

Aristotle on Time and the Soul

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Abstract

In this thesis I seek to explain a simple and yet quite difficult point about the nature of time: time is not motion, despite the fact that time and motion seem to be intertwined and interdependent. Aristotle calls time “something of motion (*tī tēs kinēseōs*).”¹ His most concentrated account of time is presented within his treatise on physics, which is devoted to the study of motion and its principles and causes. The challenge of interpreting Aristotle’s account of time is to understand how it is fitting both that 1) a discussion about the nature of time emerges within the *Physics*, and that 2) a full and adequate account of time must exceed the scope of physics. Such a challenge obliges our attention not only as readers of Aristotle, but is furthermore relevant to anyone who seeks to give a coherent account of time, as one must in any case confront the ways in which time differs from motion while being an indispensable condition of it.

Near the end of his account of time in the *Physics*, Aristotle presents us with an aporia that speaks directly to this challenge when he asks whether or not there can be time without soul. I suggest that a negative answer to this question – if time cannot exist without soul – means that the nature of time properly extends beyond physics. Aristotle has left it up to us to explore this possibility, since he does not pursue it explicitly himself. He merely formulates it in the *Physics* as a question. However, I argue that the absence of a definitive answer to this question there is not a sign that the nature of time is somehow beyond the capacity of Aristotle’s thought. After examining Aristotle’s account of time in the *Physics*, I look at his corpus more broadly, paying close attention to the way that Aristotle distinguishes the soul from the rest of nature at the beginning of the *De Anima*. The distinction between the living and the non-living is not made in the *Physics*, because it is not required for that study. In the *Physics* Aristotle studies what is shared by living things and the elements that sustain life within the ordered cosmos. As such, the focus of the *Physics* is on the causes of motion and change as what connects and distinguishes embodied individuals within this whole. But what it would mean to say that time depends on soul, and not simply on motion, cannot be addressed adequately in the *Physics*, since what distinguishes the activities of living from the incomplete activity of moving does not pertain to the main concerns of this treatise.

By paying respectful attention to the structure of distinctions that organize Aristotle’s works as such, I make the case for time’s dependence on soul. I examine Aristotle’s accounts of animal and human awareness of time in the *De Anima* and *Parva Naturalia* and find that certain activities of the soul – sensation, memory, and deliberative reasoning – provide resources that can help us come to understand the most perplexing features of his account of time in the *Physics*, precisely those features that the analogies between time and motion or magnitude fail to explain: the simultaneity of diverse motion, the sameness and difference of the now, the differentiation of time into parts, and the way that time contains and exceeds (“numbers”) all possible motions. Thus I conclude that there cannot be time without soul, because the soul’s active nature must come into view in order to explain the features of time that distinguish it from motion.

¹ Phy. IV.11 219a10.

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CHAPTER 1: INTRODUCTION

In this thesis, I shall attempt to give a philosophical account of time according to Aristotle. The goal of my investigation will be to offer a response to an aporia of *Phy.* IV.14, where Aristotle raises the question of whether or not there is time without soul. In the *Physics* this question is left unanswered. I thus take it upon myself to pursue to what extent an answer to this question is available to us in Aristotle's psychology, in his account of memory in particular. I will also be keeping in mind the ethical and metaphysical teleology informing his understanding of soul, grounded in his concept of activity (*energeia*).

Clarification of the question:

As a way of beginning I will attempt to make clear the nature of the problem that interests me. When I ask, with Aristotle, whether or not there would be time without soul this might seem closely akin to asking whether time is objective or subjective. While I do not object to the use of the language of subject and object in relation to time entirely,¹ I do think it can be misleading if it is taken to mean that time might apply simply to one realm or the other: either time is something objective and scientific, or it is something subjective and thus existing in the (human) mind alone. I think it is misleading to begin our inquiry by assuming that Aristotle has a conception of soul as something independent from, and potentially opposed to, supposedly objective nature (as independent from and potentially opposed to soul).²

¹ For instance, the distinction between subject and object is important in Aristotle's accounts of sensation and

² This assumption plagues accounts of time which ask this question under the banner of "realism." For instance McTaggart's A/B series distinction, which is frequently invoked by scholars treating this issue, divides time into a subjective (A series) and objective (B series) component. His ultimate conclusion is that time is not "real" because the A series is essential to time, but is never true "of reality." However, we can see from this that the notion of reality that McTaggart is working with is already stacked: he equates "reality" with objectivity, and it

If we look closely at the way that Aristotle himself formulates the question of the dependence of time on soul, we see that the alternatives at play are much more subtle than this. Immediately after asking the question of whether or not there is time without soul, Aristotle briefly explores the possibility that time (defined as the number of motion) could not exist without soul. Allow me to paraphrase the passage from 223a25-28:

- If time is number,
- and numbers don't exist without counting,
- and nothing can count except the soul and the intelligence of soul
- it would be impossible for time to exist without soul,
- unless as that, which, being sometime, is time,
- If, for instance, it is possible for there to be movement (*kinēsis*) without soul.³

The path of Aristotle's thinking seems to come close to deducing from the identification of time with the act of numbering that there could be no time without soul. And yet, he steps back, giving voice to the objection "unless as that, which, being sometime (*hōpote on*), is time." So typical of Aristotle, to tempt us to think he is going to give us a clear-cut answer which will satisfy our hunger for an either/or solution! But he does not. Because this is not the kind of question he is asking. Is it the question we should be asking here?

is taken for granted that "reality" must be something that is independent of subjectivity. In my reading of Aristotle I refuse to begin with this presumption – that "reality" is objective *qua* not subjective. Rather than measure Aristotle's conception of time against a foreign standard of "reality," I hope to let his own understanding of reality unfold in tandem with his understanding of time.

³ "πότερον δὲ μὴ οὐσης ψυχῆς εἴη ἂν ὁ χρόνος ἢ οὐ, ἀπορήσειεν ἂν τις. ἀδυνάτου γὰρ ὄντος εἶναι τοῦ ἀριθμήσοντος ἀδύνατον καὶ ἀριθμητόν τι εἶναι, ὥστε δῆλον ὅτι οὐδ' ἀριθμός. ἀριθμός γὰρ ἢ τὸ ἡριθμημένον ἢ τὸ ἀριθμητόν. εἰ δὲ μηδὲν ἄλλο πέφυκεν ἀριθμεῖν ἢ ψυχὴ καὶ ψυχῆς νοῦς, ἀδύνατον εἶναι χρόνον ψυχῆς μὴ οὐσης, ἀλλ' ἢ τοῦτο ὃ ποτε ὄν ἔστιν ὁ χρόνος, οἷον εἰ ἐνδέχεται κίνησιν εἶναι ἄνευ ψυχῆς" (*Phy.* IV.14 223a25-28). All translations from Greek are my own, having consulted with the translations listed in the bibliography.

A few preliminary points advise against considering this question as a choice between two starkly opposed alternatives. First of all, Aristotle's conception of soul is not limited to the human soul. Rather, for him the soul is the principle of all life, including plants and animals. Furthermore, in the passage following the aporia in question he speaks both of the soul and the mind (*nous*) of soul, indicating the possibility that time depends on soul in both its highest and in its broadest sense. Secondly, the alternative to time being dependent on soul is presented in the form of a contrast between soul and a notoriously enigmatic phrase: *ho pote on*.⁴ The meaning of this phrase is far from self-evident, and the idea that time might depend upon motion alone is stated more as an aside or example of the meaning of *ho pote on*, and not as directly equivalent.

From another point of view one might dismiss the "is time subjective or objective?" question by calling it anachronistic. The kind of ontology that such a question invokes is an early modern – above all, Kantian – one, and a response to the advent of a purely mechanistic natural science. To read into Aristotle a gulf between subjects and objects as such is to attribute to him a foreign physics. But even so, if this is not Aristotle's question, why does he show any concern for the idea that time might not exist without soul (even if it is only to give us an ambivalent answer)? Does he not at least hint at there being a possible separation between soul (here, as *nous*), and *ho pote on* (as, perhaps, movement or something like it)? Is this akin to the subjective/objective divide? Might a similar sort of gulf arise between the two?

⁴ *Phy.* IV.14 223a27. I will be addressing the meaning of this phrase in Chapter 2. For now I leave it untranslated, and use the shorthand OPO.

It is in this sort of parallel that exists the temptation to see the soul as subjectivity, and *ho pote on*, whatever that is, as “the objective thing”⁵ which may or may not exist without a soul to observe or count it, and may or may not be able to adequately account for temporality in the absence of soul. While I will not be stating my question about time in these terms I do take interest in the idea that the argument of *Phy.* IV.10-14 leads to a concern over whether time is primarily dependent upon *nous*, or on motion.⁶ This I find to be a concern germane to Aristotle’s interests, as it is among the most pressing problems he was responding to that were brought to light by his predecessors. Among them, Anaxagoras identified *nous* as his first principle,⁷ and he frustrated both Plato⁸ and Aristotle⁹ by failing to show how it is at work in the cosmos, and how sensible nature is not merely opposed to it, relying instead on its own ancillary causes. I see this question about time to speak directly to Anaxagoras’ *aporia* (of omission). That is, rather than asking whether time is subjective or objective – insofar as this question demands that the answer must be one to the exclusion of the other – I am looking to see how temporality demonstrates the reconciliation between motion and intelligence in the soul. If this reconciliation is possible, it might tell us something about how *nous* is at work in the moving cosmos as its primary cause.

Finally, one could object that my approach is of merely antiquarian interest, and that putting the question in terms of objectivity vs. subjectivity would provide a better opportunity

⁵ This is the translation provided by Wicksteed and Cornford.

⁶ Note that I am not identifying OPO with *kinēsis*, but understand Aristotle to be creating a parallel between 1) time as OPO without soul and 2) motion without soul. In the third chapter of this thesis I will clarify exactly to what extent I think OPO can and cannot be understood as motion.

⁷ D-K 12 *nous* rules (*kratei*) “the whole rotation” as well as all things that have life, and *nous* “arranged (*diakkosmese*) all things.

⁸ *Phaedo* 97c-98d

⁹ *Met.* I.4 985a18-22

to enter into dialogue with contemporary discussions about the philosophy and science of time.¹⁰ While I would like to imagine myself as being able to engage in conversation with contemporary relativistic physicists on these matters, I am afraid that I am a long way off from being able to speak to such positions with any authority.¹¹ The project I am embarking on here claims to be primarily a commentary on Aristotle, in conversation with other readers of Aristotle. Most of all, I wish to enter into a discussion with those who concern themselves with what temporality can tell us about the relationship of the natural world to the first principle or divine in Aristotle's view.¹² For Aristotle, as is well known, the divine is characterized by the activity (*energeia*) of thought thinking of thinking (*noēsis noēseōs noēsis*),¹³ but is itself unmoving (*akinēton*).¹⁴ However, it is not clear from this what relationship such a god has to time. If time belongs essentially and exclusively to motion, it would seem that time would be something separate from – even opposed to – god. This would lead to precisely the kind of dualism that Aristotle is explicitly trying to overcome. It will be my task to show whether Aristotle is successful in this regard. If time belongs not simply to motion, but more perfectly to activity (*energeia*), then time itself will belong to the

¹⁰ For instance, to engage more directly in the current debate between speculative realists and the so-called “co-relationists.” The former seek to provide a metaphysical foundation for our current scientific understanding of the world. See, for instance, Meillassoux (2008).

¹¹ Fakhry (1988) attempts this, but at the cost of reducing the question to: is Aristotle's theory more like Newton's (absolutist theory of time) or Einstein's (relativistic theory of time)? He concludes that, since Aristotle treats time as essentially related to motion, it is more like Einstein's theory than Newton's. However, as I will argue, for Aristotle it is also crucially important that time is not the same as motion, or magnitude (which is the closest thing to “space” in Aristotle's cosmology). A thorough treatment of the relationship between Aristotle's and Einstein's theories would have to attend to the differences between Aristotle's treatment of the relationship between time, motion and magnitude, and the space-time posited by Einstein. See also “The Ontology of Spacetime” (Dieks: 2006).

¹² I will thus be drawing on, and distinguishing my argument from, the works of Paul Ricoeur, Remi Brague, and Pierre Aubenque as interlocutors in these matters.

¹³ *Met.* XII. 9 1074b35.

¹⁴ *Phy.* VIII.10 267b19; *Met.* XII.7 1072b8-9.

divine activity of thinking thinking of thinking. The aporia I am addressing about how soul (and the *nous* of soul) and motion pertain to the existence of time has consequences for how we understand the relationship of god to time. Aristotle indicates that there is an integral relationship of god to soul when he argues that (*zōē*) belongs to god,¹⁵ and by the fact that the soul is what it is – alive – by virtue of its activities (*energeiai*), the highest of which is the activity of *nous*. Nonetheless, Aristotle has not made explicit whether time can be understood as an activity beyond motion, or whether it is more truly the condition of a mortal soul whose activities depend on the mediation of motion to some extent. Pure noetic activity is, after all, something that we are only said to enact “for a small time (*micron chronon*),”¹⁶ and seems to be interrupted by the business of the physical needs that sustain us. Since the activity of memory is tied directly to the mortal aspect of soul,¹⁷ we will mine Aristotle’s reflections on memory in the *De Memoria et Reminiscentia* (DM) for clues as to whether temporality exists only for those beings whose activities are contained in a time that exceeds theirs, and whether those activities (*energeiai*) retain an element of potency (*dunamis*) so as to be extinguished by time, or whether time is not rather a function of all the manifold activities of the living: that is to say, time is an activity of soul.¹⁸

This is what I take to be at stake when Aristotle suggests that time would be “impossible without soul, unless as that which, being sometime, is time, if for instance it is possible for there to be movement without soul.” Since I find the division of the world into

¹⁵ *Met.* XII.7 1072b27-30.

¹⁶ *Met.* XII.7 1072b15.

¹⁷ *DA* III.5 430a23-25; *DM* I 450a15-18.

¹⁸ If this claim appears obscure at this point, this is because the full argument of the thesis is required to make it clear. I will take up this claim and bring it to the greatest possible clarity in my conclusion.

subjects and objects to be too clumsy to capture the various gradations that distinguish natural being (*phusis*) from being, the living from the natural, and immortal life from the mortal, I will stay close to Aristotle's own language and distinctions as I proceed. It is my hope that, by trying to read Aristotle on his own terms, and by refusing to transpose his question into a more modern conceptual framework, I might allow us to question some of the presumptions about time, about the temporality of "subjects" and "objects", that confound us today.

In order to investigate the far-reaching questions I have raised, my method will be to take the aporia of *Phy* IV.14 as an opportunity to explore whether the study of temporality culminates in the *Physics*, or whether it points beyond the *Physics* and into Aristotle's psychology (*DA & PN*), ethics (*EN*), and metaphysics (*Met.*). By and large, commentary on Aristotle's account of time tends to take for granted that the understanding of time falls within the purview of the *Physics*, and that time exists through its relationship to motion alone. As an introduction, I will argue that the scope of the *Physics* is determined by its commitment to an understanding of motion, which is essentially an incomplete activity (*energeia atelēs*), and thus not adequate to account for the activities of soul. The bulk of my thesis (chapters 2 and 3) consists of a close reading of *Phy*. IV.10-14, which is where Aristotle presents his most focused treatment of time. A detailed analysis of this argument is necessary in order to ground the central claim of my thesis: since time is not motion, it cannot be apprehended through its relationship to motion alone. However, the result of this argument is not simply negative, nor am I claiming that the failure of motion to account for time demonstrates the complete failure of Aristotle's account of time. Rather, as I proceed through the arguments of this text I will show that the account of time in *Phy* IV.10-14 is never without the involvement of soul. Admittedly this in itself does not explain *how* it is that time requires both motion and the other activities of soul in order to be what it is. It is merely manifest in Aristotle's account

of time here that it is so.

Accordingly, after showing how the soul is involved the account of time in *Phy.* IV.10-14, I will go on in chapters 4 and 5 to look at Aristotle's treatment of the soul itself in the *DA* and *PN*: how the activities of soul are required to account for temporality, and how the motions mediating these activities in fact demonstrate a reconciliation between motion and the soul as activity (*energeia*), rather than their opposition. First I will focus on sensation in chapter 4, and will ask whether there is an awareness of time provided in sensation alone, or whether higher cognitive activities must be involved in the articulation of time. Then, in chapter 5, I will examine memory (*mnēmē*) and recollection (*anamnēsis*): a culminating moment. The relationship between memory and recollection is a microcosm of the broader transition in the soul from activities dependent upon motion, to those beyond motion, which I will discuss in my concluding remarks.

It is thus my contention that the question of whether time exists without soul as OPO demands that we ask about the relationship of motion to soul if we are to think time. Furthermore, I take the fact that *Phy.* IV.10-14 fails to answer this question of the involvement of soul to mean that we must look across Aristotle's texts to fulfill the promise of the issues that arise in the *Physics*. While it may not be controversial to suggest that *Phy.* IV.10-14 raises more questions than it answers, I do not take it to be adequate to conclude from this that Aristotle's account of time is fundamentally aporetic in such a way that would preclude any further investigation. It may be that time continuously frustrates those who try to think it directly, but I am here going to argue that the involvement of soul indicates a path to a higher understanding of time's paradoxes, rather than indicating a fundamental

incompatibility between soul and a physical world that exceeds and overpowers it.¹⁹

In order for a question that emerges in the *Physics* to point beyond physics to psychology for its fulfillment – as I am claiming it does – there must be a cohesive relationship between these subjects despite the fact that Aristotle treats them in different works. Physics and psychology are not discrete disciplines for Aristotle, as both are concerned with natural being (*phusis*). In the *Physics*, Aristotle states that what he means by *phusis* is inclusive of both inanimate and animate being: animals and their parts, plants, and the elemental bodies.²⁰ As such, its scope is broader than that of the *De Anima* and the *Parva Naturalia*, which focus in on animate being. However, this is not to say that the psychological works are merely an elaboration on a part of what has already been established in the *Physics*. It is not until we turn to the *De Anima* – when we ask directly what it means for something to live – that the difference between animate and inanimate becomes significant. Thus, whereas the *Physics* might be thought of as broader and therefore more inclusive, it is so in a way that is potentially reductive: it treats all the kinds of natural beings according to the common feature of having within themselves the principle of motion and rest.²¹ The ensouled natural being does have in itself the power to cause motion and rest, but what makes it “alive” is not fully captured by this principle. In the sense of treating the range of activities of which natural beings are capable, the *De Anima* is then broader and more inclusive than the *Physics*.

This relationship between the works explains in part why the aporia that arises in the *Physics* cannot be answered by *Physics* alone. How could we begin to discover if an act of

¹⁹ As it does in Paul Ricoeur’s interpretation of Aristotle (Ricoeur 2004: vol. 3, p 17).

²⁰ *Phy.* II.1 192b9-11.

²¹ *Phy.* II.1 192b14-15.

soul is essential for articulating time if we have not established what distinguishes the ensouled from the rest of nature? And yet we must begin with *Physics* as our starting point. This is because, for Aristotle, the way to knowledge of the soul is through understanding nature and its limitations and incompleteness.²² Aristotle does not have the luxury (or the liability) of having a conception of soul that exists prior to and separate from nature, but must begin, as it were, from the “whole” (*ek tōn katholou*).²³ Both motion and soul are involved in the account of time in the *Physics*, but their difference, relation, and whether it is possible for there to be time without one or the other, cannot be determined at the level of thinking available to us in *Physics*. So we will begin with Aristotle in the *Physics*, from everything all together indiscriminately (*ta sugkechumena*),²⁴ and, from there, work to differentiate the activities of soul from the principle of motion and rest that characterizes *phusis*, and the roles of each in the articulation of time.

Scope of the *Physics*:

Natural and Artificial motion

The first three books of the *Physics* give us the context out of which arises the discussion of time in Book 4, which runs up against the limitation that it is unable to say if there is time without soul. Since I am arguing that this is a limitation belonging to the scope of *Physics*, and that this impass is not Aristotle’s final word on the matter, it will be useful to have before us how the concept of *phusis* is demarcated in these first three books. As I have already mentioned, the scope of the study of nature is in one sense broader and in another

²² This is a paraphrase of Diamond (2015: 23), in a context where he is distinguishing Aristotle’s method from that of his NeoPlatonic and Medieval commentators.

²³ *Phy.* I.1 184a24.

²⁴ *Phy.* I.1 184a23.

sense narrower than that of psychology. While Aristotle lists animals and their parts, plants, and the 4 elements as all existing “by nature” (*phusei*), what fundamentally characterizes a natural being is that it possesses the principle (*arche*) of its own motion and rest.²⁵ Keeping in mind that *kinēsis* is being used in its most inclusive sense, this would indicate that *phusis* includes everything that moves, changes, becomes and passes away, except those that attain their form or place through an external mover: through the human arts (*techne*), or, incidentally, by chance (*tukhe* or *automaton*) or force (*bia*).²⁶ Again, this seems to indicate quite a broad scope: *phusis* seems to include everything that comes to be except for what is made by human hands, or what occurs by accident.

However, the contrast with the technical arts is more significant than just a way of establishing the scope of *Physics* by means of a seemingly minor exception. This is because *phusis* is essentially characterized by the relationship a being has to its motion, and motion and the productive arts (*techne* and *poiesis*) have the same kind of temporality. This is evident in the way that Aristotle illustrates his definition of motion with the example of building a house in *Phy* III.1.

It is clear both that this is motion [referring to the definition he has just offered], and that a thing happens to be moved whenever (*hotan*) this activity (*entelecheia*) as such (*ei haute*) is, and neither before nor after. For each thing admits at one time (*hote*) of being active (*energein*), at another time not. An example is the buildable. The activity (*energeia*) of the buildable, just as buildable, is building.

²⁵ “Τῶν ὄντων τὰ μὲν ἐστὶ φύσει, τὰ δὲ δι’ ἄλλας αἰτίας, φύσει μὲν τὰ τε ζῶα καὶ τὰ μέρη αὐτῶν καὶ τὰ φυτὰ καὶ τὰ ἀπλᾶ τῶν σωμάτων, οἷον γῆ καὶ πῦρ καὶ ἀήρ καὶ ὕδωρ (ταῦτα γὰρ εἶναι καὶ τὰ τοιαῦτα φύσει φαιμέν), πάντα δὲ ταῦτα φαίνεται διαφέροντα πρὸς τὰ μὴ φύσει συνεστῶτα. τούτων μὲν γὰρ ἕκαστον ἐν ἑαυτῷ ἀρχὴν ἔχει κινήσεως καὶ στάσεως” (*Phy.* II.1 192b8-15).

²⁶ *Phy.* II.4-6 establishes that *tukhe* and *automaton* are incidental causes that result by coincidentally accomplishing or thwarting the aims of rational (chosen) actions and natural motions respectively. (Note also that in the *Nicomachean Ethics* *tukhe* and *techne* are said to deal with the same things (*EN* VI.3 1140a18-19).) See *Phy.* VIII.4 on how nature considered as body (*soma*) (i.e. the elements or the parts of animals) is said to be moved either by nature or contrary to nature, by force (*bia*) (254b13ff).

For the activity (*energeia*) must be either building or the house. But whenever the house is, the buildable is no longer. But it is the buildable that is being built. Necessarily then, building is the activity (*energeia*). But building is a certain motion. And surely the same account will exactly fit the other motions.²⁷

What Aristotle is showing here is that motion is a peculiar kind of activity, one where the process is temporally distinct from its completion (*telos*). As long as something is moving, it is not yet moved. Once it has been moved, it is no longer moving. The parts of time must be distinct from one another in a relation of before and after, because something cannot be moving and have moved *at the same time*. The present progress of *moving* and the past perfect *moved* are mutually exclusive. At a given time *either* one *or* the other may occur, but never both.

It is thus rather ironic that it is *techne* which best illustrates this, especially given that the kind of motion we are primarily investigating in the *Physics* is natural motion *and not* artificial motion. But the purpose of this illustration is to show the nature of motion, and both natural motion and artificial motion are in time in the same way. In order for there to be motion at all, the fullness of the purpose (*telos*) or form (*eidos*) that is achieved – whether this be a place, a colour, an artifact, or a physically mature organ or organism – must be temporally distinct from the motion that brings it about. The motion must *stop* in order to be able to say that it *has arrived* or accomplished its aim. Were it not so, the sensible world would merely be an endless flux wherein nothing is ever realized, and the parts of time would

²⁷ “ὅτι μὲν οὖν ἔστιν αὕτη, καὶ ὅτι συμβαίνει τότε κινεῖσθαι ὅταν ἡ ἐντελέχεια ᾗ αὕτη, καὶ οὔτε πρότερον οὔτε ὕστερον, δηλόν· ἐνδέχεται γὰρ ἕκαστον ὅτε μὲν ἐνεργεῖν ὅτε δὲ μὴ, οἷον τὸ οἰκοδομητόν, καὶ ἡ τοῦ οἰκοδομητοῦ ἐνέργεια, ἡ οἰκοδομητόν, οἰκοδόμησις ἔστιν (ἡ γὰρ οἰκοδόμησις ἡ ἐνέργεια [τοῦ οἰκοδομητοῦ] ἢ ἡ οἰκία· ἀλλ’ ὅταν οἰκία ᾗ, οὐκέτ’ οἰκοδομητόν ἔστιν· οἰκοδομεῖται δὲ τὸ οἰκοδομητόν· ἀνάγκη οὖν οἰκοδόμησιν τὴν ἐνέργειαν εἶναι)· ἢ δ’ οἰκοδόμησις κίνησις τις. ἀλλὰ μὴν ὁ αὐτὸς ἐφαρμόσει λόγος καὶ ἐπὶ τῶν ἄλλων κινήσεων” (*Phy.* III.1 201b6-15).

not be distinguishable as before or after one another in any meaningful way.²⁸ As Pierre Aubenque remarks, to assert that motion is universal in the sense that everything is in motion at every instant, is to fall into the problems of heracliteanism.²⁹ Near the end of the *Physics* Aristotle shows that it is essential that neither is everything always moving, nor is everything always at rest. Rather, there must be things that are sometimes in motion and sometimes at rest.³⁰ Accordingly, movement is not universally present in nature, but rather what universally characterizes the natural being is the capacity (*dunamis*) to move or to be at rest.

In the example of building the mutual exclusion of motion and its end is perhaps most obvious, because it has an end that we, humans, set out to achieve in the building, and we stop working towards that end when it has been achieved. That is, the distinction of ends from means has already been conceptualized in the human arts, because we are consciously responsible for bringing these processes about.³¹ We do not build for the sake of building merely, but we build for the sake of having built a house. What moves by nature does not depend on our intentional involvement in this way, so the conceptual structure is not so

²⁸ “Insofar as a motion is continuous, we cannot say that the moving body “has arrived” at a mid-point and “has departed” from that mid-point in the now: we can only say that it “is” there “at the now”, which is only a potential, and not an actual, division” (*Phy.* VIII.8 262a28-32).

²⁹ Aubenque 2013: 424.

³⁰ *Phy.* VIII.III

³¹ There is some consistency between what I am saying here and Brague’s observation: “Making is given pride of place because it is the motion that best lends itself to the definition put forth: the telos is clearly visible in it...” (Brague 1990: 17). However I do not agree with the significance he draws from this: “...and this visibility is the criterion for what fully deserves to display itself as being” (ibid). He goes on: “The sharpness with which the artificial form emerges from the invisible results in a purer manifestation of the possible as such, whereas in natural generation, as in all cyclical processes, this possible (*dunamis*) is never more than an entr’acte between two realities which overshadow it” (ibid 18). Brague’s contention that seeing is the central paradigm of grasping (ibid 14), but that this fails to give us access to *energeia* (ibid 15), neglects the sense in which *seeing is a central paradigm of energeia* for Aristotle (*Met.* IX.6 1048b34). That Brague is bringing a foreign (quasi-Heideggerian) notion of “seeing” to Aristotle’s text is in full view when he writes, “This ‘seeing’ that we are denied whenever *energeia* is at stake would precisely be a ‘fixing’ on the part of the gaze, which would immobilize motion as such” (ibid 15). This is inconsistent with Aristotle’s own account of the relationship of seeing to motion in *DS7* (see my chapter 4).

immediately evident to us. Nonetheless this does not make building the paradigm of motion,³² for this temporal distinction between present progressive and past perfect is equally essential for all motions (“the same account will *exactly fit* the other motions”³³), in that they achieve an aim that was not fully realized until the process of moving towards that end has ceased. Aristotle here lists learning, healing, rolling, jumping, maturing, and aging,³⁴ to further illustrate that there is a wide variety of actions for which there must be this temporal distinction of the end from the means, and he also claims that, systematically, there are as many kinds of motion and change as there are categories of being.³⁵

Thus while motion includes much more than natural motion, the *Physics* is concerned with the principles (*archai*) and causes (*aitia*) of motion. The purpose of distinguishing natural from artificial motion is that *phusis* cannot be understood if we consider the whole according to the example of the human arts, where a motion that realizes an end or form is imposed externally by the labours of a human agent. What the example of *techne* fails to show is this inherent capability for motion within natural beings that stretches out and reaches the ends (*teloι*) belonging to each by their own natures. Unless we begin by focusing on the inherent sources of motion, the integrity of nature will escape us: the idea that there are ends belonging to beings that they achieve through motion is what must be primarily acknowledged in order for us to begin to grasp the operation of nature herself. If we were to begin with motion according to the model of *techne*, we run the risk of reading into nature a

³² On my reading Heidegger drastically overstates the significance of the role of *techne* and *poiesis* when he argues that, for the Greeks generally and for Aristotle in particular, being is conceptualized on the basis of the model of production. “The *phusei onta* are only what we do not produce, but rather are what is already there for us, already in the world, but *in such a way that has to do with producing*” (Heidegger 2009: 147, my italics).

³³ “ὁ αὐτὸς ἐφαρμόσει λόγος καὶ ἐπὶ τῶν ἄλλων κινήσεων” (*Phy.* III.1 201b15).

³⁴ *Phy.* III.1 201a19.

³⁵ *Phy.* III.1 201a9.

model where “nature” is just a bunch of inert stuff that is operated on externally, by some super natural agency. Instead, what Aristotle has done here in the *Physics* is to begin with a consideration of the sources of motion, recognizing the difference between the natural and technical sources at the outset of his investigation.

So it is not *quite* right to think of the scope of *Physics* as being limited by the exclusion of the human arts, as I first suggested. It is rather the case that *techne* is a subset of motion where the source and end of a motion belongs to the intentional activity of an external human agent. Aristotle will say that *techne* either completes (*epitelei*)³⁶ or imitates (*mimeitai*)³⁷ nature, indicating not an opposition, but rather a complementary and derivative relationship of the former on the latter.

If the scope of *Physics* is thusly broad and foundational for our understanding of all motion, then we must look elsewhere to find its limits. Notice that, in the passage on the temporality of building quoted above, motion is being described in terms of Aristotle’s central metaphysical concept of *energeia/entelecheia*. This reflection arose in the context of Aristotle having just a few lines before defined motion as “the *entelecheia* of that which is potentially (*dunamei*), just as such (*hē toiouton*),”³⁸ and later in the same chapter as “the *entelecheia* of what is potential (*dunaton*), as potential (*hē dunaton*).”³⁹ In the next chapter and in Book VIII he refers to motion as an incomplete (*atelēs*) *energeia*,⁴⁰ and as an

³⁶ *Phy.* II.8 199a16

³⁷ *Phy.* II.8 199a16; II.2 194a22.

³⁸ “ἡ τοῦ δυνάμει ὄντος ἐντελέχεια, ἡ τοιοῦτον, κίνησις ἐστίν” (*Phy.* III.1 201a10).

³⁹ “ἡ τοῦ δυνατοῦ, ἡ δυνατόν, ἐντελέχεια φανερόν ὅτι κίνησις ἐστίν” (*Phy.* III.1 201b5).

⁴⁰ “ἡ τε κίνησις ἐνέργεια μὲν εἶναι τις δοκεῖ, ἀτελής δέ” (*Phy.* III.2 201b32).

incomplete *entelecheia*,⁴¹ respectively.

These terms, which I have here left untranslated, are notoriously opaque: while *dunamis* was fairly common in Greek before Aristotle made his own use of it, both *energeia* and *entelecheia* are of Aristotle's own invention. It is the subject of great controversy among scholars how to translate these two terms, and whether there is a meaningful difference between them. Nonetheless it will be worthwhile to try to work out how they are functioning in relation to motion. We shall see that this relationship is not only important for establishing the scope of *Physics*, but we will also begin to see how the relationship between motion and *energeia* will structure my account of how temporality extends beyond *Physics*.

