his early \textit{Naturphilosophie} where Schelling ostensibly responds to Fichte’s \textit{Wissenschaftslehre} (1796). When first published in the \textit{Philosophisches Journal} under the title, “Survey of the Most Recent Philosophical Literature” (1797), it amounted to a series of essays discussing in fact the critical program more generally and its implications for practical philosophy, moreso Kant’s contribution than Fichte’s (Pfau 1994, 61).\textsuperscript{77}

In this text, one notices that Schelling is interested neither in how we know something in nature, nor even in what we can know about nature; instead, he argues that these questions entail a bifurcation of materiality from the conditions under which the material comes to be—a speculative enterprise that is an impossible move in reality. Schelling demonstrates a middle way (I/1, 365) whereby he will not focus on a false notion of cause and effect in nature, which results from our need to separate the

\textsuperscript{76} Bruce Matthews’s recent monograph is superlative in its articulation of Schelling’s later descriptions of time, and time’s relation to nature, in the \textit{System of Transcendental Idealism} (1800). See in particular Matthew’s discussion of time as a category of relation in Schelling and of the parallel coming into being of objects and time (Matthews 2011, 208-209).

\textsuperscript{77} See Thomas Pfau’s \textit{Idealism and the Endgame of Theory} (Pfau 1994, 61-62) for further details about the text. To my knowledge, Pfau’s discussion constitutes the most extensive treatment of the \textit{Abhandlungen} in the English language.
inseparable and to understand becoming as a linear enterprise, but will inquire into the necessary presence of the idea of an external world in our minds. His brief inquiry leads him ultimately to conclude that all contraries exist cohesively as one. Infinite and finite, subject and object, matter and form, not only define each other but are absolutely inextricable from one another. Schelling’s move from thinking with Fichte, that the subject creates nature, to understanding subject and object as two parts of nature having emerged from, i.e. within, the same eternal unity, called into question the Kantian assumption that space and time were conditions for all human experience of the external world. On Schelling’s proposal, there was no longer linearity in experience, no “before” meaning cause and no “after” meaning effect. Thus, time had to be, while not precisely derived by one natural being from the experience of change, a relation among the various instantiations of the absolute, or unity, of nature.

In Schelling’s earliest Naturphilosophie, we do not yet find the ideas about time that he would later articulate alongside his own analytic of nature, for example in Ideas for a Philosophy of Nature and in The System of Transcendental Idealism. In the Abhandlung, by contrast, we find Schelling explaining the critical tradition, seemingly justifying it, but ultimately moving away from it. Schelling’s departure from Kant and Fichte is apparent especially in chapter two of this work, where Schelling seemingly proposes to defend the critical position insofar as he claims it to be a reasonable system based on human reason, but instead seems to issue a backhanded critique of the assumption on behalf of the critical philosophers to try and limit the bounds of pure reason by way of their own use of reason. Schelling then offers an alternative way to think about the relationship of mind (Geist) and matter in nature. In his rethinking of the
way mind and matter exist for each other, Schelling challenges Cartesian dualism, Newtonian physics, and Kantian and Fichtean critical philosophy. Schelling emphasizes the dynamic relationality of matter and mind, leaving open the question as to how one understands temporality in the context of this burgeoning new system.

II. A Reading of Chapter Two from Schelling’s *Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre*

Schelling begins the chapter with an observation: he has heard it asked how the system of the critical philosophers could be conceived, let alone seem convincing to others. He promises to respond to this question in the present chapter. Schelling summarizes the main position as, “the form of our knowledge comes from ourselves, the material of the same thing, i.e. our knowledge, is given to us from outside” (I/1, 363). And, he casts doubt on the idea that, on the one hand, knowledge is a hylomorphic construct, composed by the marriage of real outside material with the likewise real internal structure of consciousness, while on the other hand—as the critical philosophy holds, limiting our knowledge—the possibility for this marriage—by calling into question the capability of our consciousness to know the outside world. Schelling criticizes these two tenets as inconsistent. How can we have a theory of knowledge not grounded in our capability for human knowledge?

According to Schelling, no reasonable person would advance a critical position not grounded in human nature:

I am of the firm conviction that no people not entirely bereft of reason have stated something in speculative things for which there would be found no ground in human nature itself. Were it impossible to elicit the source of speculative deceit, we would need to consider its entire abandonment, keeping others away from doubt. In hindsight, we would be leaving—each of us—our research to blind
chance. A general distrust of human reason would bring us neither to a clear opinion for ourselves, nor to a consensus with others. The reason to act at the present is thus to disprove an inconsistent idea, to show the reason in the seemingly irrational opinions (I/1, 363).

This is to say, that Schelling is about to propose a response to those critical of the critical position, at least on these grounds. He thus begins again, introducing what is perhaps his most provocative claim in this chapter. He writes that “although in our knowledge itself both form and material are intimately united, it is but clear, that philosophy sublates this hypothetical unity in order to explain it” (I/1, 364). For Schelling, knowledge is going to be the product of a relationship between the knower—Kant’s transcendental ego and Fichte’s “I”—and what it knows. Knowledge is not going to depend on the a priori intuition of the human mind to sequence and organize external phenomena for subsequent digestion, as it was for Kant, nor the subsuming of the object, or other, by the subject, as it was for Fichte. Instead, the knower and the known are one and the same thing, and their internal opposition, e.g. “I” and “not-I,” allows us to differentiate by way of reflection ourselves from the outside world.

The idea that the form of knowledge comes from a framework internal to human consciousness, while the material make-up of knowledge—the referent of knowledge—comes from the world external to human consciousness, is according to Schelling based in an understanding of human nature. But, the basis of the distinction between form and material itself is supposed only as a philosophical exercise; it is not meant to be an ontology—an investigation into the being of—knowledge. For Schelling, it is clear that this formulation is a generalization, which helps us to analyze the composition of knowledge. However, as he goes on to explain, the idea that form is internal and material is external truly is meant only for the purposes of philosophical analysis. This seems to
be Schelling’s way of saying that the critical project, while purported to be an effort to limit the reach of human reason, is undertaken on the basis of certain assumptions about the human mind, namely that it is fundamentally separate from nature and that its own potentiality for speculation can be used to justify conclusions about (1) how it knows things and (2) what it can know. Schelling is here calling into question that mind and matter are fundamentally different from each other. By analogy, we can make Schelling’s distinction here more clear. When we are baking bread, we must properly assemble, mix, and heat yeast, flour, and water. The finished product, the bread, could never be literally disassembled to show flour, yeast, and water. These ingredients when simply mixed do not make bread. There are added conditions that are required in order to produce bread as an outcome. One needs to have mixed, kneaded, and heated the ingredients properly. Yet, for the purposes of analysis, we could discuss the creation of bread as the coming together of certain materials (e.g. yeast, flour, water) and form/conditions (e.g. heat, mixing, kneading). Bread is something different from the mere sum of its parts, and its parts are something more than their contributions to the product of bread. There is a change undergone of the materials in the coming together of the bread. Bread is an inextricable and quite particular combination of the “form” and the “materials.”

It is an ancient tradition, he notes to have “considered form and material as the two extremes of our knowledge” (I/1, 364). When we are wondering about the knowledge we have, or, as in the case of the Pre-Socratic philosophers, we are trying to establish knowledge based on concrete empirical evidence, it makes sense that we try to break it off into parts and kinds. After all, knowledge about what or why things are has
to do in particular with a scrutinizing analysis into what causes and/or composes the things. In the case of bread, we are putting components together in a particular way in order to elicit a certain product; whereas, in the case of getting to know something, we are acquainted with the product by way of sense data, and then we come to understand it by way of analysis. Certainly, this is the method we see in Aristotle’s *Physics*. In the opening paragraphs, we learn that Aristotle’s most general work on nature will begin with what is most generally known and will proceed to learn of the causes, primary elements, and principles of natural objects. But, this method of dissection ends up undermining the very being of knowledge itself, which is made not unlike the bread—as an inextricable synthesis between certain material components and the conditions under which these components maintain a relationship with each other to form something altogether different. Knowledge is a product; it is not a substantial being itself.

Schelling goes on to note that an effect of dissecting knowledge into material, on the one hand, and form, on the other, is that the material becomes the “substrate of all our explanations” (I/1, 364). Bread is “yeast, water, and flour”; everything is “water,” or “aer” and it is what happens to these materials, which allows for them to become something else. And, the consequence of this is that the question regarding the source of material is not asked. Schelling continues, however, to show that there are some phenomena that cannot be explained by accounting for a material substrate. Namely, immaterial causal relationships: “regular occurring phenomena that follow one another, in particular things that could be purposive” (I/1, 364). Schelling explains that causal relationships come to be known to us as inextricable from the objects involved in the relationship. It seems impossible to disassociate the material, which causes or results
from a causal interaction from the conditions by which the cause/effect relationship was undergone. As a point of illustration, we can recall Anaximander’s challenge to Thales’s purported thesis that all things come from water (11A12). If all nature comes from a principle form, and that principle form is material, then—as Anaximander realized—it seems impossible that all things have become what they are as a result of this initial material substance. How can one material become all other materials in the world? Instead, he supposedly argued that the first principle was indefinite and boundless, immaterial infinite (12B1 + A9). We are told that opposition, according to Anaximander, came from this initial boundless infinite (12A10). In the case of Thales’s proposal, we have a material substrate for all of nature. But, Anaximander refutes this idea as impossible. Was his opposition to the fact that from one specific material substance, all things are produced, or to the idea that all material diversity comes from a material beginning? He may have realized that the only way we get diversity in materiality is from an immaterial beginning, i.e. from conditions that effect materiality.

If we have a material beginning, then the form of the material will follow—we get an infinity of diverse forms. And, if we have an immaterial beginning, then we have form preceding material. But, the phenomena of cause and effect seems inappropriate as a means to understanding, as Schelling puts it, “this inseparable alliance” of conditions and material (I/1, 364). Thus, Schelling promises to begin this chapter yet again, leaving behind the question about the “source of a world outside ourselves” (I/1, 364). He turns instead to the question of how, “the idea of the world came to be in us” (I/1, 364).

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See for example Gottschalk (1965) for a discussion about the scholarship for and against the proposal that Anaximander’s *apeiron* is material.
He further clarifies the modality of his question: he is not after the possibility of ideas of external things inside of us, but the necessity of the idea (I/1, 365). Further, he is after the reasons why we seek a correlation between the ideas of outside things we have inside us and outside things themselves; why do we not stop with the idea inside of us? Schelling responds to this unasked question: “real” knowledge, we assume, is the correspondence of an idea of outside things with outside things themselves. Thus, in our possession of knowledge and desire for more knowledge, we have come to ask about the being of knowledge. We verify truth based on this correlation between thoughts and phenomena.

Schelling puts the problem this way: in our knowledge, there is an absolute meeting between object and idea, but in speculation we can separate the two in an effort to ask the kind of questions he is after. Once the separation has been proposed, however, it is impossible to think again the unmediated relationship between the two. And, the questions regarding cause and effect begin (I/1, 365). The point here is that as soon as we ask about the relationship between matter and form, or object and idea, we try to respond to the question in a linear way—one has to follow the other; one has to come first. It is impossible for us to think of the two together, simultaneous, and independent at the same time. Because the task is impossible, we never satisfactorily answer the question.

Schelling’s solution has to do with some self-reflection and investigation. He argues that the only example of a being that looks at itself, i.e. a being that is in some situations both the knower and the known, the one intuiting and that which is being intuited, is a human being (I/1, 366). We are examples of this type of being—a being that
has the unmediated “I,” “through which one knows and understands before anything else” (I/1, 366). On the converse, in knowing any other external object, the object is mediated by the “I”. In a slight twist on Kant’s famous claim that existence has no predicate, Schelling then concludes that, “the essence or being (Wesen) of mind (Geistes) is that it is for itself and no other predicate has an itself” (I/1, 366). Schelling thus returns to his quest to identify our impulse to understand the possibility of the correspondence between idea and object. He argues for the need to prove that mind only intuits itself in order to show the absolute correspondence of idea and object. This move is based on three accepted premises: (1) Mind intuits objects overall; (2) The reality of all our knowledge is based in the absolute correspondence of idea and object, and (3) Only in the self-intuition of a mind is there identity from idea and object (I/1, 366). Schelling’s plan for the demonstration begins with two steps: (1) supposing that the subject and object are in us, i.e. the intuited object and mind are identical, and (2) the mind’s name is “I” only when it is an object for itself (I/1, 366).

Schelling defends (2) above. Mind cannot be an object originally, as object is, “something dead, calm, without ability for self-action, object is only the object (Gegenstand) of action,” (I/1, 367). Thus, object cannot mean that which acts. Instead, it is a subject, which acts itself. This becomes, then, the primary distinction Schelling defends as that which separates the identity of subject from that of object. As Schelling goes on to explain, a subject is an eternal (ewiges) becoming.79 Part of this becoming is becoming object to itself by way of acting. So, mind is first subject and becomes object through the ongoing unfolding of itself by way of acting (I/1, 367). Indeed, Schelling

79 The adjective Schelling uses here to express ceaselessness is “ewiges,” which is not the same term he uses when contrasting the infinite (unendliche) and finite (endlich).
underlines the importance of the self-action by which the mind, as subject, becomes
object through itself. Assuming that philosophy takes place with the mind, he concludes
that, “philosophy begins with deed and action, and precisely therefore mind would not be
(per se) originally object” (I/1, 367).

Schelling continues, explaining that object is originally, thus necessarily finite.
Since mind is not originally finite, it is not necessarily finite. Schelling questions, thus,
whether it is infinite in nature. But, he notes that the peculiar characteristic of mind,
which makes it mind in the first place, is that it is not only originally subject, but also an
object in virtue of the fact that it makes itself an object to itself. Thus, since it is mind,
i.e. both subject and object, it can only be such because it is partly object. Since object is
finite, mind must be in some sense finite too. Schelling plays with the theme of
inextricable contraries, concluding that since mind is both subject and, subject’s contrary,
object, it must also be both finite and infinite. He explains this seeming impossibility as
possible: “it is neither infinite without becoming finite, nor can it become finite (for
itself) without being infinite. It is not of either, neither infinite nor finite, alone, but in
mind is the primordial union of the infinite and finite (a new condition of the character of
mind” (I/1, 367). Mind is finite because it is object, and object is not infinite. It is
something that is and will eventually no longer be. But, it is also infinite because it
endlessly re-produces itself as object. Once produced, an object is a finite product of the
subject, which by definition, is capable of infinite production.