Contrariety or "another way"

Motion is defined in the *Physics* in terms of *dunamis*, *entelecheia* and *energeia*, but nowhere in the *Physics* are these terms defined. On the face of this, it might seem that we risk heading down a road of infinite regress, where one definition calls for another continuously. This case would appear to be particularly troublesome, as in searching for the definition of one term it seems that in this case we now need to define three. However, keeping with my strategy of looking across texts, we will make use of Aristotle's definitions of *dunamis*, *entelecheia* and *energeia* in other works, particularly *Metaphysics* IX, and will find some solid ground there. But first we will look at how these terms emerge in *Physics*, as a response to the positions of Aristotle's predecessors who conceptualized motion in terms of contrariety (*enantia*).

While motion seems familiar to us empirically, conceptually it poses serious

⁴¹ “ἔστιν δ' ἡ κίνησις ἐντελέχεια κινητοῦ ἀτελὲς” (*Phy.* VIII.5 257b8).

challenges,⁴² especially if we are starting from the presumptions of Eleatic logic that a thing either is, or is not. Motion demands a concept that subverts and surpasses this logic because it requires that *what was* can be different from *what is* or *will be*. Accordingly Aristotle takes it upon himself to purge us of the assumptions of Eleatic logic in the first book of the *Physics* as preparation for his treatment of *kinēsis*. There he encounters and carefully dismembers the Parmenidean stranglehold on our thinking that asserts that only being is. The scepticism regarding the reality of becoming that follows from Parmenides' position is important for the present study because it presents the most drastic separation (*chōrismos*) of a first principle that is fully complete from the kind of being characterized by motion. Aristotle will form his position as a response to the limitation of this kind of thinking. He seeks to make motion thinkable, rather than relegate it to the realm of “seeming” merely, as Parmenides does. It will not suffice for Aristotle to allow the principles of nature and those of being to fall asunder.

Parmenides (and those who follow him) understood contradiction to be an absolute limit on thought and being. Based on the absolute impossibility of any form of contradiction, it follows that being alone is. According to Parmenides' position, being has only one meaning (identical with being), thus the association of being with any attribute whatsoever constitutes a contradiction. Being is thus a unity that radically excludes multiplicity. This logic furthermore bears the consequence that motion is impossible, for change either involves a change of attributes or a transition from non-being to being (or vice versa), which is a

⁴² Remi Brague (1990: 2) points out that none of Aristotle's predecessors attempted to provide an exact definition motion, and goes so far as to suggest that no real attempts to do so have been made since Aristotle either. While acknowledging the “obvious conquests” of physics since Aristotle, he nonetheless wonders whether the focus on studying the measurable properties of motion has overshadowed any attempt to define motion. This is not inconsistent with my reading, for I will be showing how Aristotle's definition of motion emerges from the Pre-Aristotelian conceptualization of nature in terms of contraries, and yields the possibility for the modern focus on the measurable properties of motion.

contradiction.⁴³ So goes Parmenides' interpretation of the principle (*arche*) of being: it is one and unmoving.⁴⁴

Now this is one perspective, from the assumption of a pure unity. It reveals nothing beyond this because it is impossible to deduce anything from it. So why does Aristotle deal with it so extensively in the beginning of his study of nature? While he starts off by speaking of this position pejoratively, brushing it off by saying it is almost just like arguing for the sake of arguing,⁴⁵ or that it really only concerns the study of nature incidentally,⁴⁶ the specter of Parmenides returns again and again throughout the book.

Though the conclusion yielded by Parmenides' unconditional adherence to non-contradiction to nature is negative, it does reveal something important about how contrariety is involved in our understanding of motion and multiplicity. Parmenides' position offers such a deep scepticism because he not only calls into question the kind of contrariety that would yield a temporal succession (*ephexēs*) required for there to be motion or change, but also suggests that oppositions are involved in our ability to affirm the existence of any sort of plurality at all: those existing simultaneously (*hama*) distinguishing beings from one another. Both the simultaneous oppositions of plurality and the successive ones involved in change stem from the same problem for Parmenides: that it is impossible for *what is* to *be* and *not be*. And yet, as we shall see, both simultaneity and succession will prove equally essential to the existence of time. The way forward will require reckoning with contrariety.

⁴³ Note that I have here tried to emphasize the logic underpinning Parmenides' position, in order to clarify what I take to be Aristotle's starting point. While I have not dealt with the nuances of Parmenides' poem, the claims that all is one and that motion is impossible are stated at Fragment 8.6, and Fragment 8.3, 13-14, 26, 27-28, and 38 respectively.

⁴⁴ *Phy.* I.2 184b27-185a1; *Phy.* I.3.

⁴⁵ *Phy.* I.2 185a7

⁴⁶ *Phy.* I.2 185a18.

In *Physics* I, Aristotle will declare that, in contrast to Parmenides “we let it be assumed that the things that are by nature, either all or some of them, are in motion” and that “this is clear by induction.”⁴⁷ But it is not sufficient for him to thus affirm the existence of motion as given. Parmenides’ arguments do concern those who attempt a philosophic examination of nature (*he skepsis philosophian*)⁴⁸ because, as we shall see, there is something in his argument for which previous attempts to explain motion have not accounted, and to which Aristotle thinks they have to respond. All of the attempts to explain nature that Aristotle has before him end up offering some variation of the idea that the first principles of nature are contraries (*enantia*). Hot and cold, rare and dense, love and strife, atoms and void, being and not being, the one and indefinite dyad, etc., all amount to analogous attempts to explain the existence of plurality and motion by understanding all natural beings to be passing between contrary extremes, according to Aristotle.⁴⁹

Contraries might be tenable principles because nothing can be said to precede them: they are not derived from anything else nor are they derived from each other, so it seems plausible that everything else might be derived from them.⁵⁰ But if they are thus independent and irreducible to each other, how can they be said to bring about change? Can the contraries be said to act upon each other, or suffer the effects of each other, if each fundamentally excludes the other? Can density “make” (*poiein*) rarity into something else and thereby

⁴⁷ *Phy.* I.2 185a12-13.

⁴⁸ *Phy.* I.2 185a21.

⁴⁹ *Phy.* I.5 189a1. While Heraclitus is most often cited as the main proponent of contrariety, offering the position that is in most stark relief from that of Parmenides, in *Physics* I Aristotle treats all of his predecessors’ attempts to explain nature as analogously dealing with the issue of contrariety in a manner that leads to a common problem.

⁵⁰ *Phy.* I.5 188a27-33.

produce the changing variety of natural beings?⁵¹ How can contraries come into relation with one another, except to drive one another away in turn by their mutual opposition?

We are already beginning to see the limitations of thinking about motion as merely passing between two given contrary extremes, and towards some notion of doing (*poiein*) and suffering (*paschein*).⁵² Aristotle will here in Book I offer a preliminary conceptualization of motion in terms of contrariety, understanding that change is not random (*to tukon hupo tou tokhontos*):⁵³ that it is not the arbitrary replacement of any chance thing by something else, but that it emerges from a contrast with its contrary. When we say that a motion is from not-white to white we don't mean "not white" as any chance thing other than white, but rather we mean black or grey as the privation or absence (*steresis*) of white.⁵⁴ However, as contraries, white and black do not act upon each other, but on some else that underlies (*hupokeimenon*) the change that takes place between them. Taking this logic as far as it will go, Aristotle will thus present the idea that the principles of nature are three: form and its absence, which are contraries, and what underlies them.

The relationship between form and *steresis* does capture something of the structure of change and becoming⁵⁵ that we have already seen. The temporal structure in which the completion of a motion is the negation of that motion – with the result that the parts of time that contain them are mutually exclusive – is prefigured in this conception of contrariety. But at this stage in the argument it remains perplexing how the form could be thought of as the

⁵¹ *Phy.* I.6 189a23.

⁵² *Phy.* I.6 189b14-16.

⁵³ *Phy.* I.5 188a34.

⁵⁴ *Phy.* I.5 188a33-b2; I.7 191a6-14.

⁵⁵ In *Phy.* I.8 Aristotle attempts to show that these principles can be said to describe coming to be.

end or purpose (*telos*) of the motion that emerges from its absence. The addition of something “underlying” does not in itself explain this. Does the form somehow “make” the underlying like itself or unlike itself by its presence or absence?⁵⁶ If it does, change would appear to be instantaneous: either the form is present and the thing “has changed,” or it is absent and has not. There is nothing in this that explains the “changing” or “moving” itself.

This position remains tentative at best, for Aristotle will acknowledge that it remains susceptible to the challenge of Parmenides and his arguments against contradiction. Both chapters 8 and 9 begin by reiterating Parmenides’ contention that something cannot come to be from what is not absolutely. Aristotle does not deny that this is the case.⁵⁷ But Aristotle does deny that change can *only* be from what is not. What is really happening when Aristotle distinguishes *to hupokeimenon* from the contraries is that he is making room for the possibility of a new logical relationship for conceptualizing nature. It is true that motion is from what was not, to what now is, so long as we provide the qualifications that it only “incidentally” was not, because motion always belongs to something underlying that endures. But this is merely “one way” of formulating the solution. “The other [way] is that it is possible to speak of these things according to *dunamis* and *energeia*.”⁵⁸ He admits that “this distinction has been made in other places with more precision,” but if we look closely we can already see how it is beginning to emerge at the end of *Physics* I.

The idea that motion is “presence or absence of form” in the *hupokeimenon* fails to show how the form is already present in “what underlies,” in some way, before the motion

⁵⁶ *Phy.* I.7 191a8.

⁵⁷ “Still, we do not abolish everything’s either being or not being” (*Phy.* I. 8 191b27); “On this point Parmenides speaks correctly” (*Phy.* I.9 192a1).

⁵⁸ *Phy.* I.8 191b27-28.

accomplishing the form is complete. How this might be so is indicated when Aristotle refers to the *hupokeimenon* as matter (*hule*) having the capacity (*dunamis*) for both contraries. As such, the underlying matter is “almost, and in some respect is, a beingness (*ousian*),”⁵⁹ and a sort of co-cause (*sunaitia*) with the shape of becoming.⁶⁰ Therefore, matter is not contrary to form, nor is it something passive and inert acted upon externally by the presence or absence of form. The thrust of the shift away from the Parmenidean conception is shown when Aristotle puts forward the idea that being is not simply characterized by numerical unity that excludes multiplicity. He argues that what is one in number (the *hupokeimenon*) need not be one in capacity (*dunamis*) but that the capacity embraces both contraries: the form essentially and its privation incidentally. Moreover the contraries as he has formulated them are not on equal footing ontologically. Earlier he suggested that this is because the form alone by its presence or absence is responsible for change, but here he offers a more compelling suggestion. “Since there is something divine, and good, and sovereign, we say that there is something opposite to it, and something else which inherently yearns for and stretches out towards it by its own nature.”⁶¹ Thinking of the principles in this way brings out the fundamental departure of Aristotle’s position from his predecessors, who were caught up in either affirming or denying contrariety in their conceptualizations of nature. If we can think of the relationship of the *hupokeimenon* to the form as the former reaching out for the latter and desiring it as the good of its own nature, then we have to think beyond the either/or logic which asserts that it is impossible for something to be and not be; the *hupokeimenon* could not

⁵⁹ *Phy.* I.9 192a6.

⁶⁰ *Phy.* I.9 192a14.

⁶¹ “ὄντος γάρ τινος θείου καὶ ἀγαθοῦ καὶ ἐφετοῦ, τὸ μὲν ἐναντίον αὐτῷ φαμεν εἶναι τὸ δὲ ὁ πέφυκεν ἐφίεσθαι καὶ ὀρέγεσθαι αὐτοῦ κατὰ τὴν αὐτοῦ φύσιν” (*Phy.* I.9 192a17-19).

desire the form if the form were something contrary to it, because it would then be desiring its own destruction.⁶² Nor could it desire the form if they were already identical, because desire does imply an incidental lack or absence, which is also a relation or incipient possession in its separation.⁶³ Thinking in terms of this erotic relationship allows us to begin to see what is meant by the relationship of *dunamis* to *energeia*: that this is the relationship meant between matter (as *hupokeimenon*) and form, and that these cannot be contrary to one another.

In order to think of motion in terms of *dunamis* and *energeia* we need to find some way to conceptualize contrariety without merely asserting contrariety as a universal fact of nature. It would do us little good to oppose Parmenides only to side with Heraclitus. For each of these positions present countervailing problems for an understanding of nature. The aporia presented by Aristotle's history of philosophy is that, on the one hand, we might side with Parmenides and deny motion, or, on the other hand, we might side with Heraclitus and affirm universal continuous motion. What is interesting is that both positions render the plurality of nature impossible: according to Parmenides is it impossible insofar as being has only one single meaning, and according to Heraclitus the continuously moving has no end term which would distinguish one thing from the other. With this in mind, Aristotle neither denies nor asserts that the first principles are contraries. He recognizes that if we understand the first principles to be contraries we are left trying to explain how something can emerge from its opposite – essentially asking how being can emerge from non-being, or how becoming can be the result of combining two incompatible forces. So long as each extreme is mutually exclusive of its contrary we are at a loss to show how it can be that there is any

⁶² *Phy.* I.9 192a20.

⁶³ *Phy.* I.9 192a21.

relation between the two that could yield in a changing plurality.

If we look to the *Metaphysics* we can see precisely where Aristotle departs from the Parmenidean logic of non-contradiction in order to make this shift possible. Parmenides has shown how an unconditional allegiance to unity – or ‘non-contradiction’ – leaves us only able to affirm that “being is”, for everything else would involve contradiction. But, taking into account what we have already seen, this is not the case. The relationship of desire or tending towards something is not a contradiction, and the same thing can be both what it is and what it seeks to be without negating itself. For Aristotle it only makes sense to assert that “it is impossible both to be and not to be” if we add “for the same thing” (*toi autoi*), “according to the same relation” (*kata to auto*) and “at the same time” (*hama*).⁶⁴ The first qualification (for the same thing) accounts for plurality, the second (in the same relation) accounts for the predication of attributes, the last (at the same time) accounts for motion. All these qualifications are necessary in order to get at what is truly self-identical. This is what is one numerically but potentially two: namely, in the case of *phusis*, matter as *hupokeimenon*. There is a temporal dimension to this: the kind of contradiction involved in motion is impossible for the self-identical thing when the time it occupies is self-identical (*hama*). When we get to the chapter on sensation, we will see that these kinds of identity are importantly related, so much so that they are bound up in one another. For now, what we must take from this is simply that contrariety is neither being outlawed entirely, nor it is being treated as encapsulating the fundamental character of the natural world. Aristotle’s formulation of his law of non-contradiction (LNC) specifies that the kinds of contradiction involved in nature – namely plurality and motion in its broadest sense (when something

⁶⁴ “τὸ γὰρ αὐτὸ ἅμα ὑπάρχειν τε καὶ μὴ ὑπάρχειν ἀδύνατον τῷ αὐτῷ καὶ κατὰ τὸ αὐτό” (*Met.* IV.3 1005b19-20). Cf *Met.* IV.3 1005b27.

comes to be after not being, or becomes dark after being light, or goes from here to there) – are not violations of this most certain principle, but is beyond its purview. It is only on the basis of temporal and substantial unity that the law of non-contradiction holds true. Motion exists, but is derivative from the erotic identity of *dunamis* and *energeia*. In order for this to be true, the kind of identity from which motion is derived cannot be merely static and inert. It must be a sort of identity that is receptive of contrariety, which sustains itself through change. Insofar as *phusis* refers not only to the motion of natural beings, but to the principles of said motion that the natural being is said to possess inherently, *phusis* manifests an unmoving identity that is itself the ground for motion.⁶⁵

A new logic is required in order to think about motion: while motion is some sort of variance from absolute unity it is not the sort which can be thought in terms of an absolute opposition to absolute unity, but rather in terms of temporal difference (before and after) and temporal unity (simultaneity *hama*). And, since time's unifying and diversifying qualities belong equally to time's essence (we cannot think time without thinking both these aspects),⁶⁶ we need some way of bringing together contradiction and non-contradiction into our way of thinking. This must be a thinking that is comprehensive of contraries without eradicating them.

The *Physics* opens by making a case for this need, by showing that nature cannot have its source in an inert self-identical first principle that excludes diversity and change, or in two opposing first principles that are brought together to produce change. In the first book of the

⁶⁵ Note that according to this logic, to be unmoving (*akinēton*) cannot be understood as merely being static and inert (opposed to motion, or the absence or privation of motion). It must refer to an identity that is beyond motion, and not susceptible to motion.

⁶⁶ See *Phy.* IV.10 218a9-30, 13 222a10-21.

Physics Aristotle indicates that there is an alternative to this, but at this stage in the argument he can only point to there being another possible way. As he writes in chapter 2: “In this way they were already at an impasse, conceding the one to be many – as if it were not acceptable for the same to be *both* one and many, *provided these are not opposites (antikeimena)*. For the one is both in potency (*dunamis*), and in activity (*entelecheia*).”⁶⁷ Later, in the passage from chapter 8 that I have already quoted, after bringing the Eleatic either/or logic to its limits, Aristotle comes to the conclusion that genesis can’t come from being, nor from non-being, and yet we can’t do away with the principle of non-contradiction. “This is one way, but another is that it is possible to mean these things in respect to potency (*dunamis*) and activity (*energeia*).”⁶⁸

Aristotle then goes on in book III (and thereafter in both *Phy.* and *Met.*) to define motion in terms of *dunamis* and *energeia/entelecheia*. What has to occur in order to make this possible is a revision of the role of contrariety in our thinking. Contraries, such as being and not being, cannot be the ultimate constituents of *Physics*, because if each contrary were independently grounded there would be no way of relating them that would provide a transition between them. There is no “combining” being and not being into becoming because becoming must transition, and does not simply hop from one state to another ecstatically. Nor can being be thought to cause becoming if *to be* is simply *to be one* and *not many*, to be at rest and not moving. If unity is allowed to be a separate principle then what is other than it must be different and even opposed to it.

This way of thinking would yield a concept of time that stands different and opposed

⁶⁷ *Phy.* I.2 186a1-3.

⁶⁸ *Phy.* I.8 191b28-29

to the unity required by conceptual thinking. We will find the need to revisit this challenge in the account of time in Book IV, when we try to think time as itself constituted out of contraries (the now as both same and different, time as both continuous and discrete) and in the temptation to see time as one side of a contrary: seeing its pairing with soul as either that which introduces differences into the continuity of consciousness, or time as what is itself continuous and is divided by the numbering act of *nous*. These difficulties result from the same error made by those who identify matter and *steresis*,⁶⁹ and thereby understand matter as the contrary to form that can only be externally related to form. But if we take Aristotle's suggestion here in the first book of the *Physics* seriously – that there is “another way” that it might be possible for something (in this case, time) to be both one and many, “provided these are not opposites” – and if we allow ourselves to turn our attention to the relationship of *dunamis* to *energeia* when we try to think time, then we shall have our way forward.

The definition of motion in terms of dunamis and energeia/entelecheia:

In the relationship between form and matter as “something good” and something that desires this as the good of its own existence we have the prefiguration of the relationship between *energeia/entelecheia* and *dunamis*. Though it is true that this distinction “has been developed more elsewhere,” we have already seen it at work in the opening book of the *Physics*, as the starting point needed to get past the limitations of a purely contrary relation. We now have something to work with when the terms *dunamis*, *energeia* and *entelecheia* emerge in the discussion of motion.

Motion is “the *entelecheia* of that which is potentially (*dunamei*), just as such (*ei*

⁶⁹ *Phy.* I.9 191b35-192a13.

toiouton),”⁷⁰ that is, “as potential (*ei dunaton*).”⁷¹ Motion is here being defined as a sort of *entelecheia*. Up to now I have been translating *entelecheia* and *energeia* interchangeably as “activity,” but this is by no means uncontroversial among interpreters of this text or others in which these terms appear. Among Latin interpreters it was customary to simply transcribe *entelecheia* as “entelechy,”⁷² and in English it is translated most often as “actuality.”⁷³ However, in this passage in particular, the translation of *entelecheia* as “actuality” poses a series of problems. Ross argues that “*entelecheia* must here mean ‘actualization’, not ‘actuality’: it is the *passage* from potentiality to actuality that is *kinēsis*.”⁷⁴ But as others have pointed out, this makes the definition circular⁷⁵ and vacuous.⁷⁶ If the word “actualization” connotes a *passage* from potentiality to actuality, then its use in this definition is to function as a sort of synonym for motion itself, which is not very illuminating. Note, however, that if we understand “actualization” as connoting *process*, we tend to thereby use “actuality” as connoting the *product* of said process, by contrast. Ross does so in the quotation above when he says “it is the passage from potentiality *to actuality* that is *kinēsis*,”⁷⁷ implying that ‘actuality’ refers instead to the end or result of the motion/actualization.⁷⁸ Even those critical

⁷⁰ Phy III.1 201a10.

⁷¹ Phy III.1 201b5.

⁷² Brague 1990:8

⁷³ Other common translations are “fulfillment” or “complete reality”,

⁷⁴ Ross 1936: 537.

⁷⁵ Brague 1990:10.

⁷⁶ Kosman 1969:41. Kosman also points out that this is the same objection which Aquinas had to those who define motion as “*exitus de potentia in actum*” insofar as *exitus* is itself a species of motion (see Kosman 1969:41 fn.6).

⁷⁷ Ross 1936: 537, my italics

⁷⁸ Though the english word “actuality” does not mean “result”, I am arguing that in the context of the debate over whether the translation should be “actuality” or “actualization” it takes on this role. In normal English

of Ross on this point, and who choose instead to translate it as “actuality,” discuss the distinction between actuality and actualization in terms of the difference between process and product.⁷⁹ To see the question of the translation of *entelecheia* in terms of this alternative seems to me to evade the question that is at stake in the definition, and replace it with a concern that is not in dispute. Aristotle is not asking whether *kinēsis* is a process (actualization) or a product (actuality), because it is already clear to him that it is a process. The question he is asking is more along the lines of ‘what kind of being does motion have or pertain to?’ which requires asking about how it pertains to *entelecheia* (and, further along, to *energeia*) as the primary meaning of being.

Blair offers what seems to me to be a compelling suggestion when he argues that *entelecheia* means “the internal possession of the end.” This seems to me to be sensitive to context of the discussion as pertaining to *phusis*, which, as Aristotle understands it, is an inherently teleological process. Blair also defends this reading etymologically,⁸⁰ and provides

usage, “actuality,” or the actual, serves as a contrast to what is merely wished for or surmised, to correct a misconception. When someone makes a statement that is contrary to fact, we tend to respond, “Actually...” Sachs puts it nicely when he says it is “a word that refers to anything, however trivial, incidental, transient, static, that happens to be the case, so that everything is lost in translation, just at the spot where it could begin” (Sachs 2011: 245).

⁷⁹ That the contrast of process/product is implied by the actualization/actuality dichotomy – even for those who are explicitly seeking to overcome it – is in evidence in the way that Kosman (1969) proceeds: “For the actualization of the buildable *qua* buildable would be the process by which the buildable becomes buildable, rather than, as Aristotle has in mind, building, i.e. the process by which the buildable becomes built. I think that these objections are fatal enough to the proposed account to let us dispense with the uncomfortable courtesy of translating “entelecheia” or “energeia” by “actualization”, and use the much preferable term “actuality” (Kosman 1969:43). However, Kosman has more recently reconsidered this stance. In his 2013 book he translates *entelecheia* as “realization” – as it “may refer either to a process or to the result of a process” (Kosman 2013: 46). Also, Brague writes “an easy answer would be to understand the ‘activity’ at stake here as actualization and not as actuality – as process and not as result” (Brague 1990: 10). Even though both Kosman and Brague are not unaware that we need a definition of motion that is not limited by the process/product dichotomy, this shows that this limit is inescapable when one considers actualization or actuality as the only options for translating *entelecheia*.

⁸⁰ Blair parses it into: *ev* (in) + *telon* (end) + *echein* (to have): “having an end within”/ “internal possession of an end.” He argues that “*tele*” should be read as *telon* (accusative) rather than *telei* (dative) (the latter being given in the LDS, which version would mean “to be at an end” or complete). Cf. Sachs who read it as “combining *enteles* (complete, full-grown) with *echein* (=hexis, to be a certain way by the continuing effort of holding onto

a thorough comparison of the ways that *entelecheia* is used throughout Aristotle's corpus in defending this translation, as well as its relationship to *energeia*. This last point is to me what makes his position so powerful, because it is not just important for our purposes how this term is functioning here, but also for how motion pertains to *entelecheia* (and to *energeia*) more broadly.

Nonetheless, when Blair translates the definition in question he modifies it slightly to read: motion is “the *internalization of the end* of the potential as such,”⁸¹ making a similar adjustment to the one advocated by Ross who insists that *entelecheia* must here mean ‘actualization’ rather than ‘actuality.’ Similarly, Sachs assiduously makes adjustments to how he translates *entelecheia*, but unlike the others he does so in such a way that overcomes the process/product dichotomy. He will either translate it as “the fully active’ or “being-at work-staying-itself.”⁸² While I do not deny that the meaning of these terms can fluctuate slightly in different contexts, I do think that the best translation would be an English word that itself carries a force that contains these variations brought out by context, and can adjust without being re-worded. To the extent that this is possible I will find the best translation for *entelecheia* is ‘activity.’⁸³ Both Blair’s “internal possession of the end” and Sachs’ “being-at-work-staying-itself” lend a rich meaning to the term and express the complex operation of

that condition), while at the same time punning on *entelecheia* (persistence) by inserting *telos* (completion) (Sachs 2011:245). Sachs’ etymology stresses the notion of *persistence*, which to me seems compatible with Blair’s emphasis that the end is possessed internally, though not necessarily “at an end.” Note also that by breaking it down into *enteles* + *echein* Sachs is following Heidegger (2009:201) and Diels (1916: 203).

⁸¹ Blair 1992:106.

⁸² Sachs 2011: 74. This shows the influence of Heidegger, who offers “maintaining-itself-in-being-completed” as a clarification for the meaning of *entelecheia* (Heidegger 2009:201). Sachs employs the former more sparingly and probably only because the latter is too cumbersome to reiterate as frequently that the word appears in the text.

⁸³ More recently, Kosman has reconsidered his earlier translations of *energeia* as “actuality” and now translates it as “activity” (2013: vii-x).

active unity that is meant by *entelecheia*, but I find “activity” accomplishes this more elegantly. Furthermore we will see how “activity” will allow us to account for the relationship between *energeia* and *entelecheia* as we go forward.⁸⁴

No matter how we choose to translate *entelecheia*, we still need to understand how it belongs to what is *potential as such* in the definition of motion. Even if we were to translate *entelecheia* as “actuality” – allow the connotation of “product” or result therein, but specify that it is some kind of “active” product (as Kosman does when he substitutes it with “making actual”⁸⁵) – we still need to account for how this actuality/making-actual/activity belongs specifically to *what is potentially as such* or *as potential*.

We have already seen in book I the notion of *dunamis* functioning to explain the capacity of matter as *hupokeimenon* to be receptive of contraries, but as relating to the form essentially (desiring it), and relating to the privation incidentally. If this notion of *dunamis* is consistent with how it is functioning here in book III, then “what is potentially” is speaking to the way that the matter underlying motion is oriented to, or desiring, the good of its being, without yet being identical with it.

Dunamis in itself does not necessarily imply motion, however. This is why motion is here being called the *activity* of what is potentially, meaning that the potential is thus not dormant where there is motion. Still, this is not enough to capture motion, for the activity of the potential *qua activity* would have to include the full realization of what is achieved by the motion (the end), and this is not part of the motion itself. This is why Aristotle calls it the activity of what is potentially, *as such* or *as potential*. While there is motion the potential is

⁸⁴ This is also Blair’s ultimate standpoint, the argument for which we will take up as we proceed.

⁸⁵ Kosman 1969:46. Again, note that Kosman no longer ascribes to this translation (See Kosman 2013: 45).

active, but the full activity of the potential is the cessation of motion in its completion (*telos*).

We can see from this why the process/result dichotomy is so often read into the meaning of *entelecheia* in this definition: because for motion, there is an essential distinction between process and end. The mistake, however, is to expect the mutual exclusivity of process and end to pertain to *entelecheia* itself.⁸⁶ *Entelecheia* cannot be reduced to either a process, or its result, but for motion, this difference is fundamental insofar as the motion itself is negated by the realization of the aim it is directed toward. Furthermore, the process/result dichotomy does not apply to *dunamis* in the same way as it does to motion, because when what is potential achieves its activity it is not negated, but is realized, and has become identical with its *entelecheia*.

The challenge of having to draw together an understanding of *entelecheia* and *dunamis* in order to make sense of this definition of motion proves to be quite rewarding. With these concepts in mind we are able to get at precisely what evaded the thinking of motion in terms of the presence or absence of form, because motion is neither a presence nor an absence of being simply. Neither is it simply identical either to what is potentially, or to activity. Still, motion is defined in terms of potentiality and activity. Aristotle defines motion as “the activity of what is potential as such” in order to show that motion does not exist apart, as a separate kind of being from activity.⁸⁷ Motion belongs within this relation of the activity

⁸⁶ Blair’s translation of *entelecheia* as “internal possession of the end” and Sachs’ “being-at-work-staying-itself” correct this mistake by emphasizing the idea of completeness in such a way that does not exclude process or persistence. While I find these translations to be a useful corrective to the mistaken reading of *entelecheia* as either process or product, I find “activity” to be sufficient to do the same, though it is admittedly a less explicit correction. Hopefully the argument I have offered here will allow us to leave the process/product polemic behind, so such an explicit and laborious translation will not be necessary to repeat.

⁸⁷ “Motion is not something that exists apart from things (*para ta pragmata*). For what is changing always changes according to beingness (*ousia*), or to quantity, or to quality, or to place. There is nothing to take hold of which is common to these, and is neither, as we say a this, or a this-much, or an of-this-kind, nor of any of the other categories. So that neither motion nor change will be anything apart from those mentioned, since there is nothing apart from those mentioned” (*Phy.* III.1 200b33-201a3). Even though “there is nothing to take hold of

of a potency, but it itself is inherently incomplete.⁸⁸ This is why Aristotle will go on to call motion an incomplete (*atelēs*) *energeia*,⁸⁹ or an incomplete (*atelēs*) *entelecheia*.⁹⁰

We have now seen *energeia* arise in three places: 1) as its relationship to *dunamis* provides “another way” to think about becoming (genesis) 2) in describing the temporality of motion in the passage on building, and 3) in calling motion an incomplete *energeia*. I have suggested that the work we have done to uncover the meaning of *entelecheia* as “activity” will also prove instructive for our understanding of *energeia*, and that the two terms are virtually synonymous. This is in part indicated by the fact that “for every use of *entelecheia* there is a use of *energeia* somewhere in Aristotle with the exact same sense.”⁹¹ While this is not the place to prove this extensively, we can see that it is affirmed in the three examples of *energeia* we have encountered.

Since the *Physics* investigates the causes and principles of motion, *energeia* is invoked to the extent that it reveals the kind of being that realizes itself through motion. It does so by showing that motion is a particular kind of *energeia* that is essentially incomplete. *Energeia* is a concept that is itself complete (*teleion*) in that it includes the kind of activity exhibited by

which is common to these [categories],” we will see that the relationship of *dunamis* and *energeia* cuts across all the categories of being (*Met.* IX.1 1045b34).

⁸⁸ Kosman describes the difference between the activity that is motion *per se* and the activity of the potential belonging to the subject of motion in terms of the difference between a “deprivative perfection of an imperfection” and the “constitutive perfection of an imperfection” (Kosman 1969:48). The former (deprivative perfection) is annihilated in its own perfection, whereas the latter (constitutive perfection) is realized in its perfection. Because there is no such thing as abstract motion, these two kinds of perfection are inseparable empirically. But if we are to get at the character of motion, we must acknowledge this difference at work in the operation of nature. (Note that insofar as Kosman translates *entelecheia* as “actuality” he must make use of the term “perfection” as an ancillary concept to make sense of this difference. One might wonder why he does not suggest “perfection” as a translation for *entelecheia* itself given this reasoning. When he, more recently, translates *entelecheia* as “realization” this tension is abated (Kosman 2013: 48).)

⁸⁹ *Phy.* III.2 201b22.

⁹⁰ *Phy.* VIII.5 257b8.

⁹¹ Blair 1967:102. For exhaustive proof of this see Blair 1992.

motion, and the activity achieved when motion ceases. For our purposes here, of investigating its pertinence to time, the passage on building is particularly instructive. When Aristotle says that “the activity (*energeia*) must be either building or the house,” he shows that *energeia* is inclusive of both the process (here, building) and the end (the house), but that in order to think motion we must see how these activities are temporally distinct. Motion is the kind of activity exhibited in building (or moving, or growing, or changing) but the kind of activity that results from motion (the house, the destination, the mature being, the realized attribute) is not a motion, and is precisely the contrary of motion. This distinction between process and result, which applies essentially to motion, demonstrates a specific kind of temporal relation. “Whenever the house is, the buildable is no longer.” The time in which building occurs is continuous, but the activity of building and its result cannot exist at the same time.