Schelling notes that the idea of an immediate transition from finite to infinite is an
ancient concept, which was later covered over by theories of emanation, and later,
Spinozism. The reference seems to be an implicit allusion to Aristotle’s infinite, which
Aristotle argued for in the third book of the *Physics*. Not unlike Aristotle, Schelling’s emphasis here is on infinity of potentiality instead of on infinity of actuality, i.e. of a real substance. As we saw in chapter one, the idea that infinity exists only in relation to the potentiality (e.g. potentiality of division, addition, production, etc.) of a finite object.

Schelling continues, explaining that, “it was not until later ages that inane systems attempted to find intermediate links between the infinite and the finite” (I/1, 368). These attempts, however, result in solutions comprised wholly of finite things. And, he concludes, this is problematic because finite things and ideas cannot explain cause and effect. The result of this, then, is that we find a need for philosophy. Without this problem, notes Schelling, there is no need for philosophy because all knowledge can be obtained by way of empirical investigations. It is the inextricable and original nature of the finite and the infinite, he claims, that founds the “being (Wesen) of an individual nature (the ego)” (I/1, 368). This follows from the identity of the mind as that which is both subject and object for itself, i.e. from the “possibility of self-consciousness,” he explains; only in self-consciousness do we see the marrying of a finite object with the infinity of possible production by the subject.

For Schelling, this amounts to the fact that we are originally either infinite or finite. If the former is the case, we do not comprehend the finite ideas and conditions within us, and if the latter is the case, the idea of infinity seems to be inexplicable. Since, as Schelling goes on to claim, the mind exists, thus sees everything only through its own lens—which, as Schelling notes, means that it exists, and sees, through its own action—is a false dichotomy. While Schelling may think it the case that the fundamental opposition between the contraries is infinite, each action performed by the mind is a finite action.
There is no way to explain the original nature of the ego as either infinite or finite, as the two are inseparable. And, Schelling here returns to his previous theme regarding the method by which we come to think of contraries as separate in identity from each other, i.e. the finite and the infinite here “should be distinguished only in their mutual relationship with each other” (I/1, 368).

The infinite nature of the opposition marries the contraries. But, as Schelling explains, it is only through the action of the mind that one comes to know the contrary activities. Because this is the case, however, the activities are not seen as contraries. Instead, they are thought to be one and the same action of the mind, and Schelling identifies this action to be intuition (I/1, 368). Intuition does not imply consciousness, and yet it is a necessary precondition for consciousness. Consciousness, after all, is that through which one distinguishes the opposed activities. Schelling describes the contrariness in terms of “positive” and “negative,” following up with the depictions, “filled in circle,” and “outline of a circle” (I/1, 368). Finally, he provides an analogue for the positive, filled in circle, which are the actions from outside of the mind, and for the negative, outline of a circle, we have the actions internal to the mind (I/1, 369). Schelling argues that existence is not predicated on being alive, but rather in being affected by conditions. He uses the example of a dead body, which is no longer alive or being there—“it is not,” but which “is there” in the world. The mind “is,” then by the conditions it imposes on itself for itself. This is to say that mind “limits itself in its activity…mind is itself not other than this activity and this limit, both as simultaneously thought” (I/1, 369). This is to express that mind’s infinite potential for infinite action, is
self-limited by its finite actions. The potential for action is unlimited, but the actual action is not.

In this vein, then, Schelling writes that, “by limiting itself mind is at the same time active and passive (leidend), and because without this action also there would be no consciousness of our nature, so would be this absolute unity of activity and passivity of character of the individual nature” (I/1, 369). Because the mind is not just a subject and not just an object, but both, it is likewise not just infinite and not just finite, but both. And, finally, it is not just form and not just matter, but both. As such, it is similarly both activity and passivity. Without being infinite and finite, active and passive, it could not be both subject and object—subject and object for itself. So, the possibility of the unity of contraries are both the necessary and sufficient conditions for mind itself. Without this unity, there could be no consciousness for a subject of itself as object. Likewise, we could imagine a general lack of ability for any type of reflective intuition. The only possibility for perception would have to be naïve realism, where the subject does not even realize him or herself as the filter through which all external material are given.

Schelling goes on to discuss the interrelatedness between activity and passivity when he describes passivity as “not other than negative activity” (IW, 369). Passivity does not and cannot exist without its contrary because, as Schelling goes on to explain, “an absolutely passive being (Wesen) is an absolute nothingness (a nihil privativum)” (I/1, 369). The confluence and absolute simultaneity of activity and passivity are the ground for the existence of mind, or intellect (“intellectual nature”). Schelling notes that “all philosophers have realized this,” and it seems fair to take this as at least a partial

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80 This notion of mind as self-limiting seems to be an inchoate version of Schelling’s later articulations of time as relation in the System of Transcendental Idealism.
reference to Aristotle, though perhaps also as a dismissal of the Eleatic school. We will come back to this idea.

Without the unity of these contraries, ideas (vorstellungen)—though, not external objects—become impossible. As Schelling has previously discussed, it is the mind as subject, which acts and in that process becomes object to itself. The infinity of possible action characteristic of the mind is made finite by its own singular actions. But, here, Schelling declares that the grounding for mind is in fact that simultaneity of activity and passivity; it is the possibility for mind to act and simultaneously to be acted on, which allows that it exists at all. Regarding activity and passivity in terms of mind, it is both intuiting from the outside world, i.e. being affected by outside stimuli and external phenomena, and it is actively developing ideas about that which exists outside itself.

Schelling thus writes that, “in us no idea is possible without passivity, but even less so without activity” (I/1, 369). This is to say that ideas are a synthesis of the two. On the one hand, the mind requires intuition of external phenomena so as not to be an “absolute nothingness,” but it is then the activity of the mind, which allows for the production of new internal phenomena, i.e. of ideas. What we now find, and Schelling is keen to this in his explicit observation that “unnoticed, we have been led through our investigations to the most difficult problem in philosophy.” Without actually asking what is considered the first and most crucial epistemological question—namely, what or who is the starting point of knowledge—we have come upon a reply. There is no starting point; there is no before (knower) to the after (known). Instead, there is an inextricable, necessary, and simultaneous relationship between different aspects of nature, which allow for the production of ever novel phenomena. To be clearer, knowledge is not based on
the simple intellectual intuition that something outside of the mind is predicated a certain way, e.g. “the ball is red.” (1) There is a red ball; (2) I see the red ball; (3) I have an idea of the red ball; (4) Thus, I realize the existence of a red ball. Instead, nature is less linear and not based necessarily on cause and effect, i.e. on pre-set conditions. Instead, the active nature of the intellect allows for a productive self-limiting. Because the interminable opposition between infinite and finite, form and matter, subject and object, etc. exists, ideas come from a simultaneous working together of more than one aspect of nature—mind or “intellectual nature,” on the one hand, and matter or “physical nature” on the other hand. Through this inter-working, we find the production of even further nature by way of mental action. This results in ideas, which in themselves do exist; but, they are not actually existing external to intellectual nature.