In the *Physics*, time is that “in which” motion can take place,⁹² meaning that the temporal distinction between a process and its result is paramount. However, motion is merely an incomplete activity, whereas activity is inclusive of both a motion and its completion. Furthermore, while activity can capture the meaning of both motion and its result, the meaning of activity extends beyond the cases where these are temporally distinct: that is, its meaning extends beyond motion. The scope of the *Physics* is thus limited not by the difference between natural and artificial motion, but by its focus on motion, which is an incomplete activity. The *Physics* will not give us a full account of activity, but only those that are incomplete. For a full account of activity we must look elsewhere.

⁹² *Phy.* V.1 224a37.

Kinēsis and Energeia in the Metaphysics:

It is in *Metaphysics* that Aristotle investigates the full meaning of activity, while showing that it is comprehensive of the significance it has for motion established in the *Physics*. There he writes, “the name *energeia*, which convenes with *entelecheia*, comes to apply to other things from belonging especially to motion.”⁹³ This reflection arises in the *Metaphysics* after having defined *dunamis* as “the source of change in some other thing or in the same thing as other.”⁹⁴ This is the definition of *dunamis* as it pertains to motion, and Aristotle has already made it clear from the outset that he is inquiring “first about potency in the sense in which it is meant most properly, although it is not the sense that is most useful for what we want now. For *dunamis* and *energeia* apply to more than just the things spoken of in reference to motion.”⁹⁵

For the moment we will leave aside the discussion of *dunamis* as it pertains to motion. At this point it is sufficient to note that it supports what we have been saying about *dunamis* gleaned from the *Physics*: that *dunamis* functions as the *arche* of motion but is irreducible to motion (because something can have the *arche* or *dunamis* for motion without being actively moving (ch 3)), and that the overcoming of contrary possibilities is attributed to desire (ch 5) and an orientation to the good (doing well *eu poiein* ch 2). By chapter 6 Aristotle is ready to move on from discussing the kinds of potency that correspond only to motion, and discuss its

⁹³ “ἐλήλυθε δ’ ἡ ἐνέργεια τοῦνομα, ἡ πρὸς τὴν ἐντελέχειαν συντιθεμένη, καὶ ἐπὶ τὰ ἄλλα ἐκ τῶν κινήσεων μάλιστα: δοκεῖ γὰρ ἡ ἐνέργεια μάλιστα ἡ κίνησις εἶναι” (*Met.* IX.3 1047a30).

⁹⁴ “ἡ ἐστὶν ἀρχὴ μεταβολῆς ἐν ἄλλῳ ἢ ἡ ἄλλο” (*Met.* IX.1 1046a11).

⁹⁵ “πρῶτον περὶ δυνάμεως ἡ λέγεται μὲν μάλιστα κυρίως, οὐ μὴν χρησιμωτάτη γέ ἐστι πρὸς ὁ βουλόμεθα νῦν: ἐπὶ πλέον γὰρ ἐστὶν ἡ δύναμις καὶ ἡ ἐνέργεια τῶν μόνον λεγομένων κατὰ κίνησιν” (*Met.* IX.1 1045b34-a2).

relation to *energeia* more broadly.⁹⁶

Aristotle begins by including within a list of various *energeiai* cases where the activity of the potential is not a motion, and where the transition from *dunamis* to *energeia* is not a motion. He lists several ways that we speak of the relationship of *dunamis* to *energeia*: the wood to the statue of Hermes, the whole line to its division into halves, the person with knowledge to the one actively contemplating, the person who can build to the one actively building, the sleeping consciousness to the one that is awake, someone with their eyes shut to actively seeing. He stresses that these are all analogous cases of the relationship between *dunamis* and *energeia*. However, if we look closely we can see that some of these examples do not involve motion at all, and those that do involve motion do not do so in the same way. Neither the wood (as potential statue) nor image of Hermes (as the activity of the statue) is a motion, but it is a motion (carving) that brings the latter out of the former. Neither the whole line nor the divided line are a motion, nor is the division thereof a motion (it is a function of *logos*, or *to krinon*⁹⁷). Though building is itself a motion, the transition from being capable of building to actively building is not, and though opening one's eyelids is a motion, the transition from not seeing to seeing is not a motion (the opening of the eyes merely removes an external barrier). The transition from the possession of knowledge to contemplation does not involve motion at all.⁹⁸ Since the involvement of motion is certainly not analogous in

⁹⁶ “Since we speak of potential not only of that which is of such a nature as to move some other thing or be moved by something else, either simply or in a certain respect, but also in another way, and it is because we are inquiring after that other meaning that we went through this one” – “οὐ μόνον τοῦτο λέγομεν δυνατόν ὁ πέφυκε κινεῖν ἄλλο ἢ κινεῖσθαι ὑπ’ ἄλλου ἢ ἀπλῶς ἢ τρόπον τινά, ἀλλὰ καὶ ἑτέρως, διὸ ζητοῦντες καὶ περὶ τούτων διήλθομεν.” (*Met.* IX.6 1048a28-32).

⁹⁷ Cf *DA* III.2, on how the faculty of *to krinon* has the ability to use the same point as two in undivided time (426b25).

⁹⁸ Cf *DA* II.5 417a33-b2.

each of these cases, it is clearly not motion that provides the fundamental senses of *dunamis* and *energeia*, nor of the relationship between them.⁹⁹ Rather, what they have in common is that each is “capable of being simply true *at some time*” (*pote*).¹⁰⁰ This suggests that the difference between *energeia atelēs* and *energeia* is not that the former is in time and the latter is not, but rather confirms what we saw in the *Physics*: that in nature “each thing admits at one time (*hote men*) of being active (*energein*) and at another time (*hote de*) not.”¹⁰¹

This difference between motions as incomplete, and activities that are complete and thus “simply true at some time,” calls for an examination of how completeness or perfection belongs to *energeia*. This requires recognizing the difference between the idea of limit (*peras*) and that of end (*telos*). We have seen that in the case of motion the “end” in which the potential is realized is the *limit* of the motion, though it is not the limit of the potentiality or activity itself. In terms of activity the end is not a limit, but a completion or full realization. However, if we are then tempted to see the difference between incomplete *energeia* and *energeia* proper as the difference between a limited and an unlimited activity, Aristotle is quick to show us that this is not the case.

In Met. IX.6 Aristotle discusses the way in which the unlimited (*apeiron*) and limited (*peras*) are to be conceived in relation to *dunamis* and *energeia*. The unlimited is a special case of the relationship of *dunamis* and *energeia*, different from “most of things that have being, such as whatever sees, or walks, or is seen.”¹⁰² This is because the unlimited, for

⁹⁹ “There may be a motion by which an object acquires a potentiality, but once the potentiality has been acquired, only an act of energization is needed for motion to begin” (Kosman; 1969 p. 55-56). The proof of this is in *Phy.* V-VI, where Aristotle argues the beginning of motion is not divisible, therefore not itself part of motion.

¹⁰⁰ *Met.* IX.6 1048b14.

¹⁰¹ *Phy.* III.1 201b7-8.

¹⁰² *Met.* IX.6 1048b13.

Aristotle, refers to any continuity. As such, it is capable of being infinitely divided, like the line mentioned above, or magnitude, motion, and time.¹⁰³ However, if the fundamental meaning of time were its infinity as such, it would only have potential existence, for the infinite activity of division is never complete, and never exists “simply” or “apart” (*chōrizesthai*).

This notion of the unlimited is put into relief against the sort of practical activity that has a limit (*peras*). Here again we see that these are activities in the sense of motion: having a limit, these acts are not themselves ends, but are merely approaching an end (*peri to telos*). The example he cites is losing weight, where, whenever (*hotan*) something is losing weight it is in motion, but that for the sake of which it is moving is never present in the motion itself. Though the example of building with which we are already familiar has this same temporal structure, the example of losing weight highlights the deprivative nature of motion acutely, since it is an act of elimination rather than construction. If we were to lose weight for the sake of losing weight indefinitely, without assigning a limit to this act (presumably, determined by seeking the *end* of health), we would end up with nothing, and the act would eventually negate itself entirely. Nevertheless, it would also be true that if we never ceased building we would never reach the goal of having built a complete house. Insofar as motions are activities, they are a kind of activity that does not have possession of their ends, and they are limited precisely by the exclusion of the end from the motion itself. Furthermore, since motions are included among the continuous and thus potentially infinitely divisible (*apeiron*), we see how a complete activity is not attainable through the infinite divisibility of motion’s

¹⁰³ “Motion seems to be among the continuous (*suneches*), and the infinite (*apeiron*) comes to sight first in the continuous; for this reason, it often falls to those who define the continuous to also articulate the infinite, since the continuous is divisible to infinity” (*Phy.* III.1 200b18-21). “The study of nature is concerned with magnitude, motion, and time, and of these each can be either unlimited or limited” (*Phy.* III.4 202b30-32); “It is impossible for anything continuous to be [made up] of indivisibles” (*Phy.* VI.1 231a24).

continuity either. A motion is only fulfilled by its orientation to and attainment of an extra-motive end. Thus, in the case of motion, a *limit* is required in order for there to be an *end* (in the sense of completion, perfection) attained. However, this relation between limit and end does not hold for all activities.

With this reflection on the nature of the limits of motion Aristotle is finally ready to show us precisely how it is that there can be activities that do not conform to this temporal and ontological structure.

That in which the end is present is an action (*praxis*). For instance, one sees and has seen, understands and has understood, thinks and has thought, at the same time (*hama*). But one does not learn and have learned, become healthy and have become healthy. One lives well, and has lived well, is happy and has become happy, at the same time (*hama*). If not, it would have to stop at some time (*pote*), just as whenever one loses weight. Yet now, it does not stop, but one lives and has lived. Among these examples, we must say that some are motions, and some are activities (*energeiai*). For every motion is incomplete (*ateleēs*): losing weight, learning, walking, and building. These are motions, and are certainly incomplete. For one does not walk and have walked, build and have built, become and have become, move and have moved, at the same time (*hama*). Moving and having moved are different. But at the same time (*hama*) one sees and has seen, contemplates and has contemplated. These I call *energeia*, and those are motion.¹⁰⁴

What we must take away from this is that the difference between motion and activity involves a fundamentally different temporal relation to the end. In activity, the end is present as

¹⁰⁴ “ἀλλ’ ἐκείνη ἡ ἐνυπάρχει τὸ τέλος καὶ ἡ πρᾶξις. οἷον ὁρᾷ ἅμα καὶ ἐώρακε, καὶ φρονεῖ καὶ πεφρόνηκε, καὶ νοεῖ καὶ νενόηκεν, ἀλλ’ οὐ μανθάνει καὶ μεμάθηκεν οὐδ’ ὑγιάζεται καὶ υγιάσται· εὖ ζῇ καὶ εὖ ἔζηκεν ἅμα, καὶ εὐδαιμονεῖ καὶ εὐδαιμόνηκεν. εἰ δὲ μή, ἔδει ἂν ποτε παύεσθαι ὥσπερ ὅταν ἰσχυαίνῃ, νῦν δ’ οὐ, ἀλλὰ ζῇ καὶ ἔζηκεν. τούτων δὴ δεῖ τὰς μὲν κινήσεις λέγειν, τὰς δ’ ἐνεργείας. πᾶσα γὰρ κίνησις ἀτελής, ἰσχυασία μάθησις βάδισις οἰκοδόμησις· αὐταὶ δὲ κινήσεις, καὶ ἀτελεῖς γε. οὐ γὰρ ἅμα βαδίζει καὶ βεβάδικεν, οὐδ’ οἰκοδομεῖ καὶ ὠκοδόμηκεν, οὐδὲ γίγνεται καὶ γέγονεν ἢ κινεῖται καὶ κεκίνηται, ἀλλ’ ἕτερον, καὶ κινεῖ καὶ κεκίνηκεν· ἐώρακε δὲ καὶ ὁρᾷ ἅμα τὸ αὐτό, καὶ νοεῖ καὶ νενόηκεν. τὴν μὲν οὖν τοιαύτην ἐνέργειαν λέγω, ἐκείνην δὲ κίνησιν” (*Met.* IX.6 1048b23-35).

complete at every moment in such a way that the past perfect (I have seen, I have lived, I have thought etc.) is contained and vitally operational in the present progressive (seeing, living, thinking).

Burnyeat has recently called into question the validity of this passage, arguing that, “present-day scholarship should stop citing the Passage as a source of standard Aristotelian doctrine. It is a freak performance.”¹⁰⁵ He argues this on the basis of lacunae in the manuscript tradition, and on the basis of its meaning; he finds it inconsistent that Aristotle would here speak of *energeia* in contrast to motion when elsewhere he consistently speaks of motion as a sort of *energeia*, contrasted only with *dunamis*. However I find this difficult to square with Aristotle’s expressed purpose of book IX: of coming to understand how *dunamis* and *energeia* belong to more than just the things that are in motion. If Aristotle is serious about uncovering the meaning of *energeia* that extends beyond motion, it is fitting that he here finds place to address the distinction between them. This does not discount the sense in which *kinēsis* belongs to *energeia*. However, since we have already seen that motion is a qualified sort of activity, it makes sense that Aristotle should show how *kinēsis* is related to and distinguished from the unqualified sense of *energeia*, which comprehends it. Furthermore, that this distinction has a definitively temporal character is essential to showing precisely how the meaning of *energeia* can include motion but must by its very nature extend beyond it.

The analysis of motion as an activity presents the problem that both the motion and its fulfillment are *energeiai*, but that the activity of the motion itself excludes the activity of fulfillment and vice versa. This has consequences for how we conceive the relationship

¹⁰⁵ Burnyeat 2008: 276.

between the parts of time. If time were continuous in the sense of motion (infinitely divisible) then it would always be becoming other than itself. If time were continuous in the sense of the end of a motion (indivisible *atomos*),¹⁰⁶ it would always be the same. And if incomplete *energeia* were the only kind of activity that occurs ‘in time’ then it would be the function of time itself to contain the alternating differentiation and identity of beings becoming within it in succession (*ephexēs*).¹⁰⁷ It would perhaps be like the way that matter was said to underlie the contraries in *Physics* I: time would function as receptive of both divisible motion and indivisible ends, these latter having only an external – temporal – relationship between them. The connection that holds together a motion and its end in a seamless continuity would have to be the work of time, since motion *per se* essentially excludes its completion. This leaves open the question of whether and how time can be thought of as accomplishing this.

However, just as in *Physics* I Aristotle insisted that there is “another way” of thinking about nature to the one where something underlies contraries, here we see that there is another way of thinking of the relationship between the parts of time. Seeing, thinking, living, and living well (happiness) are activities that are their own end, and do not instead find their end by reaching an external limit. In the case of these activities the parts of time do not exist side by side, but in an active identity that embraces their completion and their ongoing operation: the perfective meaning, which for motion excludes the progressive meaning, is here simultaneous (*hama*) with the progress of the activity itself.

Still, that this in fact entails a temporal relation is a matter of dispute.¹⁰⁸ Burnyeat

¹⁰⁶ *Phy.* VI.5, 235b33.

¹⁰⁷ Aristotle defines succession (*ephexēs*) as when nothing of the same nature comes between parts (*Phy.* VI.1 231a23). Since motions are continuous and divisible, but their ends are indivisible, then the sequences of motions in time are successive.

¹⁰⁸ Burnyeat 2008, Kosman 1984.

argues that something is lost from the Greek when we translate the present progressive and past perfect as “seeing and have seen” in English. According to Burnyeat, this obscures the meaning of the perfect, which “although it implies the performance of an action in past time, yet states only that it stands completed at the present time.”¹⁰⁹ He argues that Aristotle is using an ancient type of perfect, which refers to actions that “are or can be wholly present, with no past reference at all,” functioning instead as a sort of “timeless present.”¹¹⁰ This would mean that we should not consider the difference between “seeing and having seen” as a matter of tense at all, but only aspect. According to Burnyeat’s analysis, the only distinction being made (and immediately negated) in this passage is between incomplete and complete aspects, and it does not deal with the situation of the activity in time – as past, present, or future – at all. Accordingly, he suggests that in order to correct this misconception we should insert a “counteracting phrase” that would accurately convey the perfective meaning in English: “x is happy and *has achieved* happiness,” which “makes the past irrelevant.”¹¹¹

If Burnyeat is right, Aristotle is saying in this passage that seeing, thinking, and living represent examples of timeless activities, as opposed to motions, which are temporal activities. This is also the view put forward by Kosman when he writes,

For many acts, to have completed or perfected them requires that there has been a past time during which they were being completed or perfected. But this is a feature of those very acts that Aristotle in the passage before us describes as motions, and precisely *not* a feature of those acts that he calls actions proper, the actions called activities or *energeiai*...it is exactly a feature of activities that such past periods of perfecting are not required; an *energeia* is the sort of thing which is perfected or completed in the very instant of its being enacted.¹¹²

¹⁰⁹ Burnyeat 2008: 247.

¹¹⁰ Ibid 248.

¹¹¹ Ibid 251.

¹¹² Kosman 1984: 124

The problem with understanding the passage in this manner is that it reduces the meaning of these activities to the perfective meaning alone, and does not account for the progressive meaning at all. If the distinction between “one is seeing” and “one has seen” is merely a matter of aspect then Aristotle would be saying that “the seeing is incomplete and complete at the same time,” which makes no sense. It violates the LNC in precisely the manner that Aristotle thinks it holds true. While it is true that the seeing “is perfected or completed in the very instant of its being enacted,” the point that Aristotle is making is that the perfection or completion of the activity does not exclude it from carrying on. Perfection does not exclude and is not contrary to active duration. So if it is true that we see, think, and live in an instant, how can we also account for the way we carry on seeing, thinking, and living for an ongoing duration of time?¹¹³ Is this not precisely what Aristotle is trying to say when he goes to the trouble to stating that we are seeing *and* have seen, living *and* have lived, thinking *and* have thought *at the same time*? The past perfect here must be able to retain its temporal connotation of belonging to the past without denying its continuing into the present.

What we have here is then an account of *energeia* that is fundamentally temporal, though distinct from the temporality of motion where the past-perfect must exclude the present progressive. Furthermore, it makes room for us to think beyond the model of motion where it appeared that time underlies alternating moments of motion and rest, and by some indescribable power connects events in a sequence of past, present and future. Even if, in the

¹¹³ Kosman concedes that this must in some way be allowable, without revising his assessment that the verbs should be read as conveying aspect only: “This is not to say that activities for Aristotle cannot happen in time. An activity can *occupy* time, but it is not the sort of thing that must *take* time” (Kosman 1984: 127). Kosman is here contesting the suggestion made by Gilbert Ryle (1954: 102), that activities cannot happen in time. The difference Kosman is trying to draw finds support in the distinction between being in time essentially (*kath' auto*) vs. being in time accidentally (*Phy.* 221a24). See also Natali (2004: Ch 7) on this point.

case of motions, time should in some way accomplish this, we can see that it is not time alone that is capable of bringing together the parts of time into an active, durational unity. This is also the power of soul, which lives, and thinks and sees.

The temporal significance of this passage cannot be brushed aside. Furthermore, it is consistent with the project of book IX. After having established the sense of *energeia* that embraces the parts of time in an active unity, Aristotle returns to the notion of *dunamis*, and asks: “*when (pote)* does each thing exist in potency, and *when* does it not?”¹¹⁴ The distinction Aristotle has just drawn between *kinēsis* and *energeia* is not the same as that between *dunamis* and *energeia*, because, as we have seen, for the *dunamis* the end or completion is not external to the process in the same way as it is for motion. While it is true that the potential ceases to be merely potential once it has been fully realized, it is not negated in this realization, because the potential is related to its full activity through a relationship of stretching out towards and desiring the activity as its own good. Nevertheless, the potential does not exist in time in the way of *energeia* that we have just seen. The potential refers to what is “capable of being simply true *at some time*” (*pote*),”¹¹⁵ but that does not mean that it exists “at any time whatever” (*hopoteon*).¹¹⁶

Aristotle will show that *dunamis* has the temporal structure of “already” (*ēdē*) having become something: “whenever (*hotan*), by virtue of its own source (*arche*), it is already (*ēdē*) as such a sort, this is already (*ēdē*) in potency.”¹¹⁷ What Aristotle is here saying is that the potential must have *already* become something in order for it to have the potential to be or do

¹¹⁴ *Met.* IX.71048b38-a1.

¹¹⁵ *Met.* IX.6 1048b14.

¹¹⁶ *Met.* IX.7 1049a1.

¹¹⁷ “ὅταν δ’ ἤδη διὰ τῆς αὐτοῦ ἀρχῆς ἢ τοιοῦτον, ἤδη τοῦτο δυνάμει” (*Met.* IX.7 1049a16-17).

something. If this sounds like it leads to an infinite regress, it is because in time there is no absolute beginning point; there was no time where everything existed in pure potency and indefiniteness prior to becoming differentiated into the various definite things that exist actively and change. Furthermore, we see that there is a parallel between the temporal structures of *dunamis* and *energeia*. To say that the potential is something that exists “already” means that “what it is” now, it is by virtue of having within itself a relation to the past that is also the source (*arche*) for an activity that reaches out into the future. *Dunamis* involves both the past-perfect and the present progressive, except that unlike *energeia* these do not occur “at the same time.” What is potential is *already* something that is *not yet* what it can and should be, for it is distinct from its *telos*. But this does not make *dunamis* an incomplete *energeia* in the manner of *kinēsis*. *Dunamis* is a power over motion, a seeking of ends in a way that can involve motion, but is not limited in the same way that motion is limited by its contradistinction from rest and being thereby annulled in reaching its *telos*. The distinction between *dunamis* and its *telos* is not a contrary distinction, but it is there insofar as the potential is not yet realized, and so remains vulnerable to contingency: “provided nothing external prevents it, it will be through itself,”¹¹⁸ and, “every potential is at the same time a potential for its opposite.”¹¹⁹ So, *dunamis* has the temporal structure of being “already *x*” and “not yet *y*.” The baby is already born and not yet educated, or the man is already educated and not yet thinking. Thus the *dunamis* exists when, and only when, the being in question has this temporal relation to the past and the future. It is unlike *energeia* in that the parts of time do not occur simultaneously. What this means is that *dunamis*, while ontologically distinct

¹¹⁸ “ὅσα μηθενὸς τῶν ἔξωθεν ἐμποδίζοντος ἔσται δι’ αὐτοῦ” (*Met.* IX.7 1049a14).

¹¹⁹ “ὅσα γὰρ κατὰ τὸ δύνασθαι λέγεται, ταῦτόν ἐστι δυνατόν τὰναντία” (*Met.* IX.9 1051a6).

from motion, is temporally akin to motion.¹²⁰

It is important to establish how both *dunamis* and *energeia* are related to motion if we are going to be able to establish the scope of the *Physics*, because, while *Physics* is about motion, it is primarily concerned with the motion that belongs to things “by nature.” Natural being is the source of its own change, meaning that it is a kind of *dunamis*. But whereas *dunamis* pertains to motion broadly by being the source of change in another or in itself as other, nature is only the source of change in itself as itself.¹²¹

There is both a microcosmic and a macrocosmic way of considering this. On the one hand, nature is a plurality of natural beings, in which each has in itself the source to achieve the end of its motion. In this sense, nature exists as *dunamis*: as things that have already become something, and are not yet something. The kind of temporality that belongs to nature as such is successive (*ephexēs*),¹²² according to linear motions, which are only perfected when they can be said to have arrived at their ends. The present progressive (moving) and the past perfect (moved) are temporally distinct. These motions cannot be continuous,¹²³ but the time

¹²⁰ Long (2004) and Gonzalez (2004) offer a reading of this passage from *Met.* IX.6 that is consistent with my own in giving heed to its temporal significance. Long notes that “by placing this perfect form of the verb next to the present tense, with its progressive aspect, however, Aristotle finds an expression for the unity of past and present in the activity itself. Based on this model, to be is to exist as the active identity of past and present...the present-perfect formulation itself opens up a conception of temporality different from that developed in the *Physics* on the model of motion” (Long 2004: 103). Gonzalez, in his review of Long’s book, offers an important corrective to Long’s insistence that this kind of active identity of the parts of time is inseparable from *dunamis* and matter, showing that Long thereby ultimately conflates *energeia* and *kinēsis* in his overall assessment of Aristotle’s *Metaphysics*. Gonzalez writes, “To the extent that *praxis* is *dunamis* it is not yet what it can and should be; it is distinct from its *telos*, and therefore its past, present and future are distinct in the way described by the account of time in the *Physics*” (Gonzalez 2004: 191).

¹²¹ “καὶ γὰρ ἡ φύσις ἐν ταῦτῳ γίγνεται: ἐν ταῦτῳ γὰρ γένει τῇ δυνάμει: ἀρχὴ γὰρ κινητικῇ, ἀλλ’ οὐκ ἐν ἄλλῳ ἄλλ’ ἐν αὐτῷ ἢ αὐτό.” (*Met.* IX.8 1049b9-11).

¹²² “If time is continuous, that does not mean motion must be too, but motion can be successive (*ephexēs*)” (*Phy.* VIII.8 264b7).

¹²³ Aristotle explains this near the end of the *Physics*, when he argues that only circular motion can be continuous infinitely. The basic argument is that there is contrariety inherent in any linear or composite motion, such that the motion will have to stop and involve not only potential, but active divisions (*Phy.* VIII.8 261b27-

in which they occur is continuous. Motion as such cannot account for the continuity of time, but it is time that contains motion in an endless temporal succession. On the other hand, nature is the entire system of these motions, which includes within itself all coming to be and passing away. Circular motion is said in the *Physics* to be the measure of linear motions,¹²⁴ and in the *Metaphysics* the sun, the stars, and the whole heavens are said to be always in activity (*aei energei*).¹²⁵ Can the way that circular motion in its continuity contains and measures linear motion account for the continuity of time in the way that living, seeing, and thinking demonstrated an active identity of the parts of time? Or is the sort of activity that belongs to the ensouled still called for? It will be the project of the coming chapters of this thesis to determine if we can find in the *Physics* a properly physical activity that can adequately account for the relationship between the parts of time in the way that we have seen this done in the examples of living, thinking and seeing. We will be looking to see if the question of whether or not there is time without soul finds its answer therein.

Before moving on, let us take an inventory of what has been established thus far. We have seen the sense in which the scope of the *Physics* is broadly foundational for understanding the causes and principles of motion. Motion itself has been defined in terms of potency (*dunamis*) and activity (*energeia/entelecheia*), which we have seen is an alternative to thinking about motion merely in terms of combined contraries. Contraries can only be externally related so as to produce a unity, as was shown in Aristotle's preliminary

262a28). By contrast, he says with regard to continuous circular motion that "whenever something is carried along continuously, A cannot have come to be at (*gegonenai*) nor have departed from (*apogegenenai*) the point B, but can only be there in a now, but not for any time exception within that of which the now is a division, within the whole" (Phy. VIII.8 262a28-31). What is particularly interesting about this passage is the way that Aristotle denies the use of the perfect tense with respect to continuous motion.

¹²⁴ *Phy.* VIII.9 265b10

¹²⁵ *Met.* IX.8 1050b23.

conceptualization of motion in *Phy.* I, with the addition of the *hupokeimenon* to the contraries, form and *steresis*. This was shown to be inadequate insofar as it meant that the form by its mere presence or absence would have to be responsible for “making” something become or cease to exist. But *phusis* is the principle of its own motion: the causes of its coming to be are not some external – technical – power, super-added to nature as *hupokeimenon*. Rather, motion belongs to *phusis* in the manner of *dunamis*, which stretches out toward and reaches for its form out of its own nature.

Nevertheless, we have also seen the way that contrariety properly pertains to motion: in terms of its temporality. Past and present are distinguished for motion due to mutual exclusivity of a motion and its *telos*. The motion (as continuous and divisible) is the privation (*steresis*) of the *telos* (as indivisible); as an incomplete activity (*energeia atelēs*), motion essentially lacks completion (*teleion*). Nonetheless, this does not mean that motion and activity are contraries, for motion is a kind of *energeia*: one that is never complete *qua* itself. What this means is that *energeia* is comprehensive of the activity that is motion, but also extends beyond motion. This has the consequence that the parts of time, which for motion are distinguished successively as pertaining to alternating moments of motion and rest, are comprehended in those cases of activity where past-perfect and present progressive were said to occur simultaneously (*hama*).

By virtue of temporal differentiation, the law of non-contradiction (LNC) does not preclude motion. For Aristotle the LNC remains operative in our thinking insofar as it reveals the temporal and substantial unity that must exist prior to differentiation, and is as such comprehensive of contraries. We can see this in the cases of *energeia* cited in the passage at *Met.* IX.6: seeing and having seen, thinking and having thought, living (well, happily) and having lived (well, happily). It is not that these are atemporal and “tenseless,” but rather the

different tenses are comprehended in these activities. Time does not “stop” while we actively see, think, and live, but the temporality of such activities is not such that what has been must be different from what is. The active unity of seeing, thinking and living corresponds to the active unity of time’s continuity.

The scope of *Physics* is thus limited insofar as it does not give us the means to fully account for such activities, although, as we shall see, it must make use of them when describing time as the “awareness” of motion and as the “number of motion with respect to before and after.” The kind of complete *energeia* that finds its place in the *Physics* is that of infinite circular motion, which also appeared in the *Metaphysics* as the eternal (*aidion*) always active (*aei energei*) motion that is prior to the potential of all that comes to be and passes away “by nature:” if this did not exist, nothing would.¹²⁶ It remains to be seen if continuous circular motion can thereby account for the active continuity of time in such a way that we can say definitely that time exists without soul.

¹²⁶ *Met.* IX.6 1050b19-20.

CHAPTER 2: Time in the *Physics* pt 1(*Phy.* IV.10-11): Time as determined by the now

The chapters on time arise in the *Physics* from the need to explain the possibility of motion. Earlier, Aristotle stated, “It seems that motion would not be possible without place, the void and time.”¹²⁷ Book IV of the *Physics* explores each of these supposed conditions for motion in turn. It is thus insofar as time might be a necessary condition for motion that the discussion of time finds its place in the *Physics*. It will be our task to see if the conception of time that Aristotle there presents shows time belonging to motion exclusively or if this discussion exceeds its original intent of merely explaining time as a condition for motion, and in fact begins to make the case for its dependence on soul.

Phy. IV.10: The aporiai about time as it relates to the nature of the infinite:

Aristotle begins by going through a series of aporiae that confront us when we try to think time, which suggest that time “either wholly is not, or is only scarcely (*molis*) and faintly (*amudros*).”¹²⁸ The initial aporia is stated as follows:

On the one hand, of it there is what *has happened* and *is not*, and, on the other hand, what *will be* is *not yet*. From these, both the infinite (*apeiron*) and the time that is always being grasped (*ho aei lambanomenos chronos*) are composed (*sugkeitai*). But what is composed of non-beings might seem to be incapable of participating (*metechein*) in beingness (*ousias*).¹²⁹

Notice here that we are not dealing with the problem that confronted Aristotle at the beginning of the *Physics* – that a thing must either be or not be – which made it impossible to

¹²⁷ *Phy.* III.1 200b22.

¹²⁸ *Phy.* IV.10 217b34.

¹²⁹ “τὸ μὲν γὰρ αὐτοῦ γέγονε καὶ οὐκ ἔστιν, τὸ δὲ μέλλει καὶ οὐπω ἔστιν. ἐκ δὲ τούτων καὶ ὁ ἄπειρος καὶ ὁ αἰεὶ λαμβανόμενος χρόνος σύγκειται. τὸ δ' ἐκ μὴ ὄντων συγκείμενον ἀδύνατον ἂν εἶναι δόξειε μετέχειν οὐσίας.” (*Phy.* IV.10 217b36-218a3, italics mine).

say that something could be both one and many,¹³⁰ or that there could be motion at all.¹³¹ It has already been established that being (*to on*) and one (*to hen*) are said in many ways (*pollachōs legetai*),¹³² and that beings are either many in *logos*, or as a whole divided into parts.¹³³ Aristotle is not holding time up to some rigid, unitary sense of “being” and asking whether it conforms to this standard. It is more like he is asking, “in what sense does time exist”? Is time among the things that are (*tōn ontōn*), or among the things that are not (*tōn mē ontōn*)?¹³⁴ It may be that time is only scarcely and faintly, but it still might be possible to discover what the nature of it is (*tis he phusis autou*).¹³⁵

In the passage quoted above Aristotle has referred to the infinite (*apeiron*) along with the time that is always grasped (*ho aei lambanomenos chronos*) as being composed (*sugkeitai*) of the past and future as its parts, and indicated that this poses a problem for how time so composed can partake of beingness (*ousia*). He is thus picking up what has already been established in *Phy* III.4-8 regarding the infinite (*apeiron*). Accordingly, we shall look at what he has said about the infinite that speaks to this aporia that he takes as a starting point for his treatment of time in the *Physics*. In *Phy*. III.4, time was listed among the five things that were said to be reasons to believe that the infinite exists, the others being 2) the division of magnitudes, 3) perpetual generation and destruction, 4) the nature of the limited (that for something to be limited, it must be limited by something), 5) thinking (*noēsis*) about a

¹³⁰ *Phy.* I.2 185b26 ff.

¹³¹ I explored this in the introduction.

¹³² *Phy.* I.2 185a22, 185b6

¹³³ *Phy.* I.2185b32-35.

¹³⁴ *Phy.* IV.10 217b32.

¹³⁵ *Phy.* IV.10 217b33.

‘beyond’ (*exō*) in number, magnitude, or place.¹³⁶ His full account of the infinite in these four chapters will show in what way each of these factors contribute to our understanding of the infinite. For now, we will only be looking at what is said there that can help us understand the aporia about its participation in *ousia*. This involves touching upon only the first four of the reasons to believe in the existence of the infinite listed above. In chapter 3 of this thesis we will resume a discussion of the infinite as it is manifest in thinking (*noēsis*) of a beyond (*exō*), and how this is contrasted with the eternal activity of circular motion.

Given what Aristotle has said in *Phy.* III about the infinite, it may seem somewhat surprising that in *Phy.* IV.10 he shows concern for how the infinite might be capable of participating in beingness (*ousia*). In *Phy.* III.5 he argued that the infinite does not exist independently (as *ousia*) but only attributively (*kata sumbebēkos*).¹³⁷ This suggests that the infinite participates in *ousia* by being a quantity (*poson*) belonging to some independent being (*ousia*).¹³⁸ However, he goes on to show that the infinite cannot participate in *ousia* in the sense of being a sensible body unlimited in extent.¹³⁹ Nevertheless, the idea that magnitude has the potential to be divided without limit,¹⁴⁰ and that time does not have a beginning or end,¹⁴¹ suggest that the study of *Physics* cannot do away with the notion of the infinite

¹³⁶ *Phy.* III.4 203b16-25.

¹³⁷ *Phy.* III.5 204a10-16. The argument there was that if the infinite existed as a beingness (*ousia*), and we are to say that it is also divisible, any part of it would itself have to be infinite. In that context, it was clear that this simply yields a logical impossibility – how could infinity be made up of infinities?

¹³⁸ *Phy.* III.5 204a29. Cf *Phy.* I.2 185b2

¹³⁹ This is argued both on the basis that body is by definition that which is bounded by a surface (*Phy.* III.5 204b8); because sensible bodies are composed of the elements, which must be limited in kind and in quantity due to the fact that they are limited by one another by means of their contrary qualities (204b11ff); and because of the inherent relationship between body and place (205a11).

¹⁴⁰ *Phy.* III.6 206a14-19.

¹⁴¹ *Phy.* III.6 206a11

entirely.¹⁴² That the infinite exists as potential in the process of dividing magnitude we have already seen in *Met.* IX.6.¹⁴³ Is time likewise infinite in the sense that the magnitude can be infinitely divided? Or might there be another way? *Phy.* III.6 points to another sense in which the infinite is said to be.

Since there are many ways to be, just as the day or the games in which another and another (*allo kai allo*) always come about, so also is the infinite. For also with these things [the infinite] is both potentially (*dunamei*) and actively (*energeiai*). For the Olympics exist both as the potential for the games to happen, and as the happening.¹⁴⁴

What Aristotle is suggesting here is that infinite exists as something that happens as “another and another” without a limit.¹⁴⁵ Unlike in the case of magnitudes, which are infinite by virtue of being continuous and thus infinitely divisible, the day or the games are unlimited in succession, by being discontinuous. The days are interspersed with nights, the games happen every four years, but each returns and is resumed anew. It is their very nature that they should happen as another and another without end.¹⁴⁶

¹⁴² For everything that moves must have magnitude: must be divisible (*Phy.* VI.4 234b10-21).

¹⁴³ The infinite never exists separately (*chōriston*) in activity (*energeiai*) but only in understanding (*gnosei*) and potential (*Met.* IX.6 1048b10-17).

¹⁴⁴ “ἀλλ' ἐπεὶ πολλαχῶς τὸ εἶναι, ὥσπερ ἡ ἡμέρα ἔστι καὶ ὁ ἀγὼν τῷ ἀεὶ ἄλλο καὶ ἄλλο γίγνεσθαι, οὕτω καὶ τὸ ἄπειρον. καὶ γὰρ ἐπὶ τούτων ἔστι καὶ δυνάμει καὶ ἐνεργείᾳ· Ὀλύμπια γὰρ ἔστι καὶ τῷ δύνασθαι τὸν ἀγῶνα γίγνεσθαι καὶ τῷ γίγνεσθαι.” (*Phy.* III.6 206a22-25).

¹⁴⁵ I have chosen to render the greek literally here, rather than try to conform the expression to something that would sound more eloquent in english (such as “always become different”) for a few reasons. The first is that “another and another” convey the sense of successive repetition more clearly than simply saying it is “becoming different,” and I find it valuable to emphasize this sense of succession in my translation. The second is this literal rendering allows me to bring out the relationship and distinction between *allo kai allo* and *palin kai palin* (again and again), which Aristotle uses to express the repetition in sameness of circular motion.

¹⁴⁶ Massie (2007) takes the meaning of this passage differently than I do. “The remarkable feature of these claims is that they do not present potentiality and actuality as two distinct moments” (583). Instead, he reads this passage as saying that the infinite is “in-potency-and-in-act” simultaneously (calling it a “conjunction of actuality and potentiality” (ibid)). However, he does so by omitting the reference to it being another and another (*allo kai allo*), translating this phrase instead as “they are always coming on and on into being” (ibid). He obscures the translation of this passage in such a way that makes possible his contention that the day and the games exemplify the infinity of eternal motion. In doing so, he does away with the distinction between *dunamis*

Furthermore, Aristotle is suggesting that these examples offer a sense in which the infinite exists both potentially and actively. This may seem puzzling. For, if the magnitude is infinitely divisible *only potentially*, why should the eternal recurring of the day or games not also be said to manifest only a potential infinity? If a division of a magnitude into halves does not constitute an instance of the infinite existing actively why should “the happening” of the day or games serve as an instance of the infinite existing actively? If the infinity of the day or games rests on their ability to happen again and again, it would seem that the day and the games too are only infinite potentially, since this endless succession is never active separately or simply.

However, if we consider the nature of these examples carefully we will see that there is an important difference between them. The reason that the division of magnitude is only potentially infinite is because *each division* is itself only potential. For, as Aristotle argues later on in the *Physics*, if the magnitude were actively divided – even once – it would no longer be continuous.¹⁴⁷ Contrast this with the day or games: each instance of them *is actively* whenever they are happening. Furthermore it belongs to the natures of these events to happen as another and another in a regular cycle. It is intrinsic to the meaning of the day or the games that they occur regularly one after the other. A day that happened only once would be a very different meaning of “day” from the meaning that it has as eternally recurring as new each time, and if the Olympics were to occur only once it would also have a

and *energeia* entirely: “Its potency admits of progression, and its movement is its actuality. Yet (just as the day or the games), it is never achieved and never reaches completion, for what is in eternal motion is never present ‘as a whole’ at any moment” (ibid).

¹⁴⁷ “For if someone divides what is continuous into two halves, he uses the one point as two, since he makes it a beginning and an end. And thus do both the one who counts and the one who divides into halves. But having been thus divided, neither the line nor the motion will be continuous; for a continuous motion is through something continuous, and while infinitely many halves are present in what is continuous, they are present not actively (*entelecheiai*) but potentially” (*Phy.* VIII.8 263a24-30).

different significance than it has as happening every four years. In the case of magnitude, however, its very meaning requires it to be *actively continuous*. If the division were to actively limit the magnitude, it would deprive it of its continuity, and thus negate its very nature as continuous. But while each day or games is also limited, it is limited in such a way that does not negate it being what it is. In fact, it is the limitation of their happening that allows for them to happen as another and another without limit.

Thus the limit of each recurring day or Olympic games does not negate the sense in which “the day” or “the games” exists without limit, but is in fact a condition for its infinity.

Continuing from the passage from *Phy.* III.6 quoted above, Aristotle goes on,

This [the way that the infinite is both potentially and actively] is evident in different ways in time, in human beings, and in the division of magnitudes. In general the infinite is in this way: it is in what is always taken as another and another (*toi aei allo kai allo lambanesthai*), while what is taken (*to lambanomenon*) is always limited, but always another and another. So being is meant in many ways, and the infinite must not be taken as a ‘this’, such as a man, or a house, but in the way the day or the games are meant, to which ‘to be’ occurs not as to some beingness (*ousia*), but as always becoming and perishing, limited, but always other and other. In magnitudes, what is taken remains, while with time and human beings it is always perishing in such a way as to not run out (*epileipein*).¹⁴⁸

We can see from this why in *Phy.* IV.10 Aristotle expressed the concern that time might be composed of parts in such a way that it might seem that it cannot partake in beingness (*ousia*). The infinite does not participate in beingness by being a definite thing possessing an attribute in unlimited quantity, as was initially suggested and then denied in *Phy.* III.4-5.

¹⁴⁸ “ἄλλως δ' ἔν τε τῷ χρόνῳ δῆλον τὸ ἄπειρον καὶ ἐπὶ τῶν ἀνθρώπων, καὶ ἐπὶ τῆς διαίρεσως τῶν μεγεθῶν. ὅλως μὲν γὰρ οὕτως ἔστιν τὸ ἄπειρον, τῷ αἰεὶ ἄλλο καὶ ἄλλο λαμβάνεσθαι, καὶ τὸ λαμβανόμενον μὲν αἰεὶ εἶναι πεπερασμένον, ἀλλ' αἰεὶ γε ἕτερον καὶ ἕτερον· [ἔτι τὸ εἶναι πλεοναχῶς λέγεται, ὥστε τὸ ἄπειρον οὐ δεῖ λαμβάνειν ὡς τόδε τι, οἷον ἄνθρωπον ἢ οἰκίαν, ἀλλ' ὡς ἡ ἡμέρα λέγεται καὶ ὁ ἀγών, οἷς τὸ εἶναι οὐχ ὡς οὐσία τις γέγονεν, ἀλλ' αἰεὶ ἐν γενέσει ἢ φθορᾷ, πεπερασμένον, ἀλλ' αἰεὶ γε ἕτερον καὶ ἕτερον·] ἀλλ' ἐν τοῖς μεγέθεσιν ὑπομένοντος τοῦ ληφθέντος τοῦτο συμβαίνει, ἐπὶ δὲ τοῦ χρόνου καὶ τῶν ἀνθρώπων φθειρομένων οὕτως ὥστε μὴ ἐπιλείπειν” (*Phy.* III.6 206a27-b3).

This man will physically perish, but the human species will continue as another and another man in potentially endless successions; *this* day will surely run out, just as surely as “the day” will begin again anew. The infinite exists actively in so far as the being of *this man* and the happening of *this day* are finite instances of the infinite activity of the species and the day generally. The infinite is thereby also potential, in so far as it also belongs to the nature of this man as a member of the human species to have the potential to reproduce himself in another, and for this day to end so that another may begin. Thus the infinite is something whose very nature is to be always perishing without ‘running out.’

Thus, in *Phy.* III.6 it has been established that the infinite does not exist in the sense of being a determinate *ousia*, or as participating in an *ousia* attributively. It seems that in the reproduction of the species, or in the coming to be and perishing of physical substances more generally, there might be a sense in which the infinite belongs to (secondary) *ousia*, but whether this might be thought of as a manner of “participating in *ousia*” is not developed. Furthermore, the examples of the day and the games show that the sense in which the infinite exists as “always another and another” is not limited to the generations of physical *ousia*, for neither the day nor the games are *ousiai*, but are rather events. Accordingly, in *Phy.* IV.10 the question about the relation of the infinite to *ousia* is resumed, because it is not yet clear how, or in what sense, the infinite exists or participates in beingness.

The examples of the day, the games, or the generations of man give us something definite ‘to take hold of’ (*labein*) as exemplifying the active nature of the infinite. However when we turn to examine time itself Aristotle does not let us fix our attention on any particular event or *ousia* as a given instance of the infinite that is time.¹⁴⁹ Instead, as we have

¹⁴⁹ This is where Aristotle’s account of time differs fundamentally from McTaggart’s (1908). McTaggart’s entire analysis of time rests on the assumption that there are “positions” in time, in which time appears to us

seen, he begins by considering that the parts of time are the past and the future, and that both the unlimited (*apeiron*) and the time that is always being grasped (*ho aei lambanomenos*) will be composed (*sugkeitai*) of these.¹⁵⁰ Unlike the day or games, about which we can say that they *are happening* and that they are *capable of happening*, the past and the future are, strictly speaking, never “happening.”

Yet Aristotle uses quite similar phrasing to describe the understanding of the infinite that these examples provide in *Phy.* III.6 and the time that is composed of parts that seem to not exist: they are both spoken of as “what is always grasped” (*ho aei lambanomenos*). The question we must then ask is: if none of the definite examples of the infinite we have encountered will suffice to explain the being of time, what is it that we are “grasping”? We must be grasping time itself. How, then, is time of such as nature that it can be grasped? We can now see the full force of this aporia: time is composed of the past and the future, which, being *no longer* and *not yet*, seem to have no independent existence. Still if time is indeed infinite, it exists in the manner of being that which is always grasped. The models of the day and the games, while not sufficient to explain time, may still prove illustrative as we proceed due to the fact that they share in common with time that they are always being grasped. Furthermore, the apparent non-existence of the past and future might be cast in a different light if we can understand how time is “always perishing without running out.” At this point in the argument, however, this remains a paradox.

prima facie. He derives the notion that there are “positions in time” from the events contained therein: “the contents of a position in time are called events” (1908: 458). The distinctions he goes on to make between the “A-series” (past, present, and future) and “B-series” (earlier and later) are different ways of conceiving of the ordering of events. Both are based the assumption that our grasp of time is directly derived from our grasp of an event having a position in time. Aristotle refuses to begin with this assumption, and seeks to get at what is behind our ability to grasp the event in the first place.

¹⁵⁰ *Phy.* IV.10 218a1-2.

We have just seen that time as composed of past and future fails to provide a sense of its active “happening” that can be grasped as another and another in the manner of the day or games. However, we might want to object to Aristotle’s claim that time is composed of past and future exclusively. What about the present? If the day and the games can be said to be “happening” does that not imply the active existence of the present in these cases? Should this be true, it nonetheless presents an aporia, which Aristotle confronts as he goes on to elaborate about the apparent non-existence of the parts of time by introducing the “now.” He suggests that, “If a partitioned thing is said to be, it is necessary that, when (*hote*) it is, all or some of its parts must be.”¹⁵¹ As composed of past and future, time is indeed a partitioned thing, but, paradoxically, neither of these parts seem to be *when time is*. Still this ought to raise the question: if time is partitioned, how is the past distinguished from the future? Aristotle suggests that it is the function of “the now” to distinguish the past from the future. However, “The now is not a part, for a part measures, and the whole must be composed of the parts. But time seems not to be made up of nows.”¹⁵² Since the now is not a part of time, it does not allow us to circumvent the difficulty of explaining how the time that we are always grasping must be composed of the past and the future. Rather, with the introduction of the now this difficulty becomes even more salient, as we shall see.

Many scholars argue that Aristotle’s now is made up of a combination or confusion of two distinct concepts: present and instant.¹⁵³ The difference between these two concepts, as it

¹⁵¹ *Phy.* IV.10 218a4-6.

¹⁵² *Phy.* IV.10 218a7-8.

¹⁵³ Barreau (1973) argues that Aristotle alternates between meaning it as present and as instant: “C’est du présent qu’il s’agit d’abord, mais on va voir qu’Aristote est amené à multiplier ce présent, si bien que le terme qui le désigne (*to nun*) signifie presque immédiatement ce que nous appelons maintenant l’instant (402). Owen (1979) (who refers to the now’s status as an indivisible temporal point as “moment” rather than “instant” (141)) thinks the now denotes a “moment” when it marks an earlier or later point in a lapsed of time, but that when it

is generally understood, is articulated well by Waterlow, who distinguishes between them as the concept of the present which stands for the “temporal present as opposed to past and future,” and “the concept of an instant: a durationless point or position, as opposed to a measurable period.”¹⁵⁴ Barreau (1973) suggests that the reason that Aristotle combines these two distinct concepts is in part due to the fact that Aristotle lacks a distinct word for the “present.”¹⁵⁵ This is not exactly true, as he does have and make use of *to paron* or *ta paronta* in other contexts to indicate the present as distinct from the past (*to genomenon*) and the future (*to mellon*).¹⁵⁶ I will be arguing that we must look beyond *Physics* to psychology (and the power of sensation in particular) to make possible the notion of the “present.” Here, at *Phy.* IV.10, Aristotle disbars us of the assumption that the present is given to us as substantial in the physical world. In order to think the relation of the present to the past and future, we first have to confront the difficulties that arise for how the now distinguishes past from future. We lose touch with Aristotle’s argument when we think of the now as the combination of two ready-made concepts (present and instant) rather than allowing it to have the significance Aristotle gives it here. For, to consider the now as a combination of present and instant assumes two distinct conceptions of time – that of time as a flowing passage and

progresses through time “we think of the present as something continuously overtaking such successive moments and leaving them in the past” (151). Ultimately Owen thinks we must read the connotations of moment and present as “wedded” in the expression of the now, but that Aristotle extends its meaning from present moment to all moments (153). Sorabji (1983) takes it as granted that, “In the word ‘now’ Aristotle often combines two ideas, though sometimes one idea occurs without the other. The first idea is that the now is *present*, the second is that it is an *instant*” (8).

¹⁵⁴ Waterlow 1984: 104. Waterlow claims that Aristotle “happily combines” these two “disparate concepts” (ibid).

¹⁵⁵ “Aristote n’a qu’un terme pour désigner le présent et l’instant” (Barreau 1973: 402).

¹⁵⁶ In the DM, Aristotle will make clear that *ta paronta* is the object of sensation (*aisthēsis*), whereas the past is the object of memory and the future is something opined about (*doxaston*) and expected (*elpiston*) (DM 1 449b9-15). Aristotle also uses the term “present” to qualify the now in the *Physics*: “Already (*ēdē*) is the part of future time which is near to the indivisible present now (*tou parontos nun*)” (*Phy.* IV.13 222b7-8). If the now were a combination of present and instant, why he would need to qualify a now as being a “present now”?

time as a changeless order – as already established.¹⁵⁷ Presenting the now in terms of this dichotomy presumes that Aristotle already has at his disposal two conceptions of time that he is tasked with combining. But both of these conceptions begin by assuming the substantial existence of the present, which, in the *Physics*, Aristotle denies.¹⁵⁸

The now's function of distinguishing past and future must be understood before we can account for our grasp of the present. If the present exists as an extended moment of time it will have to be composed of the past and the future. For, if the present were an extended moment that excludes the past and the future, we would still have to account for the boundaries that distinguish it from the past and the future.¹⁵⁹ The present is not given as a finite portion of time with its own definite boundaries. It would somehow have to be what is always ceasing to be future and becoming past. The limits that would distinguish the beginning and end of the present would elude our grasp entirely if we take the present as a given part of time that exists when time is. Before we can speak of the present, we must examine how the now creates this boundary. However, insofar as the now is a boundary, Aristotle assures us that it cannot partake of becoming, and thus cannot be thought of as a “beingness” (*ousia*).¹⁶⁰

¹⁵⁷ Waterlow (1984) takes this dichotomy (pioneered by McTaggart (1908)) to be “the fundamental point” which Aristotle “sets aside as unproblematic” (104). I think it is disingenuous to accuse Aristotle of neglecting a problem that is based on assumptions that he does not assent to, and which have not been articulated in the history of philosophy that he has before him.

¹⁵⁸ See my note on McTaggart (p 54 n 131).

¹⁵⁹ This is argued at *Phy.* VI.3 243a9-19, but the same problem is exposed in the present chapter when Aristotle goes on to consider how the now accomplishes its task of distinguishing past and future, as always remaining one and the same or as being always another and another.

¹⁶⁰ Cf this statement from the *Metaphysics*: “[The impossibility that points, lines or planes can come into being or cease to be] is similar with *the now in time*; for this too cannot be in process of coming into existence or ceasing to exist, and yet is thought to be ever different, which shows that *it is not a beingness (ousia)*. Clearly, it is the same with points, lines and planes, for the same account holds, since all are boundaries or divisions” (*Met.* III.5 1002b10). This same point is made when Aristotle next argues that the now cannot perish.

Aristotle denies us the seemingly easy solution of asserting that there exists a “present” part of time, along with the past and the future, which exists when time is. This is not without reason. For, if we were to assert the existence of the present, or give the “now” the status of being a part of time, we would run into a series of problems. This is shown when Aristotle goes on to explore the nature of the now and shows that to give it any attribute beyond its function of distinguishing past and future results in paradox. He states that, “It is not easy to see whether the now, which appears to distinguish (*diorizein*) the past and the future, always remains (*diamenei*) one and the same, or is another and another (*allo kai allo*).”¹⁶¹

Note that here again Aristotle is exploring these options using phrasing that parallels how he spoke of the infinite in *Phy.* III.6. The way that the day and the games were said to manifest the infinite was precisely that what is taken is “another and another (*allo kai allo*).”¹⁶² Furthermore, the other option – that the now always remains one and the same – parallels how he spoke of the infinitely divisible magnitude, where “what is taken remains (*hupomenontos*).”¹⁶³ Aristotle’s exploration of the “now” shows the problems that arise when we identify it with the parts “taken” in either of these models.

The problem with understanding the now as always “other and other” (*heteron kai heteron*) is that it is not the now, but rather the *parts* of time that are another and another by virtue of the fact that they are not simultaneous (*hama*).¹⁶⁴ The now is not a part of time, but is precisely that which distinguishes the parts of time as other and other. But if the now is

¹⁶¹ *Phy.* IV.10 218a9-11.

¹⁶² *Phy.* III.6 206a23, 206a28.

¹⁶³ *Phy.* III.6 206b1.

¹⁶⁴ “No parts (*meros*) are other and other in time at the same time (*hama*)” (*Phy.* IV.10 218a12).

going to be capable of having this function, then it cannot be said to have perished (*ephtharthai*) and to have been replaced by another now.¹⁶⁵ Perishing takes time, and thus requires that there be a divisible part of time in which the perishing happens. If the now were to perish, it would have to be perishing in another now, meaning that two different nows would have to exist at the same time. But this would be absurd. If two nows exist at the same time (*hama*), then they would not be *other*: they would have to be the same. One now can only be *other* from another now if they are *not* simultaneously (*hama*) distinguishing the parts of time, because the now is fundamentally characterized by its function of distinguishing past and future. Aristotle summarizes the objection to the notion that the now is always another and another as follows.

Let it be said that it is impossible for the nows to be holding onto one another, just as a point cannot hold onto a point. And if indeed they do not perish in succession (*ephexēs*), but in another, then they would exist at the same time (*hama*) as the infinite nows in between. But this is impossible.¹⁶⁶

Notice that the objection to the notion that the nows are another and another (which would liken their existence to that of the day or games) calls upon the similarity between the now and the infinite divisibility of the magnitude. Like the point that (potentially) divides the line, but is not a part of the line, there is a potentially infinite number of different ways that the now distinguishes past from future in continuous time. This calls to our attention the dissimilarity between the now and the day or games as that which is always being grasped as another and another. The day and games can be grasped as another and another because they are not continuous. Each instance is already limited, and is as such given in finite portions to

¹⁶⁵ “It is not possible for it to have perished in itself, since that is when it is, but it is not possible for the previous now to have perished in another” (*Phy.* IV.10 218a16-17).

¹⁶⁶ “ἔστω γὰρ ἀδύνατον ἐχόμενα εἶναι ἀλλήλων τὰ νῦν, ὥσπερ στιγμὴν στιγμῆς. εἴπερ οὖν ἐν τῷ ἐφεξῆς οὐκ ἔφθαρται ἀλλ’ ἐν ἄλλῳ, ἐν τοῖς μεταξὺ [τοῖς] νῦν ἀπείροις οὖσιν ἅμα ἂν εἴη· τοῦτο δὲ ἀδύνατον” (*Phy.* IV.10 218a18-22).

our grasp.

Still, if the now is to perform its function of distinguishing the past from the future, it cannot always remain one and the same. Recall that for a magnitude divided into halves, each half that “is taken” remains (*hupomenontos*),¹⁶⁷ meaning that it does not perish so as to be another and another divided half. Both the limits of a magnitude, and the stretch of continuous magnitude bounded by limits, persist and do not change throughout the process of division. While we run into a difficulty if we try to think of the now as perishing, it cannot always remain the same either. The reason given for this is that, even in the case of a magnitude, there must always be more than one limit.¹⁶⁸ But if the now were always the same in the manner that the limit of a magnitude remains the same, then everything would always be happening simultaneously (*hama*). In order for things to happen before or after one another, they must be seen to occur within the boundaries of different nows. In *Phy.* IV.11 Aristotle will show how the analogy between the limits of magnitude and the now as limiting time breaks down. For the moment this analogy holds insofar as it demonstrates a negative conclusion: it shows that a continuous magnitude cannot be distinguished into parts by a single limit that always remains the same.

Thus Aristotle has here defended his contention that the now cannot be a part of time because it is a limit that distinguishes the parts of time as past and future. Furthermore, this conception of “the now” distinguishing the past and the future is itself difficult, because it is not easy to grasp how it accomplishes this function according to the models of limited events or magnitudes. There cannot only be “one now” always remaining the same because, as

¹⁶⁷ *Phy.* III.6 206b1.

¹⁶⁸ “For nothing is divided and limited in one limit (*peras*), whether it is continuous in one or more [dimension]” (*Phy.* IV.10 218a23-24).

distinguishing what has come to pass from what will be in the future, it must be ever differing in its relation to the parts that it distinguishes. The now is only the same for what is happening simultaneously, but if the now were always the same then everything would be happening simultaneously. But while it is not the same, it cannot be *becoming* another and another, one “now” being annihilated after another and replaced by a new one. Since it is only a limit, and not a part of time itself, then it cannot come to be or pass away.¹⁶⁹ Each of these options – the now as always remaining one and the same and the now as another and another – seem to be impossible.

Notice, however, the assumption that Aristotle has started with when he introduced the now: “If a partitioned thing is said to be, it is necessary that, when (*hote*) it is, all or some of its parts must be.”¹⁷⁰ This standard of existence applies most completely to what has magnitude: that which exists when all or some of its parts exist are a line, a surface, or a solid.¹⁷¹ Aristotle has shown here that time does not measure up to the standard of existence that applies to magnitude, despite the similarity between the now as a limit in time and the points that limit a magnitude. If we consider time simply according to its similarity to magnitude, we can only conclude that it does not exist. For, not only have we not yet established how time might be divided into parts that exist, but, furthermore, it would be counter-intuitive to suggest that any of the parts of time can exist simultaneously.¹⁷²

¹⁶⁹ For the reasons stated above, and also *Phy.* VI.3 234a24-32 which argues that motions cannot be compared as faster or slower in the now.

¹⁷⁰ *Phy.* IV.10 218a4-6

¹⁷¹ Simplicius offers this suggestion, and I find it consistent with the direction of Aristotle’s argument. See Simplicius 1882: 696.

¹⁷² As we have seen, there is a sense in which Aristotle thinks the parts of time cannot be simultaneous (with regard to motion) and a sense in which he thinks that they can (with respect to *energeia*) (*Met.* IX.6 1048b23-35). I am here speaking of the model of time that contains motion, as it fitting Aristotle’s focus at this point in the argument.

We might also note that that which exists because a *part* of it exists seems to apply most accurately to what is in motion.¹⁷³ This includes the manner in which the day or the games were said to be *happening* and *capable of happening*. The infinite series of the event is “always becoming and perishing, limited, but always other and other,”¹⁷⁴ indicating a similarity between these recurring events and the way that motion (generation and destruction) belongs to natural species. However, as I have already argued, Aristotle will not allow us to cling to these particular instances of infinite becoming and perishing as providing a fundamental unit of time. Rather, he has claimed that the “time that is always being grasped” must be composed of the past and the future. The day and the games may be happening in time, but the parts of time cannot be identified with any particular event or *ousia* that it contains.¹⁷⁵ Aristotle thus goes on to consider time’s relationship to motion more broadly.

He next considers the notions “handed down to us” (*ek tōn paradedomenōn*)¹⁷⁶ that time can be identified with motion, whether this be the motion of the cosmos as a whole (*tēn tou holon kinēsin*),¹⁷⁷ or the sphere itself (*tēn sphairan autēn*).¹⁷⁸ The problem here also concerns how we might explain the existence of the parts of time. Time cannot be identical to the revolving motion (*periphoras*) of the heavens, for a part of its revolution is just as much a

¹⁷³ In *Phy.* VI.4 Aristotle argues that everything that changes must be divisible into parts, and that “it is necessary that something belonging to the changing thing must be in one condition [that from which it changed] and something else be in another [that to which it changes]” (243b16-17). Again, this association between *what exists when some of its parts exist and motion* is brought out by Simplicius (1882: 696).

¹⁷⁴ *Phy.* III.6 206a32-34.

¹⁷⁵ Again, I am arguing against McTaggart’s assumption that the parts of time are given according to their contents (“events”).

¹⁷⁶ *Phy.* IV.10 218a32.

¹⁷⁷ *Phy.* IV.10 218b1.

¹⁷⁸ *Phy.* IV.10 218b2.

part of time as the whole revolution: “Surely a part of a revolution is a certain time, though it is not a revolution; for *what is taken (to lēphthen)* is part of a revolution, but is not a revolution.”¹⁷⁹ The contention that time is identical to the sphere itself is suggested by the notion that everything (in nature) occurs “in” the sphere and also “in” time. Aristotle here says that this idea is so simple minded that its impossibilities do not need to be examined.¹⁸⁰ However easily he brushes off this contention here, the analogy between continuous time and circular motion will re-emerge in *Phy.* IV.14, and we will find the need to examine this analogy further in the course of our argument. For the moment, we can see that Aristotle has indicated that the way in which motions occur in time cannot be reduced to the way in which they are embraced by place. The whole of time is not identical to the motion of the whole, nor does the sphere provide some fundamental temporal unit that serves as an indivisible part of time.

Despite the fact that these notions offer no immediate clarity, it still seems that time is most of all (*malista*) some motion or change (*kinēsis kai metabole tis*).¹⁸¹ However, the problem with identifying time with a particular motion or change is that diverse changes are happening at the same time,¹⁸² at varying speeds.¹⁸³ All of this amounts to the problem that time is neither motions considered as a whole, nor is it the sphere itself, nor is it one among the many diverse motions. Diverse motions must somehow be able to be brought into relation

¹⁷⁹ *Phy.* IV.10 218b2-3.

¹⁸⁰ “ἔστιν δ' εὐηθικώτερον τὸ εἰρημένον ἢ ὥστε περὶ αὐτοῦ τὰ ἀδύνατα ἐπισκοπεῖν” (*Phy.* IV.10 218b7-8).

¹⁸¹ *Phy.* IV.10 218b9-10.

¹⁸² “The change or motion of each thing is only in the changing thing itself, or in the place where it happens to be moving or changing, but time is the same everywhere to all things” (*Phy.* IV.10 218b10-14).

¹⁸³ “Changes are faster and slower, but time is not. For the slow and the fast are defined by means of time...but time is not defined by means of time” (*Phy.* IV.10 218b14-18).

by time, but no motion can accomplish this, not even the circular motion that contains them locally. Time is neither “made up of” the many motions occurring in the cosmos (as its parts), nor can we take the rotation of the outer sphere as its primary, given, part; the time of a complete rotation is itself divisible into parts that are just as much parts of time as the time of a whole rotation is a part of time. The way that the whole is diversified into diverse motions does not correspond to the way that time is diversified into parts.

Thus Aristotle’s disavowal of the notion that time can be identified with motion confirms the reasoning I have offered for why he does not make use of the examples of the day or games as offering an immediate solution to the *aporiae* about the existence of time. Though motion does not occur without time, this does not mean that time is a motion: there is no motion that we take hold of and say, “this is time.” Still, he has maintained the idea the time is “that which is always being grasped,”¹⁸⁴ as he reiterates similar phrasing in the quotation above, calling the time “that which is taken” (*to lēphthen*).¹⁸⁵ In *Phy.* IV.11 we will discover how it is that time is always being grasped in relation to motion.

Phy. IV.11 Time as the awareness of motion

While Aristotle has argued that time cannot be identified with motion, he nonetheless maintains that it is not without motion (*oud’ aneu metaboles*).¹⁸⁶ This is asserted on the basis of the fact that *we must be aware of* some motion in order to be aware of time.