The interrelation between activity and passivity is, for Schelling, that which founds in a sense our “being” (Wesen), and what he must mean by this is that the very subject-object dualism he previously defended as characteristic of mind only is in turn the very essence of human existence. It is the implication of this idea that, when taken out of context, implicates Schelling as a philosophical idealist: “And because everything finite is only graspable through opposed activities, but these are originally united only in mind, so it follows from the self, that all outside existence comes forth and is apparent first from intellectual nature” (I/1, 369). Schelling is not implying either that all of nature comes to be only from the mind or that there is a fundamental difference between what

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81 Of course, this raises the question as to whether or not Schelling thought only humans are essentially mind. This type of belief seems to be in line with the Aristotelian tradition of relegating intellectual nature to intellectual beings, i.e. human beings. Whether or not non-human animals share in an active mind, in the Schellingian sense, this means a mind that produces ideas, is not discussed.
we can know and what actually exists external to us, as Kant supposed. This is to say that Schelling is not arguing for a separation between metaphysical and epistemological conclusions. Since the existence of opposition allows for intellectual nature, this nature is a plain facet of nature broadly construed, which is entirely different from saying that mind is somehow outside of nature, trying to “know” it. While the outcome might be the same, i.e. that we never know objects unfiltered by our minds, it is one thing to say that (1) this is because there is a bifurcation between what really is and what we have access to, in Kantian language, “noumena” and “phenomena,” and another to say that (2) the mind as a part of nature produces, in conjunction with intuition from the external world, additional components of nature.

In what follows, Schelling begins seemingly to interchange two German words, *Objekt* and *Gegenstand*, both commonly rendered “object” into English. But, while it has sparked discussion among readers as to whether or not Schelling meant to convey the same or different ideas with his use of the two different terms, it seems clear to me in conjunction with our foregoing reading, that he indeed meant the terms to reference different things. By “Gegenstand,” literally “standing against/in opposition to,” he means external phenomena opposing the subject intuiting the object. Likewise, the way the mind as subject makes itself object by its own action. By “Objekt,” he means the object as intuited by the mind, as that which has been filtered through the lens of the subject and, likewise, that which will simultaneously lend itself to the production of ideas. Schelling thus explains, “the object (Gegenstand) of the intuition is thus not other than the mind itself in its activity and passivity” (I/1, 369). The mind is acted on by the Gegenstand, which by way of the mind both is and becomes the Objekt of the intuition,
which also simultaneously is and becomes the mind’s activity as producer of ideas. The Gegenstand, according to Schelling, is “the mind itself in its activity and passivity” (I/1, 369). Since the mind is self-intuiting, however, it does not immediately recognize the difference between itself and its intuition. Because of the indistinguishable simultaneity of Objekt, Gegenstand, mind, and the act of intuition, we derive “the belief that reality is in the intuition alone” (I/1, 370). “But,” as Schelling continues, “we know that we can distinguish the object (Objekt) and the idea” (I/1, 370). In fact, he notes that it is only because we distinguish the two that philosophy even began.

In order to make the distinction, we need to be able to reflect on, i.e. to step away from, the immediate intuition, which is the passivity of the mind, establishing effectually that there is a difference between the object (Gegenstand) and the object intuited by the mind (Objekt). Schelling explains the importance of abstraction to this process. By way of abstraction we create a new object (Objekt) by way of our own mental action, which is to say that we create ideas that have their own independent existence in real nature. Further, the fact that we can abstract ourselves from the process of intuition and differentiate between object (Gegenstand) and intuited object (Objekt) has a far-reaching implication for Schelling. For him, the necessary condition of such abstraction is that we as humans are free, both from the objects whence we understand ourselves not to be and in the sense that by way of a freedom to act with which we can freely repeat the process of intuition and subsequent abstraction (I/1, 370). Hence, Schelling concludes that, “only by my free action, insofar as it opposes an object, arises consciousness in me” (I/1, 370). And, it is the independent existence of such an object that allows it to be intuited by way of the innate passivity of an intellectual nature. Unless there exists an object for mind to
intuit, there would be no possibility for abstraction of the Gegenstand. Schelling describes thus the converse relationship between, on the one hand, the ability of the mind for free abstraction and the accompanying compulsion for abstraction by way of intuition, and on the other hand, the compulsion for abstraction and the ability for free abstraction (I/1, 371). It is the repetition of this free action, which happens both because of and as a result of the ability for abstraction, which allows us to become who we are. And, it is over the course of such repetition that the actions of intellectual nature, i.e. the production of ideas, becomes a producer of concepts (I/1, 371).

It is then the difference between the concept and the intuition of the Gegenstand, as Objekt, which allows us to see the two as separate entities. But, as Schelling shows, it is the perspective one takes on this difference that allows for certain philosophical conclusions. On the one hand, if one thinks about the concept as having been abstracted directly from the Gegenstand, one takes up the standpoint of empiricism. On the other hand, if one thinks about the fact that we repeat the production of ideas freely, even without continually intuiting external phenomena, it may seem that we do not require the Gegenstand at all for the process of concept creation. If this is believed to be the case, one takes up a position of formal philosophy—maintaining that everything is created in the mind and then “transferred to things outside of us” (I/1, 371). Schelling is neither an empiricist, nor a formalist (a realist or an idealist); instead, he argues for a middle road. This is not to say, however, that Schelling goes the way of Kant. Despite his appreciation of the critical project, Schelling has not invoked the “Copernicanism” of his predecessor. There are no presumed pure forms of intuition—no space, no time, and no
categories given by the mind to shape a manifold of sense data into a meaningful perception.

Instead, Schelling discusses what both empiricists and formalists have in common: “both will be conscious of the objects only in contrast to the free practice of their minds; both also agree, the object is something independent of this practice, notwithstanding the object itself is not this particular practice” (I/1, 372). Schelling attempts to present this idea more clearly by shortening his argument. I present it here in standard form (I/1, 372):

P1: We are conscious of concepts only in opposition to the intuition.
P2: We are conscious of the intuition only in opposition to the concept.
P3: (assumed) We do not have to be conscious of the intuition in order that it exist.
P4: (assumed) We do have to be conscious of the concept in order that it exist, since concepts are created as the result of a repetition of the production of ideas. Therefore, the concept is dependent on the intuition, but the intuition is independent of the concept.

However, he adds that when one removes consciousness, or the intellective nature, one sees that the concept and the intuition are indeed the same thing. The concept arises as something additional to the Objekt only because mind contributes to its production as a separate entity, previously unknown and now known. Schelling continues with the introduction of yet another dichotomy, united by his system: the ideal and real. According to him, “an action, in respect of which we feel free ourselves, we call ideal, one in respect to which we ourselves feel compelled, real” (I/1, 372). Thus, he aligns the produced concept as ideal and the intuition, the taking in of which we have no choice, as real. Both the concept and the intuition, i.e. the ideal and the real, exist to us only insofar as the other exists because, according to Schelling, “for we are ourselves conscious
neither of the concept without the intuition, nor the intuition without the concept” (I/1, 372).