Whenever we ourselves are not changing in our thought (*dianoia*) or the changing escaped our notice (*lathōmen*), time does not seem to us to have happened, just as whenever those who are mythologized to sleep among the heroes in Sardinia awake. For they join together the now before to the now after and make them

¹⁸⁴ *Phy.* IV.10 218a2.

¹⁸⁵ *Phy.* IV.10 218b3.

¹⁸⁶ *Phy.* IV.11 218b21. Note that motion (*kinēsis*) and change (*metabolē*) are being used here interchangeably: “it makes no difference to us in the present inquiry to speak of motion or change” (*Phy.* IV.10 218b20).

one, taking out the middle on account of not sensing it (*dia tēn anaisthēsian*). So that if the now were not other (*heteron*), but one and the same, there would be no time, likewise when it escapes notice (*lanthanei*) that it is other, there does not seem to be the time in between (*to metaxu chronos*). But if ‘not supposing time to be’ happens to us sometimes, whenever we do not determine (*horizōmen*) any change, but the soul seems to remain one and undivided, while whenever we do perceive (*aisthōmetha*) and will divide/determine (*horisōmen*) [change], then we say (*phamen*) time has happened, it is clear that there is not time without motion and change.¹⁸⁷

The way that the involvement of soul accounts for the dependence of time on motion here is quite striking. When we are not aware (*lathōmen*) of any motion or change, we are not aware of time. Furthermore, the way that it is shown here that it is possible for time to escape our notice compliments the idea asserted in chapter 10, that time is, “that which is always being grasped.” It seems to me that Aristotle is here elaborating on how there is such a “grasp” of time when we say (*phamen*) that time has happened, whenever we perceive (*aisthōmetha*) and determine (*horisōmen*) change. The difference is that here we are speaking of how time is grasped or eludes our grasp in the first person plural: when *we* perceive and *we* determine a change then *we* say time has happened; when we do not, time escapes our notice. While speaking of time as “that which is always being grasped” (*ho aei lambanomenos*) treats the

¹⁸⁷ “ὅταν γὰρ μηδὲν αὐτοὶ μεταβάλλωμεν τὴν διάνοιαν ἢ λάθωμεν μεταβάλλοντες, οὐ δοκεῖ ἡμῖν γεγονέναι χρόνος, καθάπερ οὐδὲ τοῖς ἐν Σαρδοὶ μυθολογουμένοις καθεύδειν παρὰ τοῖς ἥρωσιν, ὅταν ἐγερθῶσι· συνάπτουσι γὰρ τῷ πρότερον νῦν τὸ ὕστερον νῦν καὶ ἐν ποιοῦσιν, ἐξαιροῦντες διὰ τὴν ἀναισθησίαν τὸ μεταξύ. ὥσπερ οὖν εἰ μὴ ἦν ἕτερον τὸ νῦν ἀλλὰ ταὐτὸ καὶ ἔν, οὐκ ἂν ἦν χρόνος, οὕτως καὶ ἐπεὶ λανθάνει ἕτερον ὄν, οὐ δοκεῖ εἶναι τὸ μεταξύ χρόνος. εἰ δὴ τὸ μὴ οἶσθαι εἶναι χρόνον τότε συμβαίνει ἡμῖν, ὅταν μὴ ὀρίσωμεν μηδεμίαν μεταβολήν, ἀλλ’ ἐν ἐνὶ καὶ ἀδιαιρέτῳ φαίνεται ἡ ψυχὴ μένειν, ὅταν δ’ αἰσθώμεθα καὶ ὀρίσωμεν, τότε φαμέν γεγονέναι χρόνον, φανερόν ὅτι οὐκ ἔστιν ἄνευ κινήσεως καὶ μεταβολῆς χρόνος. ὅτι μὲν οὖν οὔτε κινήσεις οὔτ’ ἄνευ κινήσεως ὁ χρόνος ἐστὶ, φανερόν.” (*Phy.* IV.11 218b22-219a1). Coope (2007: 38) finds the need to justify Aristotle’s appeal to our “ordinary judgements” as the basis for explaining the connection of time to motion. The presumption is that there is something inherently dubious about referring to our experience as the basis for truth. However, when Aristotle is making use of a dubious common opinion, he tends to make it explicit that he is doing so, preferencing such remarks with phrases like “we are accustomed to say X.” Here he does not do so. I think this is because he is not referring to some established, customary opinion, but is in fact pointing out a necessary tenet of our experience. The experience he describes here he takes to be universal (“whenever we ourselves are not changing...”), and one that we ought to recognize as true if we are attentive to our own awareness.

passive participle substantively, here Aristotle makes reference to the subject doing the grasping of time. This is a being that has the power to perceive and determine change, and say time has happened. Thus, rather than continuing to refer to time vaguely as “that which is always being grasped” he is here more specific about the source of this grasping. It involves our 1) perception, 2) determination, and, 3) speech. The first two describe our grasp of motion, the last, our grasp of time. It is shown here that our ability to “say time has happened” depends upon our perception and determination of change. The connection of time to motion is attributed to the connection between these forms of awareness in the soul.

At this point Aristotle claims that “it is clear that time is neither motion nor without motion.”¹⁸⁸ However, he has only shown that time is not without motion to the extent that our awareness of time is not without our awareness of motion. It seems from this that we could equally say that time is not without the perceiving and determining of motion. While he finds it to be “clear” from the account that he has just given in this passage that time is not without motion, and from the account that he gave at the end of chapter 10 that time is not motion, he goes on to state that one must take up the question of how it pertains to motion.¹⁸⁹ He follows this question by asserting that, “we perceive motion and time simultaneously (*hama*).”¹⁹⁰ Is this supposed to be a response to the question of *how* time pertains to motion? Or is he merely reiterating his reasoning for why we think that time is not without motion – because they are always manifest to our perception at once?

If we consider the meaning of this sentence more closely, we will see that the former

¹⁸⁸ *Phy.* IV.11 219a2-3.

¹⁸⁹ “ληπτέον δέ, ἐπεὶ ζητοῦμεν τί ἐστὶν ὁ χρόνος, ἐντεῦθεν ἀρχομένοις, τί τῆς κινήσεως ἐστίν.” (*Phy.* IV.11 219a3). What I have paraphrased as “how time pertains to motion would be more literally rendered as “what it is of motion” (*ti tēs kineseōs estin*).

¹⁹⁰ *Phy.* IV.11 219a4.

possibility is most likely. If saying that we perceive time and motion simultaneously is meant to serve as an explanation for *how* time pertains to motion (and not merely *that* it pertains to motion) then he is showing that it pertains to motion by virtue of the activity of sensation. As we have seen in Met. IX.6, the activity of seeing (along with thinking and living) demonstrated the active unity of the parts of time, where past perfect and present progressive were said to occur at the same time (*hama*). Aristotle's use of *hama* to describe the connection of motion to time in our perception here could then be calling upon this distinctive feature of *energeia*. Whereas a motion is in time as being incomplete, the activity of soul is complete at every moment of its operation, which allows the parts of time to fold into one another, enduring without interruption: "we are seeing and have seen" at the same time. Does it follow from this that we can say that "we are seeing and have seen *some motion*" at the same time? Or does the fact that what we are seeing is *motion* imply that "seeing" and "having seen" are happening at different times? Is the time thus divided *for us* when we are perceiving motion, in such a way that our activity of perceiving it is also divided by the object that it perceives? Is this what Aristotle is alluding to when he claims that "the soul seems to remain one and undivided"¹⁹¹ when it does not determine any change? Or, when Aristotle says that, "we perceive motion and time simultaneously (*hama*),"¹⁹² is he rather indicating that time and motion are perceived as continuous, just as the soul's activity of perceiving them is continuous and undivided? If time is not identical to motion, but pertains to motion through the perceiving activity of soul, then it is through this enduring operation of the soul that is aware of motion that time pertains to motion. It is on the basis of this continuous

¹⁹¹ *Phy.* IV.11 218b30-33.

¹⁹² *Phy.* IV.11 219a4.

perception of motion that we are then able to determine (*horisōmen*) change, and say time has happened.

The irreducible involvement of soul is emphasized when he next goes on to indicate that the perception of time and motion together is a self-reflexive activity that can be internal to the soul itself. “For even if it were dark, and we suffered nothing through the body, but a certain motion were present in the soul, straightaway at once (*euthus hama*) something seems to have happened, and time seems to have happened.”¹⁹³ He takes this connection between our perception of motion and our awareness of time to be so immediate that he here goes so far as to indicate that there is a sense in which the “motion” that we are aware of might be motions happening in the soul itself of which we are aware. That is, that time might be manifest in the soul’s awareness of its own “motion.”

This is a contentious suggestion if we compare it with what Aristotle says about the soul in *DA* I.4. For there he argues that it is incorrect to think that there is motion in the soul being itself moving (though possible that movement may have its origin or end in the soul).¹⁹⁴ But if the soul does not move *per se*, why does Aristotle describe it as moving here? Is he merely making use of an account of soul that is inconsistent with the one he presents in the *De Anima*? This could be because he is focused in the *Physics* on explaining the relationship between time and motion. As such, for the moment, he brackets the fundamental difference between the nature of soul’s activities (here, perception) and motion. Notice that, again in *Met.* IX.6, the activities of seeing, thinking and living were contrasted with learning, walking,

¹⁹³ “καὶ γὰρ ἐὰν ἡ σκότος καὶ μηδὲν διὰ τοῦ σώματος πάσχωμεν, κίνησις δέ τις ἐν τῇ ψυχῇ ἐνῇ, εὐθὺς ἅμα δοκεῖ τις γεγονέναι καὶ χρόνος” (*Phy.* IV.11 219a5-7).

¹⁹⁴ *DA* I.4 408b16-17.

building, and becoming healthy.¹⁹⁵ These, too, are acts distinctive of ensouled beings (rather than merely belonging to inanimate nature) and were said to have the temporal character of motion. However, they certainly require that we “suffer something through the body” when carrying them out. Thus why Aristotle specifies that motion can be present in the *soul* when we are aware of time remains a mystery. However, it is consistent with Aristotle’s earlier suggestion that the soul is not aware of time when it “seems to remain one and undivided”: when it is not determining any change. Whether the soul itself must also be divided qua “moving” in its own right in order to be aware of time will be a question we must contend with as we proceed.

At this point, we can conclude that just as much as the involvement of the perceiver of motion is indispensable for time, so is the motion that is perceived indispensable for time. Time is as such not without motion. Nevertheless, we have seen so far in *Phy.* IV.11 that the exploration of time is pushing up against the limitations that constrain it within the scope of *Physics*, as he cannot account for *how* time pertains to motion without making reference to powers of soul. If the activity of soul is called “motion” here, this may be because he is for the moment asking only one question: how does time pertain to motion? Still, as we will see, his response to this question eventually (in chapter 14) leads to a second question: whether there can be time without soul. This question is irresolvable in the *Physics*. But it arises in the *Physics* from encountering the limitations of considering time merely in relation to motion.

The now and the soul

If we accept that the account of time’s dependence on motion given thus far equally

¹⁹⁵ *Met.* IX.6 1048b24-25, 29-33.

entails its dependence on soul, then we must turn our attention to the powers of soul if we want a full account of time, even if this means straining against the limits assigned to *Physics*. So far Aristotle has claimed that 1) when we perceive and determine change, then we say time has happened, and 2) we perceive time and motion at once. The second point leaves aside the sense in which we must also “determine” (*horisōmen*) motion in order to “say” time has happened.¹⁹⁶

This verb (*horizein*) can have a range of meanings: to divide, to mark out a boundary, to limit/determine.¹⁹⁷ It is also related to the idea of “defining” (though this is usually indicated by using it in the middle voice). Given that it has this significance of “marking a limit” or dividing, it seems that this activity bears some resemblance to the function of the now. As such, by saying that we determine/mark out the boundary of a change, Aristotle could either be indicating that we actively distinguish time by marking boundaries in it by the now, or that we notice the difference between the nows when we have perceived change. It is not quite clear from this if the now is something that we actively *determine*, or something that we merely *notice* through determining change.

Despite this resonance between the meaning of *horisōmen* and the function of the now, Aristotle does not say definitively here that we determine the now. But he does set up a parallel between the consequences that would follow for time if the now were “one and the same” and what happens when we fail to distinguish one now from another. “If the now were not other (*heteron*), but one and the same, there would be no time, likewise when it escapes

¹⁹⁶ Does this mean that the determination of motion and the speaking about time are not simultaneous with our perceiving of time and motion? Notice that he has said the “whenever we do perceive and *will determine* (*horisomen*), then we say time *has happened* (*gegonenai*).”

¹⁹⁷ I have gone with “determine” because if we say “divide” or “limit” then we would have to be careful to specify that it is only a “potential” limit.

notice (*lanthanei*) that it is other, there does not seem to be the time in between (*to metaxu chronos*).”¹⁹⁸ Whether or not there “seems” to be time depends on our distinguishing of the now based on our perception and determination of motion. This does not prove that there *is* no time when we fail to distinguish the now any more than it proves that there is no time without motion. The fact that in some exceptional cases we join nows in such a way that we are *mistaken* about the passing of time shows that time is not produced by the way in which we determine nows. We can join together an earlier now to a later one and “make” them one (*hen poiouein*),¹⁹⁹ but this does not mean that there is no *time between* them. It seems from this that *the time that is between nows* is what we perceive simultaneously when we perceive motion, or fail to perceive (*anaisthesian*) when we are in a dreamless sleep. But this does not preclude the possibility that this time is limited into distinct parts by our determination of the now.

If in fact we determine the now, this passage that opens chapter 11 could provide a new starting point from which to address the aporia about the now outlined in chapter 10. If the soul is what determines the “now” in each case this will account for precisely the problems that arose when we tried to think of the now as likened to the partitioned magnitude or a motion directly. With reference to the models of magnitude and motion, it was impossible to say either that the now always remains the same or is always another and another.²⁰⁰ But if the now is determined by an act of soul, its character as both always the same and always other may cease to appear as a mere paradox. For, as I will be arguing in the coming chapters, the soul exists as activity (*energeia*) that preserves its identity through

¹⁹⁸ *Phy.* IV.11 218b27-30.

¹⁹⁹ *Phy.* IV.11 218b26.

²⁰⁰ *Phy.* IV.10 218a10-11.

change. This builds on what we have already seen in Met. IX.6: that the activities of seeing, thinking, and living demonstrate how the parts of time are held together in an active unity. As we move forward, we will be exploring how the temporal continuity of sensation forms the basis from which the soul determines motion by the now that distinguishes time into parts. If the now exists as a limiting act of the soul, the identity and difference of the now will be explicable according to the powers of soul on which it depends.

Furthermore, the sense in which the parts of time appeared not to exist (according to the standards of magnitude) has shifted slightly. The now is still here functioning as an indivisible limit in time, and is not a part of time itself, similar to the point that potentially divides the line. But the part of time that we say, “has happened,” is what is *between two nows* when we are aware of their difference. The parts of time are here not merely being spoken of as the past that is not longer and the future that is not yet, but a stretch of time contained within two limits. We recognize the nows to be other (*heteron*) by virtue of the changes that have taken place between them. That no motion can itself distinguish one now from another may be indicated from what we have already seen: the reason why the revolution of the heavens could not be identified with time was that a part of a revolution that has been taken (*to lēphthen*) is just as much a part of time as the whole revolution.²⁰¹ As the argument of this chapter progresses, we will find further evidence that Aristotle does not think that continuous motion distinguishes itself into temporal parts without the involvement of soul to perceive and determine it according to differing nows.²⁰² Thus far, we are beginning to see

²⁰¹ *Phy.* IV.10 218b2-3.

²⁰² Only a finite motion distinguishes itself into temporal parts, insofar as the end (*telos*) is always temporally distinct from the process. But this is the difference between the motion per se and its cessation, and not a difference within motion itself.

that we determine two nows are different from one another when we perceive change as happening between them. When all change escapes our notice, we have no frame of reference from which to define, or “say” that, the nows are different from one another.

The introduction of the involvement of soul here demonstrates an implicit shift away from understanding time merely as likened to magnitude or motion. Nevertheless, the act of defining nows as different and containing time between them is not a pure act which soul accomplishes out of itself, “remaining one and undivided,” without reference to any motion. Time’s relationship to magnitude and motion must be examined further if we are to understand how it is that the soul articulates time as such.

The before and after

What we see happening next is that Aristotle takes hold of the way that magnitude, motion and time all have in common that they are continuous, and examines the ways in which the continuous is differentiated into parts in each case. The nature of the continuous (*suneches*) is brought before us when we see that “what is moving moves from something to something (*ek tinos eis ti*).”²⁰³

Aristotle indicates that there is an *analogous* way that these continuities are distinguished into parts: as before and after one another.²⁰⁴ But he also indicates that there is a sense in which these follow (*akolouthēi*) from one another: motion from magnitude, time from motion. He states that, “before and after are first in place (*en topo*).”²⁰⁵ For the magnitude, the before and after refers to the respective position (*thesis*) of its parts.²⁰⁶ The

²⁰³ *Phy.* IV.11 219a11.

²⁰⁴ *Phy.* IV.11 219a18.

²⁰⁵ *Phy.* IV.11 219a15-16.

²⁰⁶ *Phy.* IV.11 219a16.

way that the before and after of motion “follows” that of magnitude is elucidated in the next sentence. “Since there is a before and after in magnitude, there is also a before and after in motion in analogy to this.”²⁰⁷ That is, motion follows the model of magnitude in that there is also a before and after of motion according to position. However, Aristotle claims that the senses of before and after in these cases are not identical, but rather are analogous. This should be unsurprising given the contrast between magnitude and motion that we examined in the first section of this chapter. For, when a magnitude is divided into parts “what is taken remains” but the parts of a motion are always other and other: its position “before” is always perishing in order to create the possibility for the position “after.” Thus the before and after in magnitude has a parallel meaning as it is manifest in motion, but the before and after of motion cannot be altogether deduced from magnitude and is not simply explicable in terms of its orientation to place.

This interpretation is confirmed by what comes next. “But there is also a before and after in time since one of them always follows the other (*dia to akolouthēin aei thaterō thateron autōn*).”²⁰⁸ I take it that Aristotle here means by “*autōn*” motion and time. As such, this sentence marks an important development. Aristotle began this chapter by arguing that time is not without motion (*oud’ aneu metabolēs*),²⁰⁹ and earlier in the paragraph he indicated that time is continuous because motion is continuous.²¹⁰ However in this sentence Aristotle is indicating that there is a reciprocal relationship of dependence between them: “one of them always follows the other.” He goes on,

²⁰⁷ *Phy.* IV.11 219a17-18.

²⁰⁸ *Phy.* IV.11 219a19-20.

²⁰⁹ *Phy.* IV.11 218b21. Note that motion (*kinēsis*) and change (*metabole*) are being used here interchangeably: “it makes no difference to us in the present inquiry to speak of motion or change” (*Phy.* IV.10 218b20).

²¹⁰ *Phy.* IV.11 219a14.

The before and after of them (*autōn*) is in motion that which being at some time (*ho pote on*) is motion. However the being (*to einai*) is other (*heteron*) than it and is not motion. But we do indeed become acquainted with (*gnōrizomen*) time whenever we determine (*horisōmen*) motion, determining the before and after, and we say then that time has happened, whenever we take hold of (*labōmen*) the perception (*aisthēsin*) of the before and after in motion. And we determine (*horizomen*) by taking (*hupolabein*) them (*auta*) another and another (*allo kai allo*), and what is between them is different (*heteron*).²¹¹

This shows that the sense of the before and after that motion and time share is both distinct from the one shared by magnitude and motion, and does not belong to motion *per se*. While the before and after is in motion “that which being at some time (*ho pote on*) is motion,” “the being (*to einai*) is other (*heteron*) than it and is not motion.” Here we have a contrast between two ways of conceiving of the being (*on* or *einai*) of the before and after which time and motion share. On the one hand, the before and after pertains to “that which being at some time (*ho pote on*) is motion.” On the other hand, the being (*to einai*) of the before and after “is in something other than it and is not motion.”

This is a difficult contrast to make sense of, hinging as it does on the difference between “being” in the sense of “*ho pote on*” and the sense of “*to einai*.” The construction *ho pote on* (hereafter OPO) will appear five more times in the present chapter, and once more in chapter 14 in the aporia about whether there is time without soul.²¹² I have translated it as

²¹¹ “ἔστι δὲ τὸ πρότερον καὶ ὕστερον αὐτῶν ἐν τῇ κινήσει ὃ μὲν ποτε ὄν κίνησις ἐστίν· τὸ μέντοι εἶναι αὐτῶ ἕτερον καὶ οὐ κίνησις. ἀλλὰ μὴν καὶ τὸν χρόνον γε γνωρίζομεν ὅταν ὀρίσωμεν τὴν κίνησιν, τῷ πρότερον καὶ ὕστερον ὀρίζοντες· καὶ τότε φαμέν γεγενῆσθαι χρόνον, ὅταν τοῦ προτέρου καὶ ὕστερου ἐν τῇ κινήσει αἰσθησιν λάβωμεν. ὀρίζομεν δὲ τῷ ἄλλο καὶ ἄλλο ὑπολαβεῖν αὐτά, καὶ μεταξύ τι αὐτῶν ἕτερον.” (*Phy.* IV.11 219a20-25).

²¹² Beyond the *Physics*, it appears only three more times: twice in the *Parts of Animals* (*PA* II.2 648a15, II.3 649b9) and once more in *On Generation and Corruption* (*GC* I.9 319b4). In these contexts, the OPO is discussed in relation to the *hupokeimenon*. However, as Brague (1982) shows, the OPO does not function as a synonym of *hupokeimenon* in these cases: it functions to reveal a paradox regarding what can be predicated of the *hupokeimenon* (see Brague 1982: 111 & 114).

“that which being at some time” is motion,²¹³ understanding the adverb *pote* as conveying a temporal sense (“at some time”) rather than an indefinite one (“whatever”).²¹⁴ This gives the contrast the sense that the before and after is the structure that allows motion “at some time” to be motion. What motion is “at some time” is not the whole motion, which is completed (and negated *qua* moving) in reaching its end.²¹⁵ What a motion is “at some time” refers to what motion is at some moment in its continuous operation. What it is *at that time* it is in virtue of what it *was* before and what it *will be* after. So, while “what a motion is being at some time” is “motion,” the structure of the before and after which contains it does not have its being (*to einai*) in motion, but in something other (*heteron*) than motion.

Does Aristotle go on to address the nature of this other source of the being (*to einai*)

²¹³ I thus contest the dominant view that OPO is a formula that designates “*hupokeimenon*,” as it is held by Simplicius, Philoponus, Ross and Volpi (1988: 33). Ross takes its meaning such from PA II.2 648a15 on the paradoxical nature of blood. His analysis of the first sentence reads, “the before and after in change are identical *in substratum* with change, but different in essence” (Ross 1955: 386, italics added). He elaborates on this by commenting that, “The general sense of the sentence must be ‘the before and after in movement is, *as regards its subject*, movement; but its essence is not movement” (ibid 598, italics added). See Brague (1982: 98-144) for an excellent argument for why translating OPO as *hupokeimenon* is inadequate, and for the much more interesting interpretation he offers (in particular pages 123-125). Coope (2005: 176) also rejects the translation of OPO as *hupokeimenon*, and opts instead for “that, whatever it is, by being which” motion is.

²¹⁴ Coope (2005: 174) argues against the temporal sense of the adverb, saying that it will make the meaning of OPO in chapter 14 223a27 nonsense: “that which being at some time, is time.” But we have already seen Aristotle ask a question about the being of time in temporal terms when he inquired about the existence of the parts of time: “for anything partitioned, if it is, it is necessary that, *when it is*, all or some of its part must be, but though time is composite..none of it is” (*Phy.* IV.10 218a4-6). Furthermore, Aristotle does not say definitively in Ch 14 that “that which being at some time is time,” but rather that “it is impossible for there to be time without soul UNLESS as this OPO which is time.” So if it is nonsense to say that “that which is at some time is time” then that could be because it is nonsense to say that there is time without soul. I find that translating the *pote* as “whatever” makes its role superfluous (the indefinite pronoun is sufficiently indefinite on its own). I find it strange that it would have such a weak meaning given that this adverb is what primarily distinguishes OPO as an expression of interest. Though I am in a minority for taking the *pote* in a temporal sense, others have done so as well, including Brague (1982:106), Bostock (1980: 150), and Bowin (2008: 70).

²¹⁵ This shows that when Aristotle speaks of motion in this section of chapter 11 he is only considering it *qua* moving, not in terms of the self-relation of a natural being to its end through motion. As Brague points out, the way that Aristotle characterizes motion in these chapters on time does not make use of the definition of motion he offered in *Phy.* III.1 (Brague 1982: 124). He suggests that this is because Aristotle is only interested in the parallels between movement and time here. Brague is arguing against the dominant interpretation that OPO refers directly to *hupokeimenon*: Aristotle’s use of the expression OPO goes beyond the sense of *hupokeimenon* (which refers to things that have matter as their support) to get at something broader that can be valid for both motion and time.

of the before and after?²¹⁶ What he says next is, “But we do indeed recognize time whenever we determine (*horisōmen*) motion, determining (*horizontes*) the before and after, and we say then that time has happened.” Is this simply a non-sequitur? Or, is our determining of motion here being cited as constituting the being (*to einai*) of the before and after of motion and time?

Brague’s interpretation of the significance of OPO sheds some light on how these ideas might be connected. He suggests that the expression *ho pote on* shows the participle *on* functioning as the predicate of the subject *ho*, in such a way that it does more than simply serve to reiterate or coincide with the subject of the sentence (in this case, motion). Rather, it serves to express *its constitution as subject* “at some time” of its being.²¹⁷ The expression OPO shows what the subject must be in order to be the subject of predication: “that which motion is being at some time” is what allows us to *say* what the motion *is* at some time, by virtue of what it was before and will be after. So if the before and after is in this sense (OPO) the motion, but its being is in something else, then its being (*to einai*) is in our determining (*horisomen*) motion, determining the before and after, which then allows us to say that time has happened. The subject (OPO) of the before and after is *motion*, and the subject of the being (*to einai*) of the before and after is *our activity*, our determining.

It is our determining of motion, which I earlier suggested is explicative of the function of the now, which makes possible that, “We say (*phamen*) then that time has happened

²¹⁶ Brague only says that “*Dans cette phrase, Aristote se contente cependant d’un énoncé négatif, et n’examine pas quel est l’être (einaï) de la structure*” (1982: 131, italics added). He does not address whether or not the next sentence takes up this task.

²¹⁷ Brague 1982: 121-122. He suggests that we can call it “l’acte même de la subjectivisation du sujet”, and that it is constituted by a “pré-prédication intérieur au sujet lui-même” (ibid 122). Brague also argues that the use of the neuter case in the expression finds its subject (here, *kinēsis*, which is feminine) through the grammatical phenomenon of relative attraction (ibid 103).

whenever we take hold of (*labōmen*) the perception (*aisthēsis*) of the before and after in motion.”²¹⁸ The before and after in the sense shared by time and motion has its being (*to einai*) in our “taking hold of” (in the sense of determining) our perception of motion, and saying what it is according to the before and after we have determined. The subject of the being of the before and after is not the motion directly, but is rather something about the motion that we have made known to ourselves. We do not simply *perceive* the before and after of motion, but we must *take hold of the perception* of the before and after of motion. What we are “saying” does not directly unfold from “that which the motion is being at some time” but rather from taking hold of our perception of the before or after in motion.

In this passage, many of the elements we have seen developing in Aristotle’s account of time are starting to come together. Aristotle began his account by claiming that both the infinite and “the time which is always grasped” (*ho aei lambanomenos chronos*) are composed of past and future.²¹⁹ We saw that this phrase was echoing his description of the infinite as “that which is always grasped as another and another (*toi aei allo kai allo lambanesthai*).”²²⁰ He then explored the possibilities that the now, which appears to distinguish past and future, either always remains the same, or is always another and another (*allo kai allo*).²²¹ We then saw that we say time has happened whenever we perceive and determine (*horizomen*) motion.²²² Finally, here it has become manifest that we grasp (*labōmen*) the perception (*aisthēsis*) of the before and after in motion, and “we determine

²¹⁸ *Phy.* IV.11 219a22-25.

²¹⁹ *Phy.* IV.10 218a2

²²⁰ *Phy.* III.6 206a27.

²²¹ *Phy.* IV.10 218a9-10.

²²² *Phy.* IV.11 218b33-34.

(*horizomen*) by taking (*hupolabein*) them as another and another (*allo kai allo*), and what is between them is different (*kai metaxu ti autōn heteron*).”²²³

This shows the cumulative development of his argument reaching a crescendo at the point where he is giving his most precise account of how time and motion, though so deeply intertwined, are distinct. They follow one another but are irreducible to one another. The being (*to einai*) of the before and after that time and motion share – which is motion as that which is at some time, but which does not belong to motion *per se* – is in this complex operation of grasping a perception of before and after, and determining it as another and another. We grasp the “parts” of a motion – which is itself continuous – as before and after when we determine or “mark a boundary” (*horisōmen*) in its continuous operation. As such, we grasp what is continuous as though it were successive (*ephexēs*), in so far as we recognize that what is between the boundaries we have marked out is different (*heteron*) from the boundaries themselves.²²⁴

Through this analysis Aristotle has shown how there is a sense of before and after in motion and time that is distinct from that of magnitude and place. Since the motion does not remain in its orientation to place, but passes through place in time, its before and after cannot be grasped as being something that remains what it is. We cannot take hold of the motion as something remaining what it is. What we can take hold of is *the perception* of the before and after in motion. And we determine this before and after by taking (*hupolabein*) it as another and another (*allo kai allo*). Aristotle has here laboured to show how the before and after belongs to time in a manner unlike the way it belongs to the continuous extension of

²²³ *Phy.* IV.11 219a25-27.

²²⁴ *Phy.* IV.11 219a27. Note that this is Aristotle’s definition of *ephexēs*: nothing of its own kind comes between it and the next (*Phy.* V.3 226b35ff).

magnitude where the part that is before and the part that is after remain where they are when we take them as before and after.

For a motion, the before or after is thus determined in two ways: one way is in reference to the before and after of magnitude (its position from here to there), and the other is in reference to time (earlier it was here, and later it is there). On the one hand we recognize the before and after of motion as analogous to magnitude by making reference to the differing positions that are traversed by moving, passing through one position “before,” and another one “after.” This would be consistent with the way that Aristotle describes these senses of the before and after as “following” one another, and claims that the before and after is “first” in place. For, we do not (necessarily) effectuate the change of position that we observe in motion, but we are responsible for determining the sense of before and after that reveals time. The magnitude exists as holding a continuous position.²²⁵ The moving body moves continuously, but does not hold onto the positions it passes through. Its relation to place is always perishing. Nonetheless Aristotle insists that we can determine the before and after by taking it as another and another, and in so doing, we say that time is happening.

Even if the meaning of the before and after follows from magnitude to motion and from motion to time, the sense of before and after which belongs properly to time is radically distinct from that which belongs to magnitude, and is irreducible to the being of motion. It calls for an understanding of how what is continuously perishing (the motion’s orientation to place in time) can be grasped as another and another. This was shown to be the taking hold of

²²⁵ Heidegger claims that we can only see places as next to one another by retaining one place while looking ahead at another. That is to say that places can only be seen as differentiated through our experience of time as well. “If we thus see the place manifold in the horizon of the ‘away from there – to here’ and traverse the individual places in this horizon in seeing the motion, the transition, then we retain the first traversed place as the away-from-there and expect the next place as the towards-here. Retaining the prior and expecting the posterior, we see the transition as such” (Heidegger, 1988: 245).

the perception of the before and after of motion, and in our saying of something about the motion that does not have its being (*to einai*) in motion. Aristotle is unequivocal about the involvement of soul here. “Whenever we think (*noēsōmen*) the extremes as different from the middle, and the soul says the nows are two (*duo eipē he psukhē ta nun*) – one before and one after – we say then that this is time. For what is determined by the now seems to be time. And let this be laid down.”²²⁶

We can now look back at the original aporia regarding the existence of time in light of these developments. The “time that is always taken” was said to be composed of past and future. But here, time is determined by the soul that thinks the nows as two extremes. The middle that is between two nows is time. Is this “middle” composed of past and future? Recall that past and future are distinguished by the now, and the now is said by an act of soul. The before and after are not given to our perception as partitioned by an indivisible limit: they are a continuous stretch from this to that. When Aristotle speaks of the before and after of time here he does not say that this translates directly to the meaning of past and future. It is peculiar that he does not say so. Perhaps the before and after of time refers to the past and future, but Aristotle does not make use of the language of past and future again until chapter 12,²²⁷ and more extensively in chapter 13. I will examine whether there is a significant difference between the before and after of time and the past and future when we reach these points in the text. For now, we should recognize the extent to which Aristotle’s formulation of the before and after of time responds to the aporia that time is composed of past and future.

²²⁶ “ὅταν γὰρ ἑτέρα τὰ ἄκρα τοῦ μέσου νοήσωμεν, καὶ δύο εἴπη ἡ ψυχὴ τὰ νῦν, τὸ μὲν πρότερον τὸ δ’ ὕστερον, τότε καὶ τοῦτό φαμεν εἶναι χρόνον· τὸ γὰρ ὀριζόμενον τῷ νῦν χρόνος εἶναι δοκεῖ καὶ ὑποκείσθω.” (*Phy.* IV.11 219a27-31).

²²⁷ *Phy.* IV.12 220b7-10.

Neither the before and after of time nor the past and future are given to our perception as remaining what they are. For, “that which they are being at some time” (OPO) is always becoming and perishing. If the before and after are continuous, but the past and future are distinguished by the now, does this mean that the soul is responsible for *both* distinguishing past and future by means of the now *and* composing them within two nows?

In order to explore this question, we must reconsider the second aporia regarding the being of the now: whether it is always the same or always another and another. Based on the introduction of the determining power of soul – on the soul’s ability to think the extremes as different from the middle, and thereby say the nows are two – it seems that the nows are always another and another, and not the same. But even if the nows are indeed *two*, this alone does not account for how they exist in an ordered relationship of being before and after one another.

Aristotle addresses this by showing that there are two ways of considering how the now determines a relation of before and after.

Whenever we perceive the now as one, and neither as before and after in motion, nor the same but belonging to something before and something after, no time seems to happen because no motion has. But whenever there is a before and after, then we say that there is time.²²⁸

We say the nows are two, and thus different, when we determine that there was an earlier now and a later now that, taken together, contain time. The difference between the nows is in this case cognized with regard to the differentiation manifest by motion. But time is also manifest by means of the *same now* that *belongs to* something before and something after. As Aristotle will make clear later in his argument, in order for the same now to reveal time it must serve

²²⁸ “ὅταν μὲν οὖν ὥς ἐν τὸ νῦν αἰσθανώμεθα, καὶ μὴ ἤτοι ὥς πρότερον καὶ ὕστερον ἐν τῇ κινήσει ἢ ὥς τὸ αὐτὸ μὲν προτέρου δὲ καὶ ὕστερου τινός, οὐ δοκεῖ χρόνος γεγονέναι οὐδεὶς, ὅτι οὐδὲ κίνησις. ὅταν δὲ τὸ πρότερον καὶ ὕστερον, τότε λέγομεν χρόνον.” (*Phy.* IV.11 219a32-b2).

two functions: it is always both the end of what came before it, and the beginning of what will come after it. Thus even the same now is inseparable from the relative order that implies a relationship of before and after. We determine the nows as two, one before and another after, by taking hold of our perception of motion. But the same now also belongs to something before and after.

Could it be that the soul itself belongs to something before and after in this manner of the now? I have suggested that the now cannot be isolated and abstracted either from that which it distinguishes (motion) or the being doing the distinguishing. When Aristotle speaks of the now as being “the same but belongs to something before and something after” he is pointing to something consistent with how we were saying that the before and after in the sense of OPO was motion but whose being was in the soul’s determination of its perception of motion. That which the motion is at some time (OPO) is its identity as motion, but according to my reading the relation to the before and after calls upon the soul, which, when it determines the motion at some time, at once takes hold of it as belonging to something before and something after.

Recall that earlier we encountered the question of whether the soul itself moves, and asked whether the motion that the soul determines when it says that time has happened is happening “in the soul” itself. I have suggested that, drawing on Met. IX.6, the perception of motion is not itself a motion, for it is not an incomplete activity, but an activity that is complete at every moment of its operation. Nevertheless, I suggested in chapter 1 of this thesis that this does not mean that the activities of soul are themselves timeless, or that they do not “occupy time.”²²⁹ Thus when we perceive the now as the same but as belonging to

²²⁹ See p. 42 of this thesis.

something before and something after, this could indicate that the soul itself is oriented to the past and future whenever it says “now.”

We have seen that the soul has an integral role in accounting for the relationship of time to motion. Before and after belong to motion insofar as motion is oriented to place, but natural motion is not essentially oriented to time. A local motion has its end in its proper place. While it takes time to arrive at its end, it is not determined to arrive at that end at a specific time. It cannot be early or late for realizing its *telos*. The goal or perfection (*telos*) of the natural being is to accomplish its proper end, but it has no equivalently essential relationship to time. What the motion is “now” is not the beginning and end of the motion. Time is not partitioned by nows belonging to motions intrinsically. The before and after of motion and time does not have its being (*to einai*) in motion.

Time as the number of motion with respect to before and after:

As we have seen, the distinctly temporal sense of before and after is inextricable from our grasp of motion. Based on this, Aristotle goes on to state what is commonly called his “definition” of time. “Whenever there is a before and after, then we say [that there is] time. For this is time: the number of motion with respect to the before and after.”²³⁰ He goes on to show that motion does not have this numbering intrinsically, but it is *time* that is “that by which motion has number.”²³¹

Much attention has been given to this supposed “definition” of time. Indeed, Aristotle’s phrasing seems to be quite emphatic: “this is time.” So far in this chapter Aristotle has made his conclusions about certain phenomena of our experience of time by stating “then

²³⁰ “ὅταν δὲ τὸ πρότερον καὶ ὕστερον, τότε λέγομεν χρόνον· τοῦτο γὰρ ἐστὶν ὁ χρόνος, ἀριθμὸς κινήσεως κατὰ τὸ πρότερον καὶ ὕστερον” (*Phy.* IV.11 219b1-3).

²³¹ *Phy.* IV.11 219b3-4.

we say that there is time.”²³² Here he directly follows such a statement (“then we say [that there is] time”) with the claim commonly taken to be the definition of time (“this is time: the number of motion with respect to the before and after”). But this more definitive declaration is linked to the previous statement with the causal conjunction “for” (*gar*). This indicates that the definition of time as the number of motion with respect to before and after is meant to explain what is implied in the preceding clause. I think that this suggests a connection between our “saying” that there is time, and the number of motion with respect to before and after that is time.

If there is such a connection, this will explain why he tells us very little about what he means by “number” here. What he has said leading up to this statement, about the being (*to einai*) of the before and after, and function of the now in articulating the before and after, ought to serve as explicative of the meaning of “number” that he then invokes. What he does tell us about number specifically here is sparse. He goes on to say that this definition of time is further evidence that time is not identical to motion,²³³ but that time is “that by which motion has a number.”²³⁴ He further indicates that we discern (*krinomen*) motion to be more or less (*pleiō kai ellatō*) by time, and the discerning of something to be more or less is by number. What is notable about this is that he does not say that motion is number in the sense of being “many or few” numbers of something, but “more or less.” He has thus not done away with the sense that time and motion remain continuous when he says that time is “some

²³² *Phy.* IV.11 218b34; 219a29; 219b1-2

²³³ “*ouk ara kinēsis ho chronos*” (*Phy.* IV.11 219b4). Note that the conjunction (*ara*) indicates that he is expressing a consequence of the previous statement.

²³⁴ *Phy.* IV.11 219b4.

number” (*tis arithmos*)²³⁵ and that motion “has a number” by time. The sense in which time is a number is thus not here being treated in a way that is inconsistent with the sense in which it is continuous. Nor is the sense of time as continuous ever abandoned completely in the coming chapters, as we shall see.²³⁶ Finally, here he draws our attention to the way that number has a twofold meaning. It can mean either that which is numbered (*to arithmoumenon*), or that by which we number (*ō arithmoumen*).²³⁷ He insists that it is the former: that time is numbered.²³⁸

Even though time is “that by which motion has number,” time is not a separate number that we impose on motion.²³⁹ Time is revealed when we number motion with respect to before and after. But time is not a combining of two discrete elements – number and motion – as externally related through the act of soul. We do not bring time to bear on motion by our counting. Rather, we have already seen the fundamental way that the soul is involved in making the counting of time possible: its unique ability to say the nows are two. This is

²³⁵ *Phy.* IV.11 219b6.

²³⁶ The way in which time as number is consistent with time’s continuity is dealt with in *Phy.* IV.12.

²³⁷ *Phy.* IV.11 219b6-7.

²³⁸ *Phy.* IV.11 219b8-9.

²³⁹ Coope (2005) argues against the view put forward by Hussey (1993: 151) that the difference between these two senses of number is that between abstract numbers and concrete things. Instead, she argues convincingly that “that by which we number” can refer to any thing that is already a discrete plurality (Coope 2005: 90). She argues that “all numbers are countable...but being a number with which we count involves more than just being a number that is counted (ibid 89). This is because any discrete plurality can be used to count indirectly: we can make use of pebbles or numerals to represent the number of something we are counting. But since time is continuous, it cannot be used to count as such, though it can be counted if we mark off “potential” divisions in it. The weakness of Coope’s account for our present purposes that she gives very little attention to the difficulty presented by asserting that there can be such potential divisions in time. While she affirms that “Aristotle thinks that nows are potential divisions in time and that there can only be such potential divisions, insofar as we create them” (ibid 88), she does not question the way in which we are capable of “creating” these potential divisions, even though she takes this creative power of ours to have significant consequences for the being of time: that “time is mind-dependent in a way that change is not” (Ibid, 160), and that “it is our counting that creates the ordered series of nows” (Ibid, 172). I think Coope’s conclusion is right, but I don’t think she takes seriously enough the problem of asserting we can have ability to “create” potential divisions in time when she makes use of the misleading image of the pebbles (as already divided objects) in describing our ability to number time.

due on the one hand to the soul's ability to perceive motion as before and after, and on the other hand to the orientation of the soul itself to the before and after whenever we say that there is time. Our awareness of the before and after of time involves both a relation of the soul to motion when we are perceiving it and the soul's self relation to its own activity of perceiving motion when it says "now."

If, when we say "now," we do not perceive it as belonging to something before and after, no time seems to happen. Each time we utter the now we have laid down a distinction in something that does not remain what it is: having said "now" it immediately ceases to be "now." If we "perceive the now as one," we would be perceiving something that is immediately destroyed and left behind in oblivion as soon as it is enacted. We would have only a fundamentally paradoxical grasp of "the now" as never being "now." We grasp it as the same, but belonging to something before and something after, because we are aware not only of motion, but we also are aware of our own perception of motion when we say "now." We can be aware that we said the "now" before, and that this now belongs to the past, without confusion. This implies the capacity of memory. As we shall see in chapter 4 of this thesis, memory accounts for our awareness that we have perceived something "before," and we are able to have an awareness of a past sensation without thinking that it is happening in the present.²⁴⁰ The activity of memory will show how the now is not a combination or confusion of the present and the instant. Here in the *Physics* this ability of soul is already alluded to when Aristotle claims that, "the soul says the nows are two: one before and one after."²⁴¹ For, when we say "now" we do not treat it as remaining "now." If we did, we would be falsely

²⁴⁰ Note that Ricoeur (2004) also finds that the *DM* and *Phy.* are "in complete agreement" on this point (16).

²⁴¹ *Phy.* IV.11 219a28-29.

assuming that the now that we enact in speech is an absolute division in time. We always say the now with the understanding that it does not endure in its relation to the past and future, but in fact functions as determining the before and the after of time as another and another. The number of motion with respect to before and after is made possible by this self-aware activity of the soul that says “now” but also recognizes that, having said the now, its status as being “now” can already be negated by saying another now.

Thus I am suggesting that the now can only have the function that Aristotle attributes to it if it belongs to this self-aware activity of soul. However, despite this, in what remains of chapter 11 the involvement of the soul drops out of focus, though it does not disappear entirely.²⁴² Aristotle goes on to investigate the nature of the now itself in its function of making possible the counting of time rather than investigating the psychic powers underlying the being of the now. He here resumes his comparison of time to motion and magnitude, taking the analogies between them as far as they will go.

The now as likened to the moving body and the point

Aristotle has described time as the number of motion with respect to before and after. It is this description of time that will lead to his aporia about whether time would be impossible without soul, if indeed only the soul (as *nous*) can count. The strength of this aporia lies in the fact that it is not easy to see how time is even *countable*, never mind how it could be actually counted, without soul. In what remains of chapter 11 we will see Aristotle’s attempt to show how time is countable.

²⁴² Aristotle shows that the connection between the moving body and the now rests upon how we become acquainted with (*gnōrizomen*) the before and after in motion. Just as motion follows magnitude and time follows motion, “similarly the moving body follows the point by which we become acquainted with (*gnōrizomen*) the before and after in it” (*Phy.* IV.11 219b17-18); “we become acquainted with (*gnōrizomen*) the before and after in motion by the moving body” (*Phy.* IV.11 219b25-26); “the now is that by which the before and after are countable, and this is most knowable (*gnōrimon*)” (*Phy.* IV.11 219b29).

Time is, on the one hand, always another and another (just like motion), but all time that is simultaneous is the same (unlike motion).²⁴³ These contrary qualities – the same and different – are required of anything that is countable. Something can be numbered because it is the same, but also different: ten horses are all the same (they are horses) but they are each different individual horses. Of course, Aristotle does not trouble himself with asking if horses can exist without a soul that can count them. If it is obvious that horses are countable without a soul cognizant of their multiplicity, it is because horses are already discrete entities that offer themselves up as a distinct multiplicity for our counting. But time, as we have already seen, is continuous, and is as such analogous to motion, as motion is analogous to magnitude. So in trying to see how time is countable, Aristotle will again make use of its analogies to motion and magnitude. However, here he will also be considering time, motion and magnitude in terms of the now, the moving body, and the point.

Aristotle will here reiterate the stand he took on the aporia about whether the now is always the same or always different, by saying that it is both. It is the same as “that which, being sometime,” (OPO) is now,²⁴⁴ and different in the sense of being “in something other and other.”²⁴⁵ Aristotle attempts to clarify this by means of some more tangible examples. He refers again to the way that motion follows magnitude and time follows motion, and suggests that just as motion follows magnitude, “the moving body (*to pheromenon*) follows the point.”²⁴⁶ The now is the same, as “the point or the stone or some other such thing.”²⁴⁷ In

²⁴³ “Just as motion is always other and other, so also is time. But all simultaneous time is the same” (*Phy.* IV.11 219b10-11).

²⁴⁴ *Phy.* IV.11 219b15-16,19,28.

²⁴⁵ *Phy.* IV.11 219b14.

²⁴⁶ *Phy.* IV.11 219b18.

²⁴⁷ *Phy.* IV.11 219b19-20.

what follows we will again see the double function of these examples.²⁴⁸ They are presented as analogies: the now is to time as the moving body is to the motion and the point is to the line. But they also overlap, or “follow” (*akolouthēi*), one another. We will see how the now accounts for the relationship of the moving body to motion *insofar as it is similar to the point* that divides the line.

First, let us consider the analogy between the now and what is moved locally (*to pheromenon*). Aristotle says that “we make known the before and after in motion by what is moved locally (*to pheromenon*).”²⁴⁹ What is moved locally is a stone, or a person, which retains its identity when it changes place. It is the identity of the object, which remains essentially unchanged while it moves, that allows us to recognize the before and after of its motion. The being (*to einai*) of such an object is not different by virtue of changing place, though the before and after of its motion are indeed different. If the moved object did not remain what it was while it moved, we would not only not recognize what holds together the before and after of its motion, but its motion would not be continuous. The moving thing cannot become something else in the course of its motion, for this would be its end. In reaching its end the motion must stop.²⁵⁰ However “the now is that by which the before and after are countable (*arithmēton*),”²⁵¹ meaning that the motion of the moving thing is distinguished into parts that can be taken as another and another by the now whose being

²⁴⁸ The new difference between what we are about to see and the passage we have already examined (219a11-31) is in this introduction of the point and the moving body. In the earlier passage, Aristotle spoke of the relationship between magnitude motion and time without making reference to the moving body or the point.

²⁴⁹ *Phy.* IV.11 219b17-18.

²⁵⁰ The (time) “in which” a change is completed is *indivisible* (*atomos*) (*Phy.* VI.5 235b33). Also, motion cannot be divided by points that are both the beginning and end of the motion, because something cannot be said to have arrived and have departed in the same now (*Phy.* VIII.8 262b20ff). While here Aristotle is speaking of local motion, the same applies to all motion and change insofar as all motion is between contraries.

²⁵¹ *Phy.* IV.11 219b26-27

differs each time it is taken. The continuous motion is *countable* by being determined by the now.

There is in fact a disanalogy between the moving body and the now that Aristotle draws our attention to when he makes reference to how “the sophists say” that Corsicus in the Lyceum is essentially different than Corsicus in the agora.²⁵² Unlike the Sophists, Aristotle thinks that Corsicus remains who he is essentially when he changes place: Corsicus is a beingness whose being is not altogether determined by his location. However, as Remi Brague puts it quite nicely, the now is the only case where this sophism holds true.²⁵³ The now is not an *ousia*: it is not a “this here” (*tode ti*), so when it enters into different relations its being is different. What the sophists hold to be true for all being is in fact only true for the now: that its identity is determined entirely by logos. We say “now” at some time (*pote*) – perhaps at 12:00 – and we say “now” at 12:15, and these nows are different. “For the motion (*kinēsis*) and the local motion (*phora*) are one by the moving thing (*to pheromenon*), not as OPO (for this leaves) but by *logos*. And this [the now as a function of logos] determines motion as before and after, and this follows the point in some way (*pōs*).”²⁵⁴ Whereas the now itself is the same as being that which is at some time, but different as being in something other and other, the moving thing is both the same at some time, and it is also the same in being in something other and other (motion).²⁵⁵

²⁵² *Phy.* IV.11 219b21-23.

²⁵³ “Le maintenant est le seul cas dans lequel la sophistique ait raison” (Brague 1982:129).

²⁵⁴ “καὶ γὰρ ἡ κίνησις καὶ ἡ φορὰ μία τῷ φερομένῳ, ὅτι ἓν (καὶ οὐχ ὅ ποτε ὄν—καὶ γὰρ ἂν διαλίποι—ἀλλὰ τῷ λόγῳ)· καὶ ὀρίζει δὲ τὴν πρότερον καὶ ὕστερον κίνησιν τοῦτο. ἀκολουθεῖ δὲ καὶ τοῦτό πως τῇ στιγμῇ” (*Phy.* IV.11 220a7-11).

²⁵⁵ In my treatment of the argument of *Phy.* IV.12 (in the next chapter of this thesis), I suggest that “the being” of the moved thing, which is said by Aristotle to be in time, is best understood as “what it was to be” (*to ti en einai*), drawing on Aristotle’s account of being in *Met.* VII. As such we can understand how the moving thing is

Once it has been shown that the now cannot be adequately represented by the moving body the point takes over as representing the function of the now. It has been shown that the relationship a moving body has to its motion does not serve as a direct analogy for the way that now belongs to time. Rather, the now is what makes the before and after of motion countable by being on the one hand similar to the moving body (which remains the same) and on the other hand, similar to its motion (which is differentiated in terms of the positions it leaves): “time is both continuous by the now and divided by the now.”²⁵⁶

Aristotle then turns to the point in order to elucidate the dividing function of the now. The now bears resemblance to the point in that it “holds together (*sunechei*) and determines (*horizei*)”²⁵⁷ what it limits (the time or the length respectively). However, if we can take the same point to be both the beginning and end of the length, “it must stop,”²⁵⁸ or “be at rest.”²⁵⁹ This seems like a bizarre description of the point that marks the line. Isn’t the entire line always at rest? Later on in the *Physics* Aristotle will make clear how this problem of division producing a “stop” pertains not only to motion but also to magnitude.

For if someone divides what is continuous into two halves, they use the one point as two, since they make it a beginning and an end. And thus do both the one who counts and the one who divides into halves. But having been thus divided, neither the line nor the motion will be continuous; for a continuous motion is through something continuous, and while infinitely many halves are present in what is continuous, they are present not actively but potentially.²⁶⁰

not different from itself while it undergoes motion: it is being what it was, even if its motion is different (and results in the manifestation of different attributes).

²⁵⁶ “καὶ συνεχὴς τε δὴ ὁ χρόνος τῷ νῦν, καὶ διήρηται κατὰ τὸ νῦν” (*Phy.* IV.11 220a5-6).

²⁵⁷ *Phy.* IV.11 220a11-12.

²⁵⁸ *Phy.* IV.11 220a13.

²⁵⁹ *Phy.* IV.11 220a18.

²⁶⁰ “ἐὰν γὰρ τις τὴν συνεχὴ διαίρη εἰς δύο ἡμίση, οὗτος τῷ ἐνὶ σημείῳ ὡς δυσὶ χρήται· ποιεῖ γὰρ αὐτὸ ἀρχὴν καὶ τελευτήν. οὕτω δὲ ποιεῖ ὁ τε ἀριθμῶν καὶ ὁ εἰς τὰ ἡμίση διαίρων. οὕτω δὲ διαίρουντος οὐκ ἔσται συνεχὴς οὔθ' ἡ γραμμὴ οὔθ' ἡ κίνησις· ἡ γὰρ συνεχὴς κίνησις συνεχοῦς

Thus the analogy holds: in order for the point to divide the line, and serve as both a beginning and an end, it would break its continuity, just as for the point to actively divide the motion it would have to stop the motion. Yet, when one “counts” the continuous line or the continuous motion as having parts that are before and after one another, one makes use of points that do in fact serve this function without actively breaking their continuity. The point was said to both hold together and determine the length.²⁶¹ But the same point, used as both a beginning and an end, would seem to only divide the length. How does the point also hold together the length? It does so by being two different points. “Time is number not as the same point that is beginning and end, but more as the extremes of the line, and not as a part (for to use the middle point as two would involve being at rest).”²⁶²

If we take all of this together, we see how in its different aspects the now resembles both the moving body and the point in some way without being identified with either of them. It first seemed that the now was always the same in the way that the moving thing remained the same while it was in motion. But this was seen only to show the way that we make known the continuity of the before and after of motion. Considering the now as remaining *what it is* in the way that the moving body remains *what it is* fails to show that the now in fact *differs* in its being as it follows the moving body in motion. The now differs each time it is said in the way that the point potentially divides the line into halves. The now that *was* said is essentially different from the now that *is* said or *will be* said. It is in virtue of this difference that the before and after in motion is countable.

ἔστιν, ἐν δὲ τῷ συνεχεῖ ἔνεστι μὲν ἄπειρα ἡμίση, ἀλλ' οὐκ ἐντελεχεῖα ἀλλὰ δυνάμει.” (*Phy.* VIII.8 263a24-30).

²⁶¹ *Phy.* IV.11 220a11-12.

²⁶² *Phy.* IV.11 220a14-18.

We must also recognize how the now differs from the point. The magnitude is already a limited stretch between two extreme points that are actively limiting the line. As such if we mark a point in its middle we have two halves of the whole line. This middle point was said to only exist potentially, because it can be laid down again and again, a potentially infinite amount of times that would yield a potentially infinite number of halves. This “potential point” operates by “moving” along the continuous extensions of the line without “stopping,” and thereby represents divisions in it that do not actively divide it. Furthermore, the middle point can serve as both the beginning and the end only in reference to its extreme points that are already actively serving the function of the beginning and end of the limited line. The specific directedness of the line (its before and after) is provided by these extreme limits, within which the middle point can then have the ambivalent function of representing the beginning and end of two half lines. But in order for the now to have a similar function to the point, it must mark at least two “potential” limits in the infinite continuity of time.

Thus the difference between the now and the point is this: points are either potential or active because it is truly possible for there to be points that actively divide lines. There is no magnitude that is infinite in extent, therefore there not only *can be*, but there *must be* at least two separate points of any given magnitude that divide it actively. But Aristotle claims that there are no such active limits pertaining to time.²⁶³ Thus the now is analogous to both the active and the potential functions of the point. It is similar to the middle point in that it only potentially divides, but Aristotle also says time is number “more” as the extremes of the line than as the middle point.²⁶⁴ The extremes of the line are not potential, but active limits of the

²⁶³ Because time does not start and stop, and does not have an absolute beginning or end.

²⁶⁴ *Phy.* IV.11 220a14-18.

line. And yet, time is number more in the manner of the active limits of the extremes than in the sense in which the middle point only potentially divides the line.

If we make use of the easy solution of merely reiterating that the nows “potentially” divide time we are circumventing this truly fundamental difficulty belonging to time. The analogy between the now and the point breaks down on the basis of the difference in what it is that they are dividing and holding together: time (endless and without place) and magnitude (finite in extent and remaining in place). To understand the now’s function as “potential” thus calls for a solution beyond the one offered to explain the relationship of the point to the line.²⁶⁵ This is not to say that for Aristotle the analogy between the now and the point is without significance. Aristotle makes this analogy repeatedly, not only here in the *Physics*, but in the *De Anima* as well. Our task in making sense of this analogy will require investigating how the functions of the point and the now are similar without depending directly on the active existence of the limits of magnitudes. We shall take up this question again later in this chapter and in the next chapter when we investigate the power of the discerning faculty (*to krinon*).

Let us sum up what has been established here. Time is only partitioned by the determining function of nows that are different. The “direction” of the now is not derived from its reference to any absolute limits in time, and so the now is as such unlike the middle point that potentially divides the line. Furthermore, insofar as the now is never an absolute limit in time it is unlike the extremes that actively divide the line. The now always holds together the before and after that it divides potentially.

²⁶⁵ Thus I find Coope’s claim unsatisfying: “I suspect that in thinking of time in this way Aristotle is making use of the analogy between time and the line. He calls the now a ‘potential division’ because it is marked out from time just as a potential division of a line is marked out from the line” (Coope 2005: 13 fn 27). I have here given two reasons why we cannot say that the now is marked out from time *just as* the point from the line.

The now as stretch and the now as number: encountering Heidegger

When it comes to being numbered as before and after, magnitude, motion, and time are all bound up in one another. We cannot determine motion as before and after without making reference to position. We cannot divide magnitude without the use of the “moving point.” The relationship between magnitude, motion, and time is matter of dispute among reader of Aristotle’s account of time, and of our conceptions of time in general. One reader of Aristotle in particular has a particularly interesting suggestion, which we will now examine. In *The Basic Problems of Phenomenology*, Heidegger suggests that the relationship between magnitude, motion, and time is rooted in a more original sense of temporality as “dimensional stretch” which all the concrete examples Aristotle uses point back to.²⁶⁶ Heidegger attributes this stretch to the now itself which retains the past and expects the future.²⁶⁷ But Heidegger also claims that, “Aristotle characterizes time primarily as a sequence of nows.”²⁶⁸ Are these conceptions of the now as “stretch” and the now as sequential simply incompatible, and are they at odds with Aristotle’s own account of the now offered here?²⁶⁹

²⁶⁶ Heidegger argues both that the idea of continuous “dimension” (*ek tinon, eis ti*) does not have a primarily spatial character, and that it properly belongs to the now. “The determination of the *suneches*, *being-held-together-within-itself*, continuum, continuity, also belongs to stretch. Aristotle calls the dimensional character *megethos*. This determination *megethos*, extension, or magnitude, also *does not have a primarily spatial character*, but that of stretch (Heidegger 1988: 242).

²⁶⁷ “The now is not correlated as a point to the fixed point and it cannot belong to it in that way, because by its essential nature it is both a beginning and end. In the now as such there is already present a reference to the no-longer and not-yet. It has dimension within itself; it stretches out toward a not-yet and a no-longer, The not-yet and no-longer are not patched on to the now as foreign but belong to its very content. Because of this *dimensional content* the *now* has within itself the *character of a transition*. The now as such is already in transit” (Ibid, 248).

²⁶⁸ Ibid 256.

²⁶⁹ According to Gonzalez (2008) Heidegger’s conclusion – that Aristotle characterizes time primarily as a sequence of nows – is incompatible with Heidegger’s interpretation of Aristotle’s now as “stretch” (Gonzalez 2008: 23). While Gonzalez argues that Heidegger’s reading of the now as “stretch” is compatible with Aristotle’s account in the *Physics*, he argues that Heidegger’s conclusion – that time is a sequence of nows – “oddly contradicts” the rest of his interpretation (ibid).

I think it is worth the effort to examine Heidegger’s position more closely, and see what it reveals about Aristotle’s account of time and of the difficulties that pertain to time in general. Heidegger’s bold claim about the origin of magnitude, motion and time in “stretch” – rather than claiming the priority of one over the other – seems like it could be a promising way to avoid the problems that come with reducing time to motion or magnitude. However, Heidegger does not see this claim as compatible with Aristotle’s description of time as number. In order to counter Heidegger’s interpretation, we must consider how the now numbers time. We will explore if the account of how the now numbers time is consistent with Heidegger’s analysis of the now as “stretch”, and if this activity of numbering means that time is primarily a “sequence of nows.” Aristotle states that, “Insofar as the now is a limit (*peras*) it is not time but is an attribute (*sumbebēken*) of time, insofar as it numbers (*arithmei*), it is time.”²⁷⁰ On the one hand, the now belongs to time as an attribute limiting time into parts that can be taken as another and another. On the other hand, insofar as the now numbers, it is time. How does the now number? Recall that there are several acts involved in our taking time as another and another. We perceive and determine (mark limits in) motion, and then we say that time has happened. We say that time has happened when the soul says the nows are two, thinking the nows as extremes that differ from the middle. As such, the nows bound or contain a portion of time that serves as the unit of its number that can be taken again and again. A now is never itself a quantity of time, because it is not a part of time. Noon is not a part of time if it stands alone, but it marks the boundary *from* 11:00 or *to* 1:00, and what is

²⁷⁰ “ἡ μὲν οὖν πέρας τὸ νῦν, οὐ χρόνος, ἀλλὰ συμβέβηκεν· ἡ δ' ἀριθμεῖ, χρόνος” (*Phy.* IV.11 220a21-23). I here follow Philoponus (2011), Ross (1936: 603), Pellegrin (2000: 256) and Gonzalez (2008:21) in reading *chronos* where the Oxford text has *arithmos*.

between these is time, which is different from the boundaries that limit it.²⁷¹ The now is never *one*, but it can be the *same* as an end and a beginning of the before and the after.²⁷² But it is only a beginning and an end when it is distinguished from a now before and a now after: when the nows are (at least) two. As such, with a number of nows we can determine a quantity of time elapsed.

In the *Categories*, Aristotle examines a difference that exists between kinds of quantities that is relevant to our discussion here. There are those that are continuous, including time, place and magnitude, and those that are discrete, including number and *logos*.²⁷³ Continuous quantities have parts that share a common boundary (*koinon horon*): the beginning of one part is the same as the end of the next part. Discrete quantities have no common limit. They are as such successive. If time is continuous – and thus unlike number – how then is it numbered without becoming something other than it is – without becoming successive? Recall that time is not abstract number imposed on continuous time, but rather time is itself what is numbered.

It must be that time bears some intrinsic relationship to number. Again in the

²⁷¹ *Phy.* IV.11 219a25-27.

²⁷² Note that Aristotle consistently argues against the notion that the now can ever be properly thought of as one. Even when it is called the “same” it must be thought of as serving two functions. “For nothing is divided and limited in one limit (*peras*), whether it is continuous in one or more [dimension]” (*Phy.* IV.10 218a23-24); “They join together the now before to the now after and make them one, taking out the middle on account of not sensing it. So that if the now were not other, but one and the same, there would be no time” (*Phy.* IV.11 218b27-30); “Whenever we perceive the now as one, and neither as before or after in motion, nor the same but belonging to something before and something after, no time seems to happen because no motion has. But whenever there is a before and after, then we say that there is time” (*Phy.* IV.11 219a32-b2)

²⁷³ Note that Aristotle does not include motion among the continuous quantities, for motion is only continuous by virtue of the moving thing (*to pheromenon*). It is not an accident that Aristotle fails to mention motion, for as he goes on to say “The things we have mentioned alone are in the strictest sense quantities, other things are all quantities incidentally” (*Cat.* 6 5a35). We have seen the reason for this: motion is a quantity through its relationship to magnitude and time. This would indicate that the sense in which there is a following between magnitude, motion, and time hinges upon the ambivalent status of motion, which is only a quantity by virtue of its relationship to magnitude and time.

Categories, Aristotle makes another distinction in kinds of quantity. There are those that exist as holding a relative position (*ek thesin ekhonton pros allēla*) and those that have no position at all.²⁷⁴ According to this distinction, time falls on the side of number and logos. No part of number, logos, or time remains (*hupomenei*) so as to hold a position relative to the next part.²⁷⁵ These parts have no position, but they nonetheless have an order (*taxin*) by which we say that one part is before and another part is after.²⁷⁶

With these distinctions in mind, let us return to the *Physics*. There is a sense in which the now is an attribute of time – as limit – and a sense in which the now “is time” – as it numbers. However, time is only numbered by being limited. So the sense in which the now numbers depends upon the sense in which it limits. It is thus a misconception to claim that we simply “count a sequence of nows.” Indeed, Aristotle does not say so, but claims instead that the now itself “numbers.” This indicates that, insofar as the now is time, it counts itself. But we have already seen that the now does not exist in the manner of an independent being (*ousia*) which might have such a self-reflexive power. Rather, we have seen that the now itself has the sophistical character of having its being determined by logos. Furthermore, we have seen that Aristotle’s characterization of the now depends on his characterization of the soul as capable of saying the nows are two, and that the definition of time as the number of motion with respect to before and after is explicative of what happens when we say that there is time. All of this points to the conclusion that now belongs to some power of the soul.