There are then two vantage points whence to take in this information. From the first, it appears that our knowledge is always part ideal and part real and, as such, it will never be by way of this two-faced knowledge that which one caused the other could be explained. From another point of view, knowledge is not one part ideal and the other part real; but, rather, it is simultaneously both ideal and real and there is no actual difference between the two.

From this analysis of the final pair of contraries he will introduce in this chapter, Schelling returns to the opposition between form and material. Suggesting an analogue between the second vantage point given above and the way one might look to the perennial opposition between form and material, Schelling concludes that there is no actual difference between the two. Instead, we think that there must be because it is only by way of our own intellectual nature that we have come to find a difference between the two in the first place. We can identify form and material as contraries only because we know each of them separately through their opposition to each other. And, yet, in identifying the pair with the opposition in this way, we incorrectly identify them as fundamentally separate and opposed. Schelling, if we recall, refers to the “practice of mind” as the intuition and to the “product of this practice” as the concept. When the intuition is abstracted from the concept, what is left is purely formal, and when the concept is abstracted from the intuition, what is left is pure material (I/1, 372). Therefore, Schelling is able to conclude that starting a philosophical inquiry where
consciousness is presented as a given, i.e. as a fact, will result in false conclusions precisely because the premise will be false; he calls it an “inconsistent system” (I/1, 372).

Schelling’s final conclusion here, then, shows the beloved statement of the critical philosophers, “The form of our knowledge comes from us ourselves, the material is given to us from outside” to be unfounded (I/1, 373). The last question he briefly takes up, then, given that form and material are for him one and the same thing, is whether form and material are both given to us from the outside or from the inside, i.e. from our intellective nature (I/1, 373). At first blush, Schelling admits, it looks as though material must come from outside of us. This is because we accept that material is actually real, i.e. a Gegenstand, outside of us. But, material without mind is only ever a Gegenstand, as it cannot be anything for itself. And, so, does this then mean that the material has preceded us? In order for us to know whether material is in itself, we must be material, Schelling surmises. But, as it turns out, he is unable to answer the question he has just posed regarding the origins of form and material. Instead, he asserts that we can only really know ourselves. We should not pretend or purport to have access to knowledge claims about the origins of our knowledge. And, we have come full-circle. The solutions of the critical philosophers fail primarily because they offer answers that cannot, on Schelling’s view, be justified. They rest on the false premise that we can know the original conditions and origination of form and material. Whether or not material comes from outside of us, or whether the challenge that it must come from inside of us, is correct, Schelling does not think we can say. So, he proposes a transition to the next chapter where he will take up the topic of practical philosophy.
III. A Place for Time? Some Conclusions.

In Schelling’s early *Naturphilosophie*, there is no clear analytic of temporality. Nevertheless, it has been speculated that Schelling’s proposals in the *Abhandlungen* remove temporality from the system (Distaso 2004, 116). While it may in fact be true to say that time in the Newtonian or Kantian sense is no longer present in Schelling’s ideas about nature, Schelling has lain the ground whence I contend we can interpolate time as the result of inherent relationality in nature. The reason we might want to do this may not be self-evident. Since I have aimed in previous chapters to show that Aristotle’s philosophy of time comes out of, and is a consequence of, his philosophy of nature, I am interested in understanding the relationship between ideas about time in general as concepts arising from or emerging co-equal to, instead of providing the conditions of or foundations for, philosophies of nature. Hence, since with Aristotle’s *Physics* we got a unique and well-argued philosophy of nature, which was the dominant view of nature for most of the history of Western Philosophy, and since Schelling’s philosophy of nature rejects both of Aristotle’s key opponents, i.e. Newton and Kant, in these matters, and, lastly, since Schelling’s early *Naturphilosophie* returns to the ancient tendency to privilege opposition—rather than promote dualism—I am keen to suggest that any theory of time that we might attribute to Schelling’s early studies of nature be the same type of theory of time that I claim arose from Aristotelian’s.

Thus, if Schelling’s early philosophy of nature does allow for a sense of time as the result of a relation between more than one part of nature, I do not understand it to be a new sense of time. Rather, I understand it to be a renewed sense of Aristotelian time. Contrary to the claim that time has been dropped from Schelling’s system, then, I argue
that it has been re-introduced in his system. What is more, since my previous arguments for understanding Aristotle’s Treatise on Time rests on my reading of his foregoing account of nature in the *Physics*, the task to support my current thesis is to suggest some points of commonality between Aristotle’s view of nature and the one we see Schelling proposing here, even despite the vast differences between them.\(^8^2\) The principal characteristic shared by the two studies is an emphasis on the interrelation and inextricability of actuality and potentiality, among other contraries.

With Schelling, as it is with Aristotle, we get a commonsense approach to understanding nature, which begins with the idea that we are a part of, not divorced from, nature. As such, the task to developing a philosophy of nature is neither an effort to mythologize it, nor to catalogue it as if we humans were simply the narrators of something unfolding around us, separate from us. Aristotle’s first task in the *Physics*, to know the principles, elements, and causes of natural beings is clearly a task that implicitly includes human beings as natural beings. Aristotle is not looking to investigate nature in the sense that “nature” means whatever is other than human beings, i.e. the Cartesian or Fichtean “other.” In fact, he never questions that humans are an inextricable part of nature, and thus that he is himself a part of nature.

Schelling exposes, as Aristotle did before him, the modal category of potentiality in nature, which is to say an element of actual non-being in nature. The object exists in such a way that it is always up for re-negotiation. This renegotiation happens by way of

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\(^8^2\) Chief among the differences is perhaps the difference in what each thinker positions himself to know about “nature.” Whereas Aristotle’s general interest is understanding the nature of existing self-subsistent natural beings, Schelling seems more taken with the idea of nature itself. In Schelling’s later work, this difference seems solidified because Schelling takes a modern approach and discusses nature in terms of forces, not in terms of particular beings.
its own potentiality for alternate predication, as it is an unceasing interplay of contraries, and—as Schelling’s work points out—also as that which is intuited and understood by humans to be its potentiality for renegotiation. While a natural being’s capacity to be something else is always a real potentiality, it is only by way of an intellectual nature that this potentiality becomes something actual before it is ever “real” in nature. So too, something actual in one sense can become actually something other in the content of one’s thoughts. In fact, by way of the activity of intellectual nature, it can become actual in ways that may never be “real.”

For Aristotle, the terms of motion, e.g. the infinite, void, place, and time, do not exist qua themselves. The terms arise as a consequence of the nature of natural beings. Particularly in the case of the infinite and time, as I have tried to show, the term results from an interaction between more than one natural being in nature.

More broadly, this interaction, which is capable of continual reproduction, gives birth to a remainder. And, this product is the always-different finite. In Schellingian terms, this product of intellective activity is an idea. Ideas exist, but they are not self-subsistent beings existing apart from the intellective nature that has produced them. Instead, ideas in Schelling, as is the case with the infinite and time in Aristotle, exist as an interaction between a human being and another being in the world.

The receptivity, or passivity, characteristic of the sensitive faculty of soul, in Aristotle’s terminology, or of the intuition, in Schelling’s, allows for the question about the being of nature to arise at all. After all, if we as humans were unaware of change going on around us, to use Aristotelian language, or of the difference between the objects external to us and the objects we intuit, to speak in Schellingian terms, we would have no
use for questions about the principles and makeup of nature. Asking these kinds of questions about nature is quite different from inquiries that begin with the assumption that such faculties allow for the very existence of nature. No, these faculties are the vehicles by which the questions about nature arise in us. Clearly, as we have said, these faculties are just as much a part of nature as are the external objects themselves.

Schelling’s claim that the ‘I’ is perfectly both subject and object simultaneously, and thus the perfect place to begin an investigation into the being of nature is a claim about the state in which we always find nature. This is to say that nature is always going to be something that is not a singular object to investigate as if we were simply passive observers. Instead, it must always begin as an investigation into a relationship between the part of nature asking about nature and the aspect of nature sensed or intuited by the questioner. Thus, from its beginning, such an investigation does not make the Newtonian or Kantian mistakes of attributing either too much to the external world, nor too much to the intellective nature. Instead, as Schelling proposed, we begin talking about one natural being, i.e. the human being, which is at the same time form and material, subject and object, passive and active, real and ideal. Beginning with an investigation of one being who is at the same time mind and matter, subject and object to itself, in turn demonstrates that this marriage of contraries is the non-foundational foundation (abgrundt) of all nature.

But, Aristotle had already argued, in the first book of the *Physics*, that the very interplay between contraries is the starting point to any study of nature. In the Aristotelian vein, then, Schelling demonstrates the foundation of nature as a robust relationship between contraries by emphasizing the being of a human being as the one
being who can have a relationship with itself. As we saw with Aristotle, all natural objects can be predicated both as “actually” one way while simultaneously being predicated “potentially” the contrary. But, Schelling demonstrates that the aspect of potentiality really surfaces as the result of the relationship between that thing and a human being. He does this when he uses the human being as an example of a natural object, which is both actually ‘I’ and ‘not-I’ at the same time by virtue of the fact that it can understand this about itself. By way of the understanding, the human being becomes object to itself; thus can identify itself as both what it is and as what it is not-yet. When actual material, or real, nature enters into a relationship with a human being, who is both real and ideal in nature as a result of its intellective faculty, nature’s principles become a known quantity by way of the relationship. This is to say that the inseparability of all contraries and that they are always and irrevocably co-definitive becomes clear through, in Aristotle’s words, that which is not immediately clear to us.

The activity of the intellective nature, which for Schelling occurs as the result of intuition and for Aristotle requires a prior readiness for thinking in addition to sense perception, is simultaneous with its passivity. Because the intellectual nature is active only as the result of—or, put another way, in conjunction with—its partial passivity, its activity is always the product of the unceasing intermingling and interconnectedness of both passivity and activity. The product of the activity, the finite idea, is thus literally nothing without the infinite potential of the mind continually to act, and this infinite potential is as it is only because the mind is both subject and object, both active and passive.
From this view of nature emerges an idea of time. But, this time is neither that which exists as a being qua itself to take in passively, nor as a necessary feature of the capacity for human beings to intuit outside phenomena. Instead, time in this sense results from the primary way in which nature exists, as an interrelated dynamism. Thus, time must be either coequal to, as Schelling seemingly argues in later works, or a byproduct of the process by which the human being intuits and processes change either in the external world or in the context of a change in its own state of mind. Time is thus very real to the human experience in the world, but it means nothing outside of the subject-object/potential-actual relationship that occurs as primary in nature. Aristotle, spelled this out fairly clearly in the fourth book of the *Physics*, or so I have tried to show by emphasizing (1) Aristotle’s arguments about the archai of nature, (2) his definition of *kinēsis*, which highlights the relationship between actuality and potentiality, and (3) his examinations of the terms of motion, which include time.

Schelling offers an understanding of nature that presupposes that nature is always already interacting with more than one part of itself; nature is always nature in relation. The human being freely creates concepts to better understand the world as a further product of its ideation. These concepts shape the way we continue then to understand the parts of nature outside of us. Distaso (Distaso 2004, 116) attributes this process to the human faculty of spontaneity, “which allows the absolute and unconditional I to give form to a world in such a way that the world becomes objective and conditional.” It is literally by way of the infinite capacity of the intellective nature to make sense of intuition, and thus to produce finite activity, that time amounts to something that is born of the very being of nature qua nature.
Where is time’s place generally in a philosophy of nature unfounded by a priori concepts of time and space? Well, if by place we mean, “place where,” either on the one hand, a container or vessel that is a real self-subsistent being itself containing another actual being, or, on the other hand, the outer limit of a material body actualized by the body’s presence in a particular part of space, then by no means is there a place for time in the sense we have been speaking of time here. When time’s existence comes out of a philosophy of nature, time is nothing qua itself. By contrast, if by place we mean, “place by or in whom,” then time does have a place. Time’s place is partially founded by us, as an outcome of the way in which we interact with other beings in nature.
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Appendix 1

Translation of Chapter 2, F.W.J. Schelling’s

Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre (1796/97)\textsuperscript{83}

Treatise Explaining the Idealism of the Science of Knowledge

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I have heard the question before: how is it possible that such a preposterous system of the so called critical philosophers not only could be conceived in a person’s mind, but also could hold sway there? Because I left this question unanswered in the previous section, I will say something about it here. For, I am of the firm conviction that no people not entirely bereft of reason have stated something in speculative things for which there would be found no ground in human nature itself. Were it impossible to elicit the source of speculative deceit, we would need to consider its entire abandonment, keeping others away from doubt. In hindsight, we would be leaving—each of us—our research to blind chance. A general distrust of human reason would bring us neither to a clear opinion for ourselves, nor to a consensus with others. The reason to act at the present is thus to disprove an inconsistent idea, to show the reason in the seemingly

\textsuperscript{83} The translation I provide here is my own, though I have benefitted not only from Thomas Pfau’s English translation (Pfau 1994), but also from the helpful advice of my colleague Norman Schultz. In most cases, I chose to render the text as literally as readability permitted. I alone am responsible for any missteps.
irrational opinions. However, through this careful inspection it may be shown that such people receive more honors than what they deserve.

The main theorem of critical philosophy [364] can be conveyed as follows: The form of our knowledge comes from ourselves, the matter of the same thing, [i.e. our knowledge], is given to us from outside.

It is yet advantageous, that this opposition will be compiled only generally. For although in our knowledge itself both form and matter are intimately united, it is clear that philosophy suspends this hypothetical unity in order to be able to explain it; and likewise it is apparent that all philosophical systems, from the oldest times on, have considered form and matter as the two extremes of our knowledge.