Thus time can only be a sequence of nows insofar as the nows both bound something continuous between them and number their own difference. Heidegger’s claim about the now

²⁷⁴ *Cat.* 6 5a15-16.

²⁷⁵ *Cat.* 6 5a27.

²⁷⁶ *Cat.* 6 5a29-30.

is bold: he maintains that that the now *is* this continuous “stretch.” But if it is to yield a sequence of numbers, it must also be a stretch that limits itself. In order for this to hold, we must consider how the now has this double function – limit and stretch – by being translated into number by *logos*. If the now numbers, and this is indicative of an activity of soul, we might consider some of the ways we number time and see to what extent they might illustrate this activity. We might think of the way that children learn to count seconds by inserting syllables between the numbers that they say or think: “one *mississippi*, two *mississippi*...” When *logos* is manifest through speech (*meta phones*) the syllables differentiate the continuous flow in an ordered sequence.²⁷⁷ The numbers function almost as points that bound the syllables and make explicit their order. It is evident even to the very young that the nows or numbers that they speak do not represent indivisible parts of time: they can always count faster or slower, but the syllables that they say and hear themselves saying each have an integral quantity (long or short) relative to one another which allows them to measure that which does not remain or hold a position outside of their saying and hearing.

Of course, such counting of time is merely an instrument, and it no more *is time* than the clock by which we measure time is time. Without the temporally continuous power of the soul that speaks and hears its words there would be nothing holding onto the syllables in their relative order. A recording of a voice counting time would not accomplish this function, unless there was a listener to hear it. Similarly a clock – or “watch” – does not itself *watch* time unfold, but requires the awareness of the one *watching* it to serve as a representation of time. But the now that is “said” (as *logos*) or “counted” (as *arithmos*) might be the instrument

²⁷⁷ Just as numbers are divided by virtue of having no common boundary, “so thusly is *logos*. For it is said that *logos* is a quantity, and it is measured by syllables short and long. And I say that *logos* happens the same with speech (*meta phones*). For the parts are not joined by a common boundary, for there is no common boundary towards which the syllables join, but each is divided itself according to itself” (*Cat.* 6 4b33-5a1).

that is most perfectly suited for making time manifest to ourselves. It is thus not merely the words or the numbers that are said that constitute time, but it is the continuous act belonging to the speaker who hears (and retains) the now that they have said, and anticipates the now that could be said next. In this way, the sequence of nows that are said when one counts time (aloud, or by reference to some visible instrument like a clock) does not represent a rejection or alternative to the idea that time is always a continuous stretch from the before and to the after, but the idea that the now *is* this stretch requires qualification. The nows that are said by the speaker are not just a sequence of interrupted moments or points that exist independently of the speaker. The sequence of spoken nows is not some independently existing quantity which is time, but rather is the aspect of the now which is most readily manifest as an object of sensation. The reason why saying the numbers aloud can be a fitting instrument for manifesting time is that, when we speak, the punctual nows are manifest directly from their source: the continuous consciousness that retains and anticipates as it divides. It takes time to say the syllables, but it does not escape the notice of the speaker that this time can be taken by a variety of sequences of syllables. We can count in “mississippies” or “one thousands” or any such quantities of sounds, but their temporal significance lies how they are unfolded in a relative order without holding onto any place or position. Thus it is not quite right to say that the now is the stretch that retains the past and anticipates the future, but this is true of the soul that says the now.

All the various instruments that we use to measure time accomplish the function of revealing and concealing the continuous time that they measure to different degrees and in different fashions. By means of the digital clock we most astutely conceal time from the measure of time. The digital clock presents a sequence of static numbers, having removed from view all evidence of the continuity of time. The digital clock, most of all, represents

time to us as, what Heidegger calls, “a manifold of naked nows.”²⁷⁸ The analogue clock shows both the continuity of time in the radial motion of the hands, and the differentiation of time according to the numbers that mark its positions. But the static numbers that mark time on the clock conceal, or at least do not reveal, the nature of the now which has no such position. Finally a water clock, which would have been familiar to Aristotle, shows time being differentiated in relation to a continuous magnitude. A given quantity of water is contained in a vessel, which will represent a given quantity of time. Just as time is intrinsically continuous, so is water: it is only differentiated by means of what contains it. By allowing the water to run out through a small hole in the container, the water becomes differentiated into parts. Drop by drop it stands for the flow of time being differentiated into parts and “taken as another and another.” But this representation of the activity of measuring time is, again, merely an imperfect symbol. The given quantity of water eventually runs out, whereas time seems to be always perishing in such a way as to not run out.²⁷⁹

Heidegger rightly insists that we not take the clock as our object,²⁸⁰ and Aristotle for his part never mentions any equipment that measures time for us. Aristotle only refers quite generally to the motion we are perceiving and determining, and the *logos* of numbering. If the clock is to be in any way useful for us we must understand it as a reflection of our saying “now.” In this regard, Heidegger makes another bold suggestion, one that is consistent with the interpretation I have been offering here. “If in saying “now” we are not addressing ourselves to anything extant, then are we addressing ourselves to the being that we ourselves

²⁷⁸ Heidegger 1988:271

²⁷⁹ *Phy.* III.6 206b3.

²⁸⁰ “In using a clock we do of course perceive the clock, but only and solely in order to allow ourselves to be brought by it to something that the clock itself is not but that it shows as a clock – time. But here too caution is advisable. The point is to grasp the use of the clock in its original mode of being” (Heidegger 1988: 258).

are? But surely I am not the now? Perhaps I am, though, in a certain way.”²⁸¹

Let us consider whether what we have seen in Aristotle’s account of time thus far supports Heidegger’s suggestion that “Perhaps I am [the now], in a certain way.” We have seen that the moving body and the point offer only imperfect likenesses to the now, but taken together they supplement each other in giving an account of how we determine time as number. We have also seen that motion alone does not account for the being of the now, but that we only say “now” when we take hold of our perception of the before and after in motion and determine it. Finally, insofar as time is that by which motion has a number, we discovered that motion is not numbered intrinsically, but only through *logos*, which measures time as it speaks. At every step of the argument, born from the need to explain time as a condition of motion, we encounter the limitation of using motion as model for time, and we find we must allude to the soul’s reflection on its own activities: the activities of perceiving, determining, saying are repeatedly invoked, and always in the relation of taking hold of our determination of a perception as the basis for our saying. Furthermore, our discerning (*krinomen*)²⁸² and our thinking (*noēsōmen*)²⁸³ each appear once as well. We will return to these latter shortly.

However, Heidegger’s suggestion that “I am the now” conceals a difficulty regarding the soul’s relationship to motion that we have already encountered but not yet resolved. Heidegger goes on: “When I say ‘now’ I do not mean the now as such, but in my now saying I am transient. I am *in motion* in the understanding of now and, in a strict sense, I am really

²⁸¹ Heidegger 1988: 259.

²⁸² “We discern (*krinomen*) more or less by number” (*Phy.* IV.11 219b4-5).

²⁸³ “Whenever we think (*noēsōmen*) the extremes as different from the middle, and the soul says the nows are two – before and after – then indeed we say that this is time” (*Phy.* IV.11 219a27-29).

with that whereto the time is and wherefore I determine the time.”²⁸⁴ This claim harkens back to the passage quoted earlier that describes our awareness of time in terms of there being motions “in the soul,” and specifies that these are not affections of the body.²⁸⁵ Heidegger takes this description of the soul in terms of motion at face value, going so far as to say that, “The mind, too, has the character of a moving thing.”²⁸⁶

In my analysis I have and will continue to offer reasons to be suspicious of this characterization of the mind as fundamentally moving, arguing instead that the involvement of soul will point us to an activity beyond motion. Heidegger has both attributed to the now the powers of “retaining” and “anticipating”, and suggested that “perhaps I am the now.” I have argued that it is only by taking these claims together that Heidegger’s position is plausible: my *saying* “now” involves both retaining the past and anticipating the future. However, we must figure out if Heidegger’s claims that “I am in motion in understanding the now,” and that the mind is a “moving thing” are required in order to understand time, and the activity of saying “now,” as “stretch.” Heidegger’s depiction of the now as the original “dimensional stretch,” anticipating the after and retaining the before, seems to me to be consistent with Aristotle’s depiction of how the now belongs to the before and after.

When Heidegger suggests that “perhaps I am [the now]” he seems to point to the way in which this “retention” and “anticipation” might explain how the now depends on certain

²⁸⁴ Heidegger 1988:259

²⁸⁵ “For even if it were dark, and we suffered nothing through the body, but a certain motion were present in the soul, straightaway at once (*euthus hama*) something seems to have happened, and time seems to have happened” (*Phy.* IV.11 219a5-7).

²⁸⁶ Ibid 254.

modes of our awareness (perception, determination, discernment).²⁸⁷ In this way, Heidegger's characterization of the now as dimensional stretch seems truer to Aristotle's own account than the idea that Aristotle characterizes time primarily as a "sequence of nows." But if the sort of awareness that Heidegger calls "stretch" is in the end merely some kind of motion then the insight that Heidegger offers seems to fall apart. Though Heidegger first calls time the "original sense of dimensional stretch," this "original sense" is collapsed into the kind of dimensional stretch that is manifest in motion. This assimilation of stretch to motion is deeply puzzling, for it is quite clear from everything Aristotle has said in the *Physics* that time is not a motion.

If the now is a dimensional stretch as a being *in motion* is "stretch", it is robbed of the distinctive powers that Heidegger is compelled to attribute to it, the very powers that might explain how the now "numbers" and is not simply a numbered sequence. In saying now, Heidegger claims, "we are not addressing ourselves to anything extant," but are "addressing ourselves to the being that we ourselves are." But if this being that we are and are addressing is simply another kind of motion, Heidegger's position becomes one-sided: it only captures one element of the dichotomy between thinking of the now as akin to the point and thinking of it as akin to a motion. Just as the analogies of the now to the point and the moving body must supplement each other in order to exemplify the character of the now, the now cannot only be stretch without also being limiting: akin to the point. But if the now is a limit, it cannot be a limit proper to motion, for when a motion is limited it must stop or come to rest.

²⁸⁷ While Heidegger speaks of the possibility that "I am the now" he does not say the now is the *soul*. Nonetheless the compatibility between Heidegger's account of the now as stretch and Aristotle's understanding of the soul has been pointed out by Gonzalez: "As counting and thus retaining and anticipating in the present the motion before and the motion after, the soul is characterized by the same temporal dimension, that same 'stretch' and character of transition, to use Heidegger's language, that characterizes the now" (Gonzalez 2008: 24).

As Aristotle makes clear in *Phy* IV.8, insofar as a motion is continuous, we cannot say that the moving body “has arrived” at a mid-point and “has departed” from that mid-point in the now: we can only say that it “is” there “at the now”, which is only a potential division of time.²⁸⁸

Furthermore, though it may be true in some sense that “I am transient”, and that “I am that whereto time is,” does not the idea that I, a moving thing, am “stretch” fail to explain how I am “the wherefore I *determine* the time”? Unless we show how this “stretch” can also be limiting without “running out”, that this “moving” of the mind is also unmoving without bringing itself to a close, we will have failed to capture the fundamental character of the now, that, “perhaps, I am.”

Nonetheless, Heidegger seems to have hit upon the crucial point that could give us a way out of these oppositions and dichotomies: the idea that we are “addressing ourselves to the being that we ourselves are” when we say the now, rather than addressing any extant thing (whether this extant thing be a moving body, or stationary (like the point)). From this perspective we might discover how “I am the now” that numbers. If the now is a form of our self-addressing then we are able to see how it is distinguished from the point – that it is not merely a static limit, but that it is self-limiting. But the self-addressing now is also unlike the motion of the moving thing, which is annihilated when it is limited (when it stops). If when we say “now” we are expressing a limit which is self-surpassing and thus does not bring its own power of addressing itself to an end – which “retains” without losing its ability to “anticipate” – then Heidegger has hit upon the fundamental way that the now can neither be fully assimilated to the point nor to the moving of a body. But when Heidegger’s depiction of

²⁸⁸ *Phy.* VIII.8 262a28-32.

the now as “stretch” (which is in opposition to the idea that time is a “sequence of nows”) is linked to his assertion that the mind (or soul) is “a moving thing,” then he has only attained to one element of the aporia that Aristotle is seeking to overcome. Understanding the “I” that addresses itself to its being as characterized fundamentally by motion means that this “I” is inadequate to account for the power of the now in the same way that understanding the now as analogous to the motion of the moving body alone was inadequate.²⁸⁹

Even if Heidegger does not offer a solution that we can accept completely, we have gained both an insightful elaboration of how the now belongs to the before and after – by thinking of it in terms of the psychic powers of retention and anticipation – and we have clarified the problem arising from the now’s similarity to motion. Perhaps the now is the soul, or belongs to some power of the soul, but, as we shall see, if the soul is primarily characterized by motion it is as such “in time.” Recall that, “Insofar as the now is a limit it is not time but is an attribute of time, insofar as it numbers, it is time.”²⁹⁰ When we look to the account of being in time in *Phy.* IV.12 we will see how this means that there is a sense in which the now is *in time* – by being a limit – and a sense in which the now *is time*, by numbering, containing, and exceeding the motions that it numbers. If the now is indeed a moving “stretch”, as Heidegger claims, it is unclear how it limits, exceeds, and goes on

²⁸⁹ A deeper analysis of this shortcoming of Heidegger’s account is provided by Gonzalez (2008: 25-45). In this article Gonzalez shows how Heidegger’s reading of Aristotle is compromised by Heidegger’s reduction of *energeia* and *entelecheia* to concepts of “unfinished being at work” (motion) and static presence respectively. By failing to recognize that *energeia* and *entelecheia* indicate complete activity beyond motion, Heidegger attributes to Aristotle a conception of being “understood within the horizon of a naive conception of time as a series of nows” (Ibid, 38). The “more primordial” conception of time that Heidegger seeks to retrieve from Aristotle’s supposedly naive formulation is only established by collapsing the distinction between motion and *energeia*. I have been arguing that we should have in mind this distinction when reading Aristotle’s the account of time in the *Physics*, in order to understand how motion is inadequate to account for time. In the coming chapters on the soul I will give my positive account of how time is to be understood as *energeia*.

²⁹⁰ *Phy.* IV.11 220a21-23.

numbering itself, unless we can see how the act of addressing ourselves to our being is somehow beyond motion. Still, Heidegger's intuition about the identity of the now with the "I" of the cognitive soul might be right. If I am the now, will there likewise be a sense in which I *am in* time, and a sense in which I *am* time, *especially if I am not just "a moving thing"*? We shall now move on to chapter 12 of the *Physics*, where Aristotle addresses the question of what it means to be in time.

CHAPTER 3: Time in the *Physics* Part 2 (*Phy.* IV.12-14): Time as exceeding and embracing motion

In chapter 12 Aristotle tackles the problem of how we establish a unit by which time is number. This answer to this problem has already been in development in Aristotle's account of the now thus far, in chapters 10 and 11. The initial aporia about time found that none of its parts exist: "the now is not a part, for the part measures, and it is necessary that the whole is composed of parts."²⁹¹ Aristotle has been consistent in claiming that the now does not measure time by being a part of time – by being some unit or "this" in time – which is then collected into the whole of time. The unit of time is determined by the now, but is not the now. Furthermore, a quantity of time is not made up of discrete parts, but is continuously distinguished into parts taken as another and another: we have seen that time is distinguished into parts that can be taken as another and another when the soul says the nows are two. I have also shown that Aristotle consistently argues against the idea that the now can be characterized as *one* in the *Physics*, but that he only says that it can be the *same* in its duality as belonging to the before and the after.²⁹² This again shows that the now is not itself the unit of time that is counted, but that the now has the power to determine such a unit. There must be more than one now in order for time to be distinguished into parts that can be numbered. We have also noted that the text that immediately follows the so-called "definition of time"²⁹³ does not go very far to elaborate on how we are to understand time as number. I suggested that what Aristotle says leading up to this description of time as number, about how the soul articulates the difference between the before and after in saying now, is necessary in order to

²⁹¹ *Phy.* IV.10 218a6-7.

²⁹² *Phy.* IV.10 218a23-24; *Phy.* IV.11 218b27-30; *Phy.* IV.11 219a32-b2.

²⁹³ *Phy.* IV.11 219b1-3.

understand how time is the number of motion with respect to before and after. I have tried to supplement our understanding of this through the encounter with Heidegger, where I argued that Heidegger's understanding of the now as "the original dimensional stretch" was inconsistent with his claim that Aristotle primarily characterized time as "a sequence of nows." In chapter 12 Aristotle will himself turn to a more direct examination of the difficulties belonging to the idea that time is a number of something continuous, which we shall now explore.

Phy. IV.12 being in time

In chapter 12 Aristotle will expand on his claim that time is a number on the basis of the dual characteristics of the now that have already come to light in the preceding chapters: the now is the same and different. In chapter 11 Aristotle explored these attributes of the now through analogies to examples that share these conflicting attributes: the point's relation to a magnitude and a moving body's relation to its motion. However, these examples are treated abstractly, and they do not make explicit reference to the being of what has magnitude or undergoes motion. Though he has asked about the being (*to einai*) of the before and after shared by time and motion (arguing that this sense of the before and after does not have its being in motion, but rather in our determining of our perception of motion²⁹⁴), thus far Aristotle has not addressed what it means "to be" in time. In chapter 12 he is not simply asking how time can be said to have such and such (contradictory) properties, but rather he is now asking how it is that temporality pertains to the being (*to einai*) of things in nature. Accordingly, in chapter 12, Aristotle will resume his discussion of these paradoxical attributes of time, but here he is concerned to say something about the beings that manifest these

²⁹⁴ *Phy.* IV.11 219a21-23.

paradoxical qualities that also belong to time. Here, Aristotle explores the sameness and otherness of time not only by making analogies to magnitude and motion, but he considers sameness and otherness of that which has its *being* in number and in motion. The main thrust of his argument in chapter 12 is intent on explaining exactly how it is that being-in-time is a manner of being-in-number: how “number” as it belongs to beings in time is to be understood in such a way that does not compromise time’s continuity.

Aristotle begins chapter 12 by stating that “the smallest number, simply is two, but it is possible with some particular kind of counted thing that there a smallest number, but in a sense there is not.”²⁹⁵ He then goes on to refer back to the analogy between time and the line. For time (just as for a magnitude) there is in a sense no smallest number, because any dimension that we take as a part is always capable of further division. As a continuous quantity, the parts of time have no definite, essential size, and any part that is taken can be divided into a *smaller part* that is just as much a part of time as a *larger part* is a part of time.

Nonetheless, despite lacking any given unit, Aristotle has described time as the *number* of motion with respect to before and after. Aristotle recognizes that there is a tension between the sense of time as continuous and the description of time as number: “As continuous, time is long or short, but as number it is great or small. It is not fast or slow, for neither is the number by which we count anything fast or slow.”²⁹⁶

Here Aristotle indicates that we can either think of a time as a long or short continuum, or we can think of it as a greater or smaller amount of number, as though these were both equally appropriate, though not identical, ways of determining time. We can see

²⁹⁵ *Phy.* IV.12 220a27-29.

²⁹⁶ *Phy.* IV.12 220b2-6.

how this is consistent with his claim from the *Categories* about how time shares aspects of both continuous and discrete quantities. Moreover, Aristotle here reiterates the proviso that time is not fast or slow, which he stated earlier as evidence that time is not identical with motion.²⁹⁷ It is worth noting that when Aristotle established the difference between continuous and discrete quantities in the *Categories*, he did not mention motion as among the kinds of continuous quantities.²⁹⁸ Though this might seem like an accidental omission (given the way that he addresses time, magnitude and motion as continuous (*suneches*) in *Phy.* IV.11²⁹⁹), it is consistent with the way Aristotle argues that the continuity of motion depends, on the one hand, on its relation to magnitude and place, and, on the other hand, on the reciprocal dependence of time and motion.³⁰⁰ Furthermore, the claim that time cannot be fast or slow both indicates a sense in which time differs from motion, and shows how time's relationship to motion is responsible for its sharing in the nature of both continuous and discrete quantities. A motion, while it is moving, is continuous (like time), and the before and after of time and motion are distinguished by the same act of soul. Thus a motion can be fast or slow (unlike time). The reason for this was stated at the end of *Phy.* IV.10: time is what gives this number to motion by which the motion is judged as being fast or slow.³⁰¹

While this goes some way towards explaining the functional relationship between time and motion in determining quantities, Aristotle nonetheless finds need to delve deeper into showing how time continuously numbers. Again, we will show that the relation between time

²⁹⁷ *Phy.* IV.10 218b14-17.

²⁹⁸ He only mentioned magnitudes (the line, the surface, and the body), time, and place (*Cat.* 6 4b24-26).

²⁹⁹ *Phy.* IV.11 219a11ff.

³⁰⁰ *Phy.* IV.11 219a11-22.

³⁰¹ *Phy.* IV.10 218b15-18.

and motion is only possible on the basis that time is not motion. He states,

Time is the same everywhere simultaneously, but the before and after are not the same, because the present change is one, but the change that has happened and the change that is about to be are different. But time is number, not that by which we count, but what is counted, so with this it also happens that the before and after are different; for the nows are different.³⁰²

Recall that the idea that “time is the same everywhere simultaneously” is the other main reason stated in *Phy.* IV.10 for believing that time is not motion. “The change or motion of each thing is only in the changing thing itself, or in the place where it happens to be moving or changing, but time is the same everywhere to all things.”³⁰³ Here Aristotle reiterates this fundamental difference between time and motion, indicating that it is consistent with what he has just established about the distinguishing power of the now (our ability to distinguish the before and after as different by nows that are different). But furthermore, he is going beyond what he was able to say about how the now determines motion abstracted from any particular content, by speaking of how the past, present, and future changes themselves are different. Here he is showing how the awesome power of the now to determine motion as before and after squares with the way that past, present, and future changes are different. All of this is leading to an explanation for what it means to be in time, and how this is consistent with what he has said about how we perceive and determine motion as before and after.

Note that in the passage quoted above Aristotle states that the “present change is one.” This might seem to be at odds with Aristotle’s earlier claim that the parts of time

³⁰² “καὶ ὁ αὐτὸς δὲ πανταχοῦ ἅμα· πρότερον δὲ καὶ ὕστερον οὐχ ὁ αὐτός, ὅτι καὶ ἡ μεταβολὴ ἢ μὲν παροῦσα μία, ἢ δὲ γεγεννημένη καὶ ἢ μέλλουσα ἑτέρα, ὁ δὲ χρόνος ἀριθμὸς ἐστὶν οὐχ ὥς ἀριθμοῦμεν ἀλλ’ ὁ ἀριθμούμενος, οὗτος δὲ συμβαίνει πρότερον καὶ ὕστερον ἀεὶ ἕτερος· τὰ γὰρ νῦν ἕτερα” (*Phy.* IV.12 220b7-10).

³⁰³ *Phy.* IV.10 218b 10-13.

are the past and future distinguished by the now. However, if this reference to the “present change” is understood within the unfolding logic of the text, it may not be a problem. On its own, it would seem to simply ignore the penetrating aporia with which he began the discussion of time in *Phy.* IV. 10: that time seems to be composed of past and future, and that these are not distinguished by the “present” but are rather distinguished by the now. The “present change” is not happening in the indivisible now: for then it would not be changing at all. But if we accept that “the soul says the nows are two, and time is what is between them” we have opened up the possibility of speaking about a “present change”: a change contained in portion of time whose boundaries are established by two nows spoken by the soul. This notion of the “present change” is established only on the basis of this analysis, and cannot be taken for granted apart from understanding that the articulation of now is a power belonging to the soul. Furthermore, it is only in this way that we can understand how a change can be taken as a unit that is counted: how the “time is the same everywhere simultaneously” can harbour change. The simultaneity of motions is only possible on the basis that time is not itself a kind of change or motion, which “is only in the changing thing itself.” This difficult analysis of the now that we have explored in the previous chapter overcomes this initial aporia and grounds Aristotle’s reference to the “present change” here. On the basis of this, Aristotle is able to offer a more elaborate examination of number, and how time is a number of motion.

Aristotle then reiterates the claim that time is what is numbered and not that by which we number, again showing that his argument is cumulative and conserves what has been established previously. Numbers are always the same as “that by which we count” no matter

what we are counting: horses or men or time are all counted with the same numbers.³⁰⁴ This neither makes what is counted in each case the same, nor are time and horses or men quantities in the same sense.³⁰⁵ But in each case of numbering there must be a unit that is recognized and taken as another and another in order for the multitude to be counted. The difficulty for time is how this unit is established. Here in chapter 12 Aristotle builds on what he has said about how we determine the before and after of time and motion, by showing how we measure out a unit that we can then go on to count. He makes the connection between how we “determine” (*horizomen*) these and how we “measure” (*metroumen*) them when he writes, “Not only do we measure (*metroumen*) a motion by a time, but also a time by a motion, since they are determined (*horizesthai*) by one another.”³⁰⁶ The “present change” refers to the result of this mutual determining: in order to determine the change as “present” we need to recognize it as within a multitude of changes that have been distinguished as before and after one another – similar to the way that “we recognize the multitude of horses by the number” – but without any change we would not recognize the distinction between the before and after – similar to the way that we “recognize the number of horses itself by the horse.”³⁰⁷

³⁰⁴ “The number is one and the same of a hundred horses and of a hundred men, but those things of which is a number are different, horses and men” (*Phy.* IV.12 220b12-15).

³⁰⁵ According to the different senses of quantity demarcated in *Cat.* 6.

³⁰⁶ *Phy.* IV. 12 220b17-18. Note how the introduction of the notion of “measuring” both conserves the determining function of the now, and goes beyond its function as determining. As Aristotle originally said in *Phy.* IV.10 “The now is not a part [of time]; for the part measures, and it is necessary that the whole is composed of parts. But time does not seem to be composed of nows” (218ba7-8). Measuring thus depends on determining – the now as two determines a part of time – and takes the part thus determined again and again as number.

³⁰⁷ “For we recognize the multitude of the horses by the number, and conversely, we recognize the number itself of the horses by the one horse. A similarly with time and motion: by the time we measure the motion, and by the motion the time” (*Phy.* IV.12 220b22-24).

Thus while the multitude of horses is measured by the number, and the number is measured by the horse, time and motion are measured and distinguished by one another. There is an intrinsic relationship to their measuring, which is unlike the way that we say that various group of a certain species are all measured by number. The given unit of the horses is the horse, but the unit of time is established by determining motion. But while it is relatively easy³⁰⁸ to recognize that the number of horses belong to the same group, motions are diverse both in number and in kind, and do not remain what they are while we are counting them.

There is, however, a specific kind of motion which offers itself to our perception with some regularity, some recurring sameness, that provides something like “the horse” by which we recognize the number of horses. Aristotle goes on to give another example of the countable, but this time he speaks of a specific kind of motion, and not the individuals of a species. He writes, “Just as it is possible for a motion to be one and the same again and again, so also a time can be, such as a year or spring or fall.”³⁰⁹ Among the vast diversity of motions, there is a kind of motion that manifests a recurring sameness: which, though it does not remain the same, recurs as one and the same again and again. Such cyclical motions manifest both unity and repetition, which is exemplary of our power to establish a unit of time by which we number a multitude: a year as a number of seasons, perhaps also an Olympiad as a number of years.³¹⁰ This sort of motion, which Aristotle will later say is “most knowable (*gnōrimōtatos*),”³¹¹ most readily offers itself up to being determined into units by which we

³⁰⁸ That the difficulty of measuring time is in some sense similar to the difficulty of measuring horses is addressed at the end of this section.

³⁰⁹ *Phy.* IV.12 220b13-14.

³¹⁰ Note the affinity of this example to the examples of the active infinite: the day or games.

³¹¹ *Phy.* IV.14 223b20.

measure time again and again in perpetuity. Note that this measuring is reciprocal: he is not simply saying that the yearly return of the seasonal changes *are* the number of time, or that the difference between these changes is responsible for the distinguishing power that we have thus far attributed to the now. This is because, as we have seen, he will not allow the movement of the heavens (which runs the course of the days or seasons, again and again) to be identified with time, because any part of its motion that is taken can likewise be called a part of time.³¹² So we can no more point to any visible cyclical motion in the sky and say that it *is* time than we can identify time with the clock or any instrument we use for measuring time. Rather, time and motion measure one another,³¹³ just as in *Phy.* IV.11 we saw that the before and after of time and motion follow one another.³¹⁴ Indeed, “We call time much or little measuring it by the motion, exactly as we do when we determine a number by the thing numbered.”³¹⁵ But equally, “Since time is a measure of motion and of being moved, it measures the motion by marking off a certain motion which measures out the whole into pieces.”³¹⁶ The unit of time that we take and use to measure time contains motion. The amount of time is determined by how many units of certain motion it contains, and we compare and measure the speed and duration of motions in reference to a unit of motion. Though perhaps the cyclical motions in the heavens manifest this with the greatest clarity of all extant motions, it would seem that this unit can be selected from among the given motions

³¹² *Phy.* IV.10 218b2-3.

³¹³ “Not only do we measure motion by time, but also time by motion, since they determine one another” (*Phy.* IV.12 220b15-16).

³¹⁴ “But there is also a before and after in time, since one of these always follows the other” (*Phy.* IV.11 219a18-20).

³¹⁵ *Phy.* IV.12 220b18-20.

³¹⁶ *Phy.* IV.12 221a1-2

or parts of motions rather arbitrarily.

Time and motion have this intrinsic relationship of measuring one another, because all motion is in time in a fundamental way. The last phrase quoted above is part of a longer conditional sentence that describes how this is so:

Since time is a measure of motion and of being moved, it measures the motion by marking off a certain motion which measures out the whole (*holon*) into pieces (just as also the cubit measures a length by marking off a certain magnitude which measures out the whole); and since for the motion to be in time means both it (*autēn*) and its being (*to einai autēs*) are measured by time, for it measures at the same time (*hama*) both the motion and the being of the motion, then this is its being-in-time: the being measured of the being of it. And it is clear that for the others (*tois allois*) too this is the being-in-time: the being measured of the being of them by time.³¹⁷

Fundamentally, being in time is being in motion, because both the motion itself (*autēn*) and the being of motion (*to einai autēs*) are measured by time. Reciprocally, being in motion is being in time. For it is not that time simply measures the interval through which the motion occurs, as if the motion remains what it was before, and the only thing that has changed is the temporal interval as something external to it. Rather, the motion takes time: it is not simply remaining what it is in time, for its being is different before and after,³¹⁸ and the measure of both the motion itself and its being as such is how much time it takes.

This central claim of this passage regarding the connection between being-in-motion

³¹⁷ “ἐπεὶ δ’ ἐστὶν ὁ χρόνος μέτρον κινήσεως καὶ τοῦ κινεῖσθαι, μετρεῖ δ’ οὗτος τὴν κίνησιν τῷ ὀρίσαι τινὰ κίνησιν ἢ καταμετρήσει τὴν ὅλην (ὥσπερ καὶ τὸ μῆκος ὁ πῆχυς τῷ ὀρίσαι τι μέγεθος ὃ ἀναμετρήσει τὸ ὅλον), καὶ ἔστιν τῇ κινήσει τὸ ἐν χρόνῳ εἶναι τὸ μετρεῖσθαι τῷ χρόνῳ καὶ αὐτὴν καὶ τὸ εἶναι αὐτῆς - ἅμα γὰρ τὴν κίνησιν καὶ τὸ εἶναι τῆς κινήσεως μετρεῖ, καὶ τοῦτ’ ἐστὶν αὐτῇ τὸ ἐν χρόνῳ εἶναι, τὸ μετρεῖσθαι αὐτῆς τὸ εἶναι - δηλον ὅτι καὶ τοῖς ἄλλοις τοῦτ’ ἐστὶ τὸ ἐν χρόνῳ εἶναι, τὸ μετρεῖσθαι αὐτῶν τὸ εἶναι ὑπὸ τοῦ χρόνου” (*Phy.* IV.12 221a1-9). I have followed Themistius, Simplicius, Philoponus and Natali in reading 221a8 as “*delon de kai*” rather than “*delon hoti kai*” (the latter being common among modern editions and having its origins in Alexander’s text). This makes the line 221a7 (“then this is its being in time: the being-measured of the being of it”) the apodosis of the long conditional that begins with the protasis “Since time is the measure of moving and being moved...” (221a1). Accordingly line 221a8, which refers to “other things,” is an addition to what was said, and not the apodosis.