One soon found, that matter is the endmost substratum of all our explanations. One did thereupon abstain to research the source of matter itself. But one also noticed something else about things, what one could not more explain from the matter itself, but which someone felt forced to explain (for example, general successiveness in nature, particularly in things that could be purposive, on which hangs the order and system of the outside world by way of a complete linkage from beginning to end). But these conditions continue to hang together with the things themselves so much so that one is able to think neither the things without these conditions, nor these conditions without the things. One wanted thus from the understanding something of the highest essence (e.g. a creator of the world) first to change over to these, so one realized not how this inseparable alliance, through which no speculative art can be resolved, emerged between them. One thus allows the things together with their conditions to originate from the creative power of a godhead; no doubt alone one grasps, how an essence from the creative power of an
outside thing itself can be represented, but not how it itself can represent another essence. Or in other words: even if we grasp the source of a world outside ourselves, we fail to grasp how the idea (Vorstellung) of this world came to be in us.

The last attempt thus must be to explain not how outside things independent from us came to be—*for* from these we do not understand, because they themselves are the endmost substrate of all explanations of outside events—*but* how an idea of these things came to be in us.

First the question must be determined. Clearly, it is not only the possibility of an idea in us of outside things, but the necessity of the things that must be explained. Further, not only how we ourselves will know an idea, but also, why we are therefore compelled to relate it to an outside object. For, we hold onto our knowledge as real only insofar as it corresponds with the object. (The old definition of truth: it is the absolute correspondence of the object and of the knowing, has thereon long been able to suggest that the object itself is not other than our necessary knowing.) For in speculation we are able to separate the two, but in our knowledge there is an absolute meeting of them, and even in the inability, the object is distinguished over a period of time from the idea of the idea, establishing for the common understanding the ground of belief in an outside world.

The problem is also this: to explain the absolute correspondence of the object and the idea, the being and the knowing. But now it is clear that as soon as we oppose the object, as the thing outside of us, and the idea (and we do it, by posing the question), absolutely no unmediated correspondence between the two is possible—hence the attempts to mediate the object and idea through concepts, to consider that as cause, this as effect. We never achieve with all of these attempts what we actually wanted, identity of
the object and of the idea; for that is what we must presume and what the common understanding has always presumed in all its judgments.

It is so asked: whether such an identity of the object and the idea is in general possible? Simply put, [366] it is only possible in one case: if such a being that looked at itself were to exist, then the one representing and that which is being represented, that which is intuiting and that which is intuited, would exist at the same time. The only example we find of an absolute identity of an idea and of an object is thus in ourselves. What is alone unmediated, and through which one knows and understands before anything else, is the I in us. I am compelled to ask with regard to all other objects, through what place will the same being be mediated by my idea? But I am not primary perhaps for a knowing subject outside of me, as is matter. I am primary only for myself; in me is the absolute identity of the subject and of the object, of knowing and of being. Since I know nothing other than through myself, so it is absurd, self-consciousness requires still another predicate other than I. Precisely in this consists the essence or being (Wesen) of mind (Geistes), that it for itself no other predicate has as itself.

Only in the self-intuition of a mind thus is identity from idea and object. That is, it would have to, in order to demonstrate the absolute correspondence of idea and object, in which is based the reality of all of our knowledge, prove that mind, in which it intuits objects overall, only intuits itself. The reality of our knowledge is secured by this proof.

The question is, how does one prove it?

First it is necessary that one takes possession of that position, on which the subject and object in us, the one intuited and that which is intuited, are identical. This cannot occur by virtue of a free action.
Further: mind’s name is I, that which only its own object is.\textsuperscript{84}

Mind must be object for itself, which insofar as it is not originally object, but absolute subject, for which all (even himself) is object. So it should be also. Object is something dead, calm. Without the ability for self-action, object is only the object (Gegenstand) of action. But mind can be conceived only in its action (one cannot dissent, from which one says therefore, that he philosophizes without mind), mind is thus only in the state of becoming. What is more, he is himself not other than an eternal becoming. (Thus, one grasps the ongoing advancement, the progression, of our knowledge, from the dead matter to the idea of a living nature). Mind must be an object for itself – not to be, but – to become. Precisely therefore all philosophy begins with deed and action, and mind cannot be (per se) originally object. It becomes only object through itself, through its own action.

Now what object is (originally), is as such necessarily also something finite. Because mind is not originally object, it cannot be originally finite in accordance with its nature. So, must it be infinite? This also seems problematic because it is mind only insofar as it is object for itself, i.e., insofar as it is finite. Thus it is neither infinite without becoming finite, nor can it become finite (for itself) without being infinite. It is

\textsuperscript{84} Mancher ehrliche Mann, der gegen das Bisherige sonst nichts aufzubringen weiß, wird wenigstens das Wort Geist aufgreifen; die Kantianer (wenn sie diese Kritik ihrer Philosophie beurtheilen) werden den Stab über sie brechen, oder sie über Dinge in die Lehre nehmen, welche tief unter ihr liegen, zB daß sie dogmatisch verfahren, von dem Geist als Ding an sich spreche usw Deßwegen habe ich mehrmals wiederholt, Geist heiße mir, was für sich selbst, nicht für ein fremdes Wesen, also ursprünglich überhaupt kein Objekt, geschweige ein Objekt an sich ist.
simply neither infinite, nor finite. However, in mind is the primordial union of the infinite and finite (a new condition of the mind’s character).

From infinite to finite – no overpass! This was a proposition of ancient philosophy. Earlier philosophers sought to conceal this transition at least through images, hence the doctrine of emanation, a tradition from the most ancient world. Thus, the inevitability of Spinozism from the inherited principles.

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It was not until later ages that inane systems attempted to find intermediate links between the infinite and the finite. But such can give between the two no before and no after; this finds instead only finite things. The existence of finite things (thus also finite ideas) cannot be explained by way of the concepts of cause and effect. With the insight of this position begins all philosophy; for without it we have not one time a need to philosophize – without it all of our knowledge is empirical, advancing from cause to effect. The finite and infinite are united originally only in the being of an intellectual nature. In this absolute simultaneity of the infinite and finite lies the being (Wesen) of an individual nature (the ego). That it must be so follows from the possibility of self-consciousness, through which alone mind is what it is. It is but also an indirect (apagogischer) proof for that which is possible. For either we are originally infinite, so we do not comprehend how in us was created finite ideas and a finite succession of ideas; or, we are originally finite, so it is inexplicable how an idea of infinity, at the same time with the ability from the finite to abstract, has come to be in us.
Further: the mind is (sees) everything only through itself, through its own action. Thus actions would have to be originally opposed to it (mind), or, if we consider the mere form of which is given opposed actions, it would be originally infinite, the others originally finite. But the two should be distinguished only in their mutual relationship with each other.

Thus it is as well. Both of these activities are originally united in me; but I know this only through it, that I summarize the two in one action. This action is called intuition, the nature of which I believe to have explained in the foregoing section. With the same intuition is consciousness still not there, but without it is no consciousness possible. First in consciousness can I distinguish the two of those activities: the one is positive in nature, the other negative, the one filled, the other a sphere bordered. Those [369] are presented as activity from outside, these as an activity from inside. Everything, what is (in the true sense of the word is), is only due to the direction of itself (this expresses itself in the dead object, that is not, but only there exists, through gravitational force and in the world system through the centripetal tendency of the world body.) Mind is thus only by its direction of itself, for itself, through which it limits itself in its activity, or what is more, mind is itself not other than this activity and this limit, both as simultaneously thought.

By limiting itself mind is at the same time active and passive (leidend), and because without this action there would be likewise no consciousness of our nature, so would be this absolute unity of activity and passivity of the character of the individual nature.
Passivity is not other than negative activity. An absolutely passive being (Wesen) is an absolute nothingness (a nihil privatum). Unnoticed, we have been led through our investigations to the most difficult problem in philosophy. In us is no idea possible without passivity, but even less so without activity. All philosophers have recognized this. It appears now that our being and essence (Wesen) is based on this original unity of activity and passivity, that it therefore belongs to our being and essence, ever present, and as will be shown in the future, also present is this determined system of things. And because everything finite is only graspable through opposed activities, but these are originally united only in a mind, so it follows from the self, that all outside existence comes forth and is apparent first from intellectual nature.

The intuition actively binds together activity and passivity. This is known, as I put it in the previous section. The object (Gegenstand) of the intuition is thus not other than the mind itself in its activity and its passivity. But the mind, which intuits itself, cannot distinguish at the same time itself from itself—hence, the intuition of absolute identity of the object and the [370] idea (hence, as it will soon be shown, the belief that reality is in the intuition alone; for now still the mind does not distinguish, what is real and what is not real).

But we know that we can distinguish the object and the idea, for from this distinction we set out. (Without it there is no need to philosophize). In order to distinguish the object and idea, we need to move beyond the intuition.

This we cannot other, as the way we abstract from the product of our intuition. (This ability to abstract is thereby graspable because we are originally free, i.e. are independent of the object. Further, since this ability is in opposition to the object
(Objekt), i.e. practically speaking, can be voiced, so it is clear that a difference is possible with respect to the intensity of the idea between different subjects—also that theoretical and practical philosophy were not at all separated; for we would not be able to abstract at all without free action, and we could not act free without abstracting. This will soon become still clearer. Namely, we could not abstract from the product of the intuition without acting freely, i.e. without the original practice (of mind) freely to repeat the intuition; and conversely, we would not be able to freely repeat this action without at the same time abstracting from its product. We could not thus abstract the action from the product, without it opposing the free action (i.e. without giving it independence of our action, self-existence); and conversely, we could not oppose the product of action to our action, without at the same time being free to act (i.e. without abstracting from it). Now only by our abstraction does the product becomes our action’s object.

Only by my free action, insofar as it opposes an object, arises consciousness in me. The object is now here, its origin lies for me in the past, beyond my current consciousness, it is here, without my making. (Hence the impossibility to explain, from the standpoint of consciousness, out of the origin of the [371] objects). I cannot act freely in abstraction, without opposing the object to myself, i.e. without me feeling dependent on it. The object was but originally only in the intuition, absolutely undifferentiated from the intuition. Thus I cannot freely abstract, without feeling compelled in view of the intuition, and conversely, I cannot feel compelled in view of the intuition, without at the same time abstracting freely.

I am becoming me, but I am not conscious of the intuition as I am abstracting from it. Thus I will not be able to be conscious of the intuition, without feeling myself
compelled in view of the same. Conversely, I can feel myself in view of the objects (of intuition) not compelled, without abstracting from it, i.e. without at the same time feeling free. Thus I will also be conscious of my freedom, only insofar as I feel myself restricted in view of the objects. There is no consciousness of objects without consciousness of freedom, no consciousness of freedom without consciousness of objects.

By freely repeating the original practices of mind in the intuition, i.e. by abstracting, concept arises. But, I cannot abstract, without at the same time intuiting with consciousness, and conversely; so we are ourselves conscious of the concept only in contrast to the intuition, of the intuition only in contrast to the concept.

But for that very reason, because we ourselves will only be conscious of the free practice in the intuition in contrast to the same product (the object), it seems to us as something from the abstracted object (Gegenstand) (standpoint of empiricism), the object (Gegenstand) notwithstanding itself otherwise is as a product of this practice.

But because we freely repeat this practice (because we for example see figures free in space, because the imagination can design the general outline of free objects (Gegenstandes), thus it seems to us this practice is something that only comes forth from our minds and that we only transfer to things outside of us (the standpoint of formal philosophy).

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But both (empiricists and formalists) will be conscious of the objects only in contrast to the free practice of their minds; both also agree, the object is something
independent of this practice, notwithstanding the object itself is nothing but this particular practice.

In brief, because we ourselves are conscious of the concepts only in opposition to the intuition, and we will be conscious of the intuition only in opposition to the concept, so it appears (erscheint) to us the concept as dependent on the intuition, the intuition as independent from the concept, the two notwithstanding are originally (before consciousness) one and the same.

An action, in respect of which we feel free ourselves, we call ideal, one in respect of which we ourselves feel restricted, real. The concept seems to us hence as ideal, the intuition as real; but both only in mutual relationship with one another; for we are ourselves conscious neither of the concept without the intuition, nor the intuition without the concept.

Hence who remains from the standpoint of the mere consciousness, must necessarily argue: our knowledge is part ideal, part real; out of it will arise an adventurous system that can never explain how the ideal had become real or the real ideal. One who stands at a higher vantage point finds that there is originally no difference between ideality and reality, so that our knowledge is not in part, but at the same time is entirely and perfectly ideal and real.

Originally the practice of the mind and the product of this practice is one and the same. But we can be conscious ourselves of neither the practice thus of the products themselves, without these opposing those, those opposing these. The practice, abstracted from their product, is purely formal, the product, abstracted form the practice, through the practice it has arisen, purely matter.
Who thus only proceeds from consciousness (as a fact), will establish an inconsistent system, by force of which our knowledge is a part, [373] from unsubstantial forms, on the other hand will put together a wonderful ditty from formless things. In short, such a system will come from a proposition, which we have established above (p. 363) as the principal thesis of the newest philosophy:

The form of our knowledge derives from us ourselves, the matter is given to us from outside.

We know that originally form and matter are one, that we could differentiate the two, only after both exist through one the same identical and indivisible action, we are familiar with only the single alternative: either must both, matter and form, be given to us from outside, or both, matter and form, must first come to be and spring forth from us.

We accept the first—matter is something that is in itself and originally real. But matter is matter, only insofar as it is an object (Objekt) (an intuition or an action). Were it something in itself, so it would have to be also something for itself; but this it is not, for it only ever is to the extent it is viewed from a being (Wesen) outside it.

But suppose it were something in itself—although, it is absurd to say or even to think such a thing—we might not even be able to know what it is in itself. It seems that we would need to be matter ourselves in order to know it. But then, in order to know this being (Seyn) necessarily, it seems actually that we would need to be immaterial. So long as we presuppose that this being is something that precedes our knowledge, we do not even understand what we are saying. Instead of further grasping around blindly at
incomprehensible concepts, it is better to ask, what we alone originally understand, and
what can we understand? But originally we only understand ourselves, and because there
are only two conceivable schemas, one in which the matter is the principle of mind, and
the other, which makes the mind the principle of matter, so remains for us, that we want
to understand ourselves. Ultimately, this amounts to the contention that mind is not born
of matter, but matter is born from [374] mind: a proposition, whence the transition to
practical philosophy, to which we now go, can be very easily made.