³¹⁸ *Phy.* IV.11 219b10ff.

and being-in-time might appear to be very straightforward: being-in-motion is being-in-time since time measures motion and motion measures time. It seems quite easy to see that we establish a unit of time by simply pointing to how this is consistent with our customary ways of measuring time: the unit of time is something we call a minute, and we have instruments that appear to mark off a certain motion on their own accord that serves as the measure of all simultaneous motions, and can be taken again and again as the number of time. It might seem obvious that this is what happens when we say that it takes sixty seconds for the hands of the clock to make a complete rotation, or that it takes twenty-four hours for the sun to circle the earth (or for the earth to make a full rotation on its axis), and all motions that occur within these boundaries can be said to be simultaneous, though they may be longer or shorter, faster or slower than one another. But we cannot take for granted these customary ways that we measure time, for they conceal the central difficulty that time *is not* any one of these motions, but is rather the act of measuring motions. Though a portion of the motion is a motion, and this portion can be used to measure any whole motion, the act of marking off a portion of the motion is not a motion, but is rather attributed to time. This act of marking off a part of a continuous motion is what we have been examining in the discussion of the now throughout *Phy. IV.11*, wherein we saw this act attributed to soul. However, in addition to this, Aristotle is here saying that “being-in-time” means having one’s being measured by time. Thus he is not only talking about how motions are measured by time, but also how “the being” of something is in time.

Understanding this will require encountering some challenges regarding Aristotle’s expression here. First, we should clarify what is the nature of the “whole” which is measured by the certain motion that is marked off by time. The second challenge is to understand the significance of the distinction between the motion itself (*autēn*) and the being of motion (*to*

einai autēs), which Aristotle says are measured by time. The last challenge is to figure out what Aristotle means by the “others” (*tois allois*), whose being-in-time also means having their being measured by time.

When Aristotle speaks of the “whole” that is measured by the certain motion as its part, we might wonder if this can be understood as referring to any and every kind of motion, or, rather, to motion of a certain sort. Perhaps this “whole” refers most of all to the instances of cyclical motion that he cited earlier: the visible motions of the heavens that are measured as years and seasons. These cases of motions that are “one and the same again and again” were mentioned in apposition to the number of horses or of men, where the “wholes” that we are counting are not motions, but living individuals. When we count horses, or men, we are not counting their motions, or their magnitudes, but we are counting individual beings that have a number when they are numbered as a group according to their common species. In the case of the living individuals, the number of the whole is the group, and in the case of the motion that is the same again and again, the number of the whole is divided from a continuous motion that is itself whole insofar as it returns as itself the same again and again.

Still, perhaps the “whole” refers to any motion, or at least any motion with respect to place. However, linear local motions have a terminus, a *telos*, which is their cessation in a period of rest. It would be odd to speak of such motions as “whole”, since at no moment of their moving are they whole. The whole journey from Athens to Thebes is not just the period in which we are moving, but also includes our arrival in Thebes, when we rest. Drawing on Aristotle’s claim that motion is an incomplete activity (*energeia atelēs*), we might expect that the “whole” that is “measured out into pieces” properly refers to a circular locomotion, which is always in the same relation to its *telos*, and thus can at any moment be considered equally whole without having to reach a terminus. Still, even if this is so, it is not clear whether

Aristotle principally means circular motion (which can be the same again and again) when he goes on to speak of the motion that “both itself and its being” are measured by time.

Leaving this ambiguity aside for the moment, the next two challenges must be approached together. Aristotle appears to be making a distinction between “the motion”, which both itself and the being of it are measured by time, and “the others”, which have their being measured by time. This indicates that “the others” refers to something other than the motion that is *itself* measured by time. Perhaps “the motion” that was initially referenced is a specific sort of motion and “the others” refers to other kinds of motion, which have their being measured by time, but are not “themselves” measured by time.³¹⁹

But if “the others” refers to other motions and not to other beings, does this mean that there is a meaningful distinction in the way certain kinds of motions are in time? Up until this point in his treatment of time’s relationship to motion, Aristotle has not specified that time pertains to certain kinds of motion any more or less than other kinds. At the end of *Phy.* IV.10 Aristotle said, “that time is not motion is clear, and it makes no difference to the present inquiry to speak of motion or change (*kinēsin ē metabolēn*).”³²⁰ Presumably this means that the differences between the various kinds of motion are not significant for our general understanding of how time pertains to motion. Nonetheless, in *Phy.* IV.11, Aristotle seemed to be singling out a specific kind of motion when he spoke of the “carrying” (*phora*) and “the carried thing” (*to pheromenon*) as exemplifying the otherness and sameness of the now.³²¹

³¹⁹ This is how Simplicius appears to be interpreting this passage at the outset. Drawing upon Alexander’s interpretation, Simplicius reads Aristotle as saying that ‘the others’ “refer to motion and not to all things. For it is by the medium of motion for all things that ‘this is what it is to be in time, that their being should be measured by time’” (Diels 1882: 735, 11-12).

³²⁰ *Phy.* IV. 10 218b20.

³²¹ *Phy.* IV.11 219b16-34. Aristotle typically uses the words *phora* and *to pheromenon* to speak of the motions of the elements and the heavens. See for instance *DG* II.3 330b32.

Could this distinction between the “*phora*” and “*to pheromenon*” be similar to the distinction Aristotle is making here, between the “motion” itself, and other things with regard to their change, respectively?

At the beginning of the passage we are now examining, Aristotle says that “time is the measure of motion and of being moved.” The addition of “being moved” might be what opens up the space for his reflection on “the others.” However, it would be odd if this were taken to mean that there is a kind of motion that occurs without belonging to something “being moved.”³²² Is not every instance of motion something undergone by a being whose being is something beyond the motions that it suffers or enacts? Certainly, we do not have *experience*, on the one hand, of a motion that is itself motion, and, on the other hand, of “others” that move, but are not themselves motion. Perhaps, rather than making a distinction between “motion” and “being moved” as two existent things in nature, Aristotle is referring to our ability to take motion as the subject of inquiry, even though every motion we are aware of belongs to something “other”: some body which is capable of moving but is not “itself” motion.³²³ But even if this is what is being said here, what does it mean to say that “the being” both of the motion and of the others are measured by time, even though “the others” are not “themselves” motion, and are thus not “themselves” measured by time?

In order to answer this question, we will have to figure out what Aristotle means by “being” (*to einai*) here, and whether it can be meaningfully distinguished from the reflexive pronoun (*auten*). One might expect that saying that “the being” of something is measured by

³²² This would contradict what Aristotle claimed earlier in the *Physics*, that “there is no motion apart from *ta pragmata*. For what changes always changes either according to beingness (*kata ousian*) or quantity or quality or place” (*Phy.* III.1 200b33).

³²³ See *Met.* XI 1068aff. where Aristotle claims that despite the possibility of taking motion as the subject of inquiry, no motion can be said to be what underlies (*hupokeimenon*) changing attributes.

time makes a strong claim about the bearing of time on it: even stronger, perhaps, than the claim that it is “itself” measured by time. Is not “the being” of something inclusive of everything it “itself” is?³²⁴ Though it might seem out of character, Aristotle is here claiming that these unnamed “others” have their being measured by time, but does not say that they are themselves measured by time. Simplicius makes an interesting suggestion regarding this difficulty:

It is clear that this is another sense of ‘being’ from that customarily used by the Peripatetics, which means ‘form.’ For this is clearly different, and refers to the ‘extent of its existence’ (*tēn paratasin tēs huparxeos*), and, as it were, the activity of its being (*tēn energeian tou ontos*). Since the being of motion is an extended activity (*energeia paratetamene*) – for it is the activity (*entelecheia*) of the moveable – it is to be expected that motion and the being of motion should be the same. That is why Aristotle himself, having said that time was the measure of motion, added, ‘and of being moved’, not as something additional but because he has shown that motion is an activity (*energeia*), and that time is the measure of activity (*energeia*).³²⁵

It is quite remarkable the Simplicius makes use of these distinctly Aristotelian words for the activity of being – *energeia* and *entelecheia* – in order to make sense of the meaning of *to einai* here.³²⁶ Using this terminology, Simplicius finds it possible to speak of motion as the “medium” of the being of the other things, without reducing their being to this motion itself (*autēn*).

Simplicius does not justify his use of the terms *energeia* and *entelecheia* here. Nor does he entertain the distinction between activity and motion that Aristotle makes in *Met.*

³²⁴ Indeed, in *Met.* VII.4-6 Aristotle goes to great lengths to argue that the being (*to einai*) for each thing is not other than what it is primarily and according to itself (*kath’ auto*).

³²⁵ Simplicius (1882: 33-36). Urmson translates *energeia* and *entelecheia* quite haphazardly. He translates *ten paratasin tes huparxeos* as “the extent of its being,” *ten energeian tou ontos* as “the actuality of its existence,” *energeia paratetamene* as “extended actuality” and *entelecheia tou kinetou* as “the realization of the changeable” (Urmson 1992, 146). I find these translations obscure the meaning of the text.

³²⁶ Nor is this the only time he uses this word in his interpretation. See also *Ibid.*, 13-16; 736, 18, 25.

IX.6. Indeed, Simplicius is making use of these terms without making a sharp distinction between *energeia* and incomplete *energeia* (motion). But Simplicius must be presuming some sort of distinction between these terms, or else why would he not find it sufficient to give his interpretation simply in terms of motion? Though Simplicius speaks of how time measures the motion “itself” and its being without reference to activity, in order to explain how time measures “the being” of the others he finds himself making use of this terminology.

If we are going to accept Simplicius’s addition of this vocabulary to elucidate the meaning of *to einai*, we will need to understand what it means to say that time measures the activity and motion of the being of “the others.” Surely, time does not measure the activity of the being of “the others” tout court, but only insofar as the being of these others can be quantified. The being of “the others” is not simply a measurable quantity, but to the extent that something’s “being” can be quantified it is measured by time.³²⁷ The quantifiable aspect of something’s being is what Simplicius calls “the extension of its being”: its being insofar as it does not exist simultaneously (*hama*). This quantity is determined through the relation of time to motion, even if these “others” are not *themselves* motion.

I thus understand this passage as setting out to show how, from understanding how time measures motion, we can understand how time measures [the quantifiable aspect of] the being of others too: beings which move, but whose being is not simply the duration of any particular motion. The rest of the argument of *Phy.* IV.12 is required to fill out what this means, but Aristotle has here laid out what he intends to show.

Understanding the above, we can now see how this idea of time measuring motion relates to the idea of time as number. Recall that, insofar as time is continuous, it is long or

³²⁷ “That which is moved (*to krinomenon*) is not simply (*haplōs*) measured by time, insofar as it is a quantity, but insofar as its motion is a quantity” (*Phy.* IV.12 221b19-21).

short, but insofar as it is number it is great or small. The idea that time measures motion requires “marking off a certain motion which measures out the whole into pieces.” That is to say, the continuous motion is marked off by [the spokesperson for] the now into a pieces that can be taken “again and again” to measure any and every motion, and the temporal extent of the being of “the others” too. But what this act of marking off motions fails to show is the distinction between being in time and being outside of time. For, since we have allowed that “the others” have their being measured by time also, does this mean that everything is likewise measured by time, as long as we apply our standard to measure it: as long as we can say “now” at any point of its being?

This is precisely the difficulty that Aristotle goes on to address. Being in time, he says, is one of two possibilities. It is either 1) being *when time is*, or it is 2) being in time in the sense we say some things are in number. The sense that corresponds to being in number is further divided into 2a) that which is in time in a manner like how a part (*meros*) or attribute (*pathos*) of number is “something of number,” 2b) the sense like that which belongs to something that is counted: “there is a number of it.”³²⁸ Earlier I drew our attention to the limitation of this analogy for describing the number of time (with the example of the horse). But at this point Aristotle makes clear how this analogy holds true: the way that numbered things are “embraced” (*periechetai*) by a number that exceeds them (similar to the way that bodies are embraced by place). Just as for anything that is “in number” there is always a greater number, for things that are in time there is always a greater time.

Among the senses of being in time, the sense of being “when time is” does not appear

³²⁸ “For to be in time is one of two things: to be when time is, or something corresponding to what we say of some things, that they are in number. This means that something is a part or attribute of or generally something belonging to number (*tou arithmou ti*), or else that there is a number of it (*autou arithmos*)” (*Phy.* IV.12 221a10-13).

to capture fully what Aristotle means when he says that “the others” too are in time in this way (of having their being measured by time).

It is clear that to be in time is not to be *when time is*, any more than to be in motion or place is to be when motion or place is. For if that is ‘to be in something,’ all things will be in anything, and the heavens in a millet seed. For at that time when the millet seed is, the heavens are also. But this is incidental (*sumbebēken*), while the other follows necessarily, both for that which is in time that there by a certain time (*tina chronon*) when it is, and for the thing in motion that there be then a motion.³²⁹

From this it seems that even eternal things are in time incidentally, for since they *always are* they are *when* time is, and we might say now at any point of their being. Similarly the parts or attributes of time (the now, and the before and after) would be “when time is,” though they are not measured by time (since they are involved in the measuring of time). But being in time properly is not having some indefinite relationship of being whenever time is. Rather, it requires that there is a certain time (*tina chronon*) for one’s being, which is contained within a number of time that exceeds it.

Everything that has finite existence exists for a time that is exceeded and as such “embraced by time” (*periechesthai hupo chronos*).³³⁰ The sense of being in time that “follows necessarily” pertains to the distinction we called 2b) above (likened to being in number), for “to be in number means that there is a certain number (*tina arithmon*) of this thing/event (*tou pragmatos*), and their being (*to einai*) is measured by the number in which it is, just as, if it is

³²⁹ “φανερόν δὲ καὶ ὅτι οὐκ ἔστιν τὸ ἐν χρόνῳ εἶναι τὸ εἶναι ὅτε ὁ χρόνος ἔστιν, ὥσπερ οὐδὲ τὸ ἐν κινήσει εἶναι οὐδὲ τὸ ἐν τόπῳ ὅτε ἡ κίνησις καὶ ὁ τόπος ἔστιν. εἰ γὰρ ἔσται τὸ ἐν τινι οὕτω, πάντα τὰ πράγματα ἐν ὅτῳ οὖν ἔσται, καὶ ὁ οὐρανὸς ἐν τῇ κέγχρῳ· ὅτε γὰρ ἡ κέγχρος ἔστιν, ἔστι καὶ ὁ οὐρανός. ἀλλὰ τοῦτο μὲν συμβέβηκεν, ἐκείνο δ’ ἀνάγκη παρακολουθεῖν, καὶ τῷ ὄντι ἐν χρόνῳ εἶναι τινὰ χρόνον ὅτε καὶ ἐκεῖνο ἔστιν, καὶ τῷ ἐν κινήσει ὄντι εἶναι τότε κίνησιν” (*Phy.* IV.12 221a19-26).

³³⁰ *Phy.* IV.12 221a29.

in time, by time.”³³¹ As such, this sense of “being in” corresponds with Aristotle’s description of how “the others” have their being (*to einai*) measured by time.

Accordingly, a wide range of happenings can be said to be in time. Indeed, Aristotle uses the term “*ta pragmata*” to describe that which is in time in the way numbered things are in number.³³² This term can have a broad significance. It can signify “deeds” or “acts”, “occurrences” or “events,” “affairs,” or quite generally “things.”³³³ It does not apply to the motion of the moving thing any more than to the end of its motion. As such, it seems possible that even action and activity (*praxis*, or *energeia*) might be included among “the others” that have their being measured by time, insofar as the duration of a practical or theoretical activity might be embraced by a time that exceeds its active operation. This is argued by Natali (2007), who claims that “the others” does not only include what is moved.³³⁴ According to Natali what distinguishes the moving thing from its motion can equally be said of the way that *praxis* exemplifies *energeia* in distinction from motion in Met. IX.6. An activity may be measured as lasting for a certain time (*tina chronos*) but, unlike motion, it is completely what it is at every moment of its operation. This does not mean that activities in no way involve motion, but only that the activity is not itself motion. Just as Simplicius finds that the others “are also in time according to their proper movement, which is an extension of their being (*paratastin tou einai*),” Natali argues that the same can be said of *praxis*.

³³¹ *Phy.* IV.12 221b14-16.

³³² “*Ta pragmata* are in time as in number” (*Phy.* IV.12 221a17).

³³³ Sachs (1999) suggests that *pragma* indicates either intentionality or completion when he says that it means “a thing of interest or concern or a thing done” (xxxviii).

³³⁴ Natali refers to “what is moved” as “composite beings” (following Philoponus’ interpretation). This might be appropriate, since for everything capable of being moved we can distinguish between matter and form. However, explaining the relation of matter to form here takes away from our focus, so I shall simply speak of “what is moved.”

Tout ce qui possède une essence et n'est pas seulement un mouvement est immuable dans son essence aussi longtemps qu'il existe; en conséquence son être n'est pas mesuré par le temps, même si son être est dans le temps et si on peut déterminer un temps pendant lequel il est, et un temps où il n'est plus ou pas encore. Il n'est donc pas nécessaire d'en venir à penser, comme le faisait Goldschmidt, que de manière absolue l'action n'est pas dans le temps. Il est vrai qu'en tant qu'activité parfaite elle n'est pas dans le temps comme l'est mouvement physique, c'est-à-dire au sens où elle serait essentiellement destinée à son propre achèvement. Mais d'autre part elle est dans le temps à la façon dont le sont les réalités composées de matière et de forme, comme des tables ou des chevaux, à savoir quant à son existence.³³⁵

According to Natali's interpretation, it is possible for some thing or activity to be in time – even to have the quantity of its being measured by a time that exceeds its – without time being the ultimate measure of what it is: without equating its temporal destiny with what Natali calls its “essence.”³³⁶ This applies to “the others” whose being is not fundamentally captured by motion, although they may undergo motion or enact motion in their operation.

Is there any proof from Aristotle's own text that can defend the interpretations of Simplicius and Natali? Indeed, Aristotle's reference to “the others” is sufficiently vague that anything that is for a certain time (*tina chronos*) is exceeded by a greater time and thus has its being measured by time, and from this we might conclude that activities that do not go on forever are in time in this way. But Aristotle does not say this. What he does go on to say is that being embraced by time seems to also involve being affected by time (*paschein hupo*

³³⁵ Natali 2007: 171.

³³⁶ “On peut être dans le temps au sens de ‘être déterminé essentiellement par le temps’ (être pour la mort, dirait Heidegger). Ce sens est celui selon lequel le temps s'applique au mouvement. Ou bien on peut ‘être dans le temps de telle façon que ‘seul l'être-là de la chose est mesuré par le temps, et non sa nature propre.’ Ce dernier sens est celui où le temps s'applique aux ‘autres choses’” (Natali 2007: 170). Natali applies the modern distinction between “existence” and “essence” to Aristotle's use of “*to einai*,” stipulating: “Nous employons les termes ‘essence’ et ‘existence’ seulement par commodité, sans vouloir nous engager dans une discussion technique de ces concepts du point de vue de la métaphysique moderne” (Ibid, 170, fn. 15). I have chosen to be more cautious, and tried not to employ metaphysical distinctions that are foreign to the text that I cannot account for.

chronos).³³⁷ Here he entertains the possibility that time affects what is in it negatively, more in the manner of destruction (than generation).³³⁸ This would seem to pose a problem for reading “the others” as including activity, insofar as what distinguishes an activity from a motion is that an activity, complete at every moment of its operation, is neither generated nor destroyed, even if it may be active at one time, and not active at another time.

However, the argument that follows this proves to be crucial for explaining what distinguishes being in motion from being in time, which may clarify the possibility that activities are in time in some way. Aristotle makes the seemingly banal claim that “since time is the measure of motions, it will also measure rest incidentally (*kata sumbebēkos*). For all rest is in time.”³³⁹ The distinction he is making here is that being in motion necessarily means that something is moving, but something may be in time without being in motion: when it is at rest. Aristotle says that “time also measures rest incidentally”, not because when something is at rest it is only *in time* incidentally, but that it is measured by a measure that is incidental to its resting: for rest, too, is measured by a quantity of time determined by measuring *motion*. But time does not only measure moving and resting as defined within separate parts of time, as if time were simply made up of alternating moments of motion and rest; as if time offers itself to us as partitioned by the distinction between motion and rest. Rather, the earlier claim was that time measured “the being” of the others, and here with the inclusion of rest we see why time does not only measure motion itself. When we measure the certain time (*tina chronos*) of something’s being (*to einai*), this is not determined exclusively by the time when it is in motion. “The others” do not necessarily cease being when they stop

³³⁷ *Phy.* IV.12 221a31.

³³⁸ *Phy.* IV.12 221b1-3.

³³⁹ *Phy.* IV.12 221b7-8.

moving. The “extension of their being” can involve either moving or resting: “For, generally, if time is the measure of motion according to itself (*kath'auto*), but of other things incidentally (*kata sumbebēkos*), it is clear that for all of those things of which it measures the being (*to einai*), that being will be in rest or in motion.”³⁴⁰

Thus, the inclusion of rest is neither trivial nor obvious, but in fact quite crucial to discovering what it means to be in time. Being in time is not the same as being in motion, because the being (*to einai*) of “the others” that is measured by time involves both moving and resting. Since the being of the others is not simply measured by their moving, there must be a sense of being beyond motion that is at work in determining the being of “the others” that is also measured by time. Aristotle makes what I take to be a revealing statement by making use of another word for “being” to describe what is measured by time – *ousia* – when he goes on to say, “accordingly, whatever is destroyed and generated, and, generally, being sometimes and sometimes not, must be in time. For there is some greater time which exceeds the being of them (*tou einai autōn*) and which measures their beingness (*tēn ousian*).”³⁴¹

I would like to pause at this point and consider the importance of the presence of this word here. Though I do not want to depart greatly from Aristotle’s focus in this text, we might wonder to what extent Aristotle’s account of *ousia*, explored at length in *Met.* VII, has become relevant to his discussion of being-in-time: how the physical account of being in time draws on a sense of being that is beyond motion, and involves the capacity to move and rest that belongs to a “beingness” (*ousia*). I would suggest that Aristotle’s invocation of *ousia* here draws on the primary meaning of being that he articulates in *Met.* VII. In the context of

³⁴⁰ *Phy.* IV.12 221b25-28.

³⁴¹ *Phy.* IV.12 221b28-32.

first philosophy Aristotle will attempt to clarify the meanings of being that is not restricted to the domain of *Physics* (which deals with a certain genus of being: the sort of *ousia* that has in it the principle of motion and rest).³⁴² Nonetheless, the discussion of *ousia* in *Met.* VII arises from a consideration of the causes of *phusis*: of sensible *ousiai* that become and perish.³⁴³ Reciprocally, the invocation of *ousia* here in *Phy.* VI.12 indicates a way in which *Physics* points beyond itself: it is not an altogether discrete discipline. Exploring the nature of the kind of beings that have in themselves the principle of their own motion and rest³⁴⁴ taps into the difficulties pertaining to being *qua* being, addressed in the *Metaphysics*. What does it mean for “a this here” (*tode ti*) to be what it is? Even though we cannot delve too deeply into Aristotle’s answer to this question in the *Metaphysics* without losing focus on what is at stake here, there is an aspect of this argument that seems to me to be particularly relevant to this examination of being in time. In exploring the various senses of *ousia*, Aristotle considers *ousia* as meaning “what it was to be” (*to ti ēn einai*).³⁴⁵ This phrase is used to indicate how an *ousia* is defined (*horizmenos*) according to itself (*kath’ auto*). The sense of “definition” (*horismos*) that is at work in this argument is how we distinguish what a thing is according to its own being among the accidental attributes or affects that it entails in the course of its being

³⁴² *Met.* VI.1 1025b19-22.

³⁴³ *Met.* VI begins with a consideration of the relation of *Physics* (*hē phusike theoretike*) to the other theoretical disciplines (mathematics and theology), and then goes on to investigate the causes of generation and destruction, leading to the investigation of *ousia* in *Met.* VI.1-6, and returning to the causes and principles of generation and destruction in 7-12.

³⁴⁴ For this is how he demarkates the scope of *Physics* in *Phy.* II.1 192b14.

³⁴⁵ *Met.* V.8 (1017b23); VI.1 1025b29; VII.3 1028b34; VII.4 1029b14-VII.6 1032a12; VII.10 1035b16; VII.11 1037a2, 1037a21; VII.13 1038b3, 1038b17; VII.17 1041a28. Though my translation of this phrase is unorthodox, there has recently been a trend (among those reading Aristotle through the influence of Heidegger) to bring out the temporal significance indicated by the imperfect “ēn”. See Aubenque (2002: 460-472); Long (2004: 65-75); Gonzalez (2008: 10-14).

what it was.³⁴⁶ This sense of “what it was to be” seems to me to be precisely what Aristotle is getting at when he speaks of how time measures the being (*to einai*) of “the others” whose being is inclusive of the time of its moving *and resting*. The inclusion of rest within the “certain time” of one’s being indicates that a being is capable of suffering or enacting a variety of different motions; that each of these diverse motions may be happening at one time, and completed at another, but that all these distinguishable motions belong to a being that goes on being itself throughout the course of its being. Though it might seem possible to understand every motion as a manner of becoming and perishing (between the contraries of form and *steresis* in each of the categories), not every motion is the becoming and perishing of an *ousia*.³⁴⁷ The claim that there is a “certain time” of the being of each finite thing – that this being is in time as being in a number of time – depends on Aristotle’s arguments for how there can be beings in time that possess their own integrity, which can account for the continuity of their own being through the differentiation of various measurable (growth), perceptible (alteration), and local determinations of its being moving and resting.

³⁴⁶ The presumption that Aristotle’s account of definition refers to merely abstractly “logical” meaning of *ousia* is not sensitive to Aristotle’s argument in *Met.* VI. For instance, Long (2004) claims to show that Aristotle’s (supposedly) “purely logical approach” to the definition of finite concrete beings in *Met.* VI.4-6 ultimately fails, and that the example of the definition of the “snub” “defies formal logic” and instead shows that “both matter and form are irreducible principles of *ousia*” (Long, 2004: 67). However, Aristotle’s account of definition bears little resemblance to anything that we might call “formal logic” today. Aristotle rejects the idea that we can make a definition of something by attaching terms together (*ek protheseōs*) or separating them (*Met.* VI.4 1029b30-1030a1), which indicates that definition is not concerned with truth and falsity. Instead argues that definition is attained by dividing (*kata tas diaireseis*) until we come to something indivisible, which is its definition and *ousia* (*Met.* VI.12 1037b28-1038a21). This, in turn, leads to Aristotle’s claim that the individual *ousia* is not an aggregate (*Soros*) of bodily parts or elements. When we divide the being to the point where we have it in parts or elements, we have gone beyond the indivisible *ousia*, dividing too far. However, when we do so, we are compelled to ask question of why the matter is of such a nature as to be this individual, which reveals the form and cause. I thus find it untenable to claim, as Long does, that there is at work in *Met.* VI, on the one hand, a “purely logical approach”, and on the other, a concern for the historicity of finite, concrete beings.

³⁴⁷ See *Phy.* I.8-9; V.1 225a14-20. Also DG. I.4 (how becoming is distinguished from alteration), and DG I.5 (how becoming is distinguished from growth); also *Phy.* VII.2 (which distinguishes motion in place and growth from the other kinds of motion) *Phy.* VII.3 (which distinguishes alteration from becoming).

Thus, I am suggesting that *to ti ēn einai* defines the *ousia* of that which has its being determined within a certain time. It includes the motions involved in its being what it was, but it does not reduce its being to any particular motion than supports – or at least does not fatally compromise – the continuation of its own being in time. Its being involves moving and resting: certain attributes may arise in it (through the mediation of motion) that do not make it other than what it was: they are in this sense “incidental.” The time of its being may be divided into a part of time when it was white, and a part of time when it is not-white, a part of time when it was here, and a part of time when it is there, a part of time when it was moving and a part of time when it was resting. But its “what it was to be” is not determined by such changes. It does not escape our notice that what it *was* may be distinguished from what it *is* insofar as it manifests itself through differing qualities, quantities, or locations, and that we may divide time accordingly. But still, it is being what it was. The time of its being is not defined by any particular motion, but by its being so long as it is being.

Thus I am arguing that the inclusion of “rest” in what is measured by time points to a sense of being (*to einai*) beyond motion, as it belongs to sensible *ousia*. Once Aristotle includes rest as also being measured by time, he is at liberty to speak of time as measuring *ousia*: for this shows that the being-in-time is not identical to being-in-motion. I have suggested that this mention of *ousia* gives us the opportunity to make use of Aristotle’s reflections the meaning of *ousia* as *to ti ēn einai* from *Met.* VII to elucidate the sense of the being of “the others” that is measured by time.

We may now address the viability of Simplicius and Natali’s suggestions that actions and activities are as such in time: in the manner of “the others.” For, it might be possible to

make the case that Aristotle identifies *to ti ēn einai* with *energeia*.³⁴⁸ Recall that in *Met. IX.6* Aristotle characterized *energeia* (as distinct from motion) by the simultaneity of past perfect and present progressive: we are seeing and have seen, living and have lived, at the same time. In the expression *to ti ēn einai*, we have the imperfect (*ēn*) embedded in the articular infinitive (*to einai*).³⁴⁹ Though not identical,³⁵⁰ both expressions have in common that they indicate an identity between past and present: that what *was* is not inherently different from what *is*. Furthermore, in *Met. IX.8* Aristotle identifies *energeia* with *ousia* and form (*eidos*),³⁵¹ just as,

³⁴⁸ This is suggested by Gonzalez (2008: 14)

³⁴⁹ The articular infinitive may indicate time (Smyth 2034).

³⁵⁰ The *ēn* of *to ti ēn einai* is a past tense with a progressive aspect (imperfect), and the “having seen” or “lived” or “thought” in the expression of *energeia* Aristotle uses a past tense with a perfective aspect (past-perfect). Just as in the case of *energeia*, many interpreters of *to ti ēn einai* have been inclined to disregard the temporal importance of the tense (past), and focus only on the aspect (progressive or perfective). It was common among ancient commentators to read the imperfect *en* as “habitual”, and more recently, Owens and Sachs have translated the expression in such a way that conveys timelessness (Owens 1951, 180-188; Sachs 1999, xxxvi-xxxvii). However, just as I have argued that it is problematic to focus only on aspect with respect to *energeia*, I see a problem with understanding the imperfect *ēn* of *to ti ēn einai* as only referring to the aspect (progression) and not at all to tense (past). For, given what is at stake in the argument of *Met. VII* – the definition of sensible *ousia* – the importance of continuity throughout change in time is relevant. It seems to me that what is important for both the descriptions of *energeia* and the expression *to ti ēn einai* is that there is a sense of the past that is not merely finished and done away with: that what has been or was being does not always and in every case exclude what is and or will be, as though the past is always something remaining in itself statically at its end, dead for all remaining time. Rather, in these expressions *what was* is actively identified with what is ongoing in time. Considering the aspect alone (whether progressive perfective), and disregarding the tense, leaves us simply trying to join together unsituated notions of completeness or incompleteness, as though such determinations (or lack thereof) exist in a temporal void. By contrast, when Gonzalez writes of the “present reaching back into its past” in relation to both *energeia* and *to ti ēn einai*, this captures this sense of the importance of tense and aspect together: that what is actively identifies with itself through differentiated time. Furthermore the difference of aspect (the “completion” associated with the perfect which is not necessarily associated with the imperfect) may not be so significant if we consider the following: Neither expression refers to the future, but in neither case is the future definitively excluded. This indicates that an *ousia* may go on being what it was, but *need not* go on in order to attain perfection. The *telos* is there “already,” which means that the being of such a being neither requires nor excludes future time.

³⁵¹ 1050a15-16, b 2-3.

in Met. VII., *to ti en einai* was said to belong primarily to *ousia*,³⁵² and in the case of the soul, *to ti en einai* is identified with both *ousia* and form.³⁵³

Thus there is some textual evidence for a connection between *ousia*, in the sense of *to ti en einai*, and *energeia*. Based on this it might be possible to make a connection between how *ousia* has a definition (*horismos*), and how the measure (*to metresthai*) of its being is time. Note the connection that defining and measuring have to the function of the now; how we determine (*horisomen*) the before and after of motion by saying now. Given the analysis of the now we have just seen in *Phy.* IV.11, it seems possible that there is some relationship between definition – the *logos* or “logic” of the way that we speak and think about individual, sensible beings – and the determination or measuring of the certain time of a such a thing’s being. Yet, can we say from this that time defines *ousia*? Surely many beings can be at the same time. We cannot as such define a being – say, a man, or a horse – simply by the time in which it lives. But we measure the time of its being having defined it as an individual. When Aristotle claims that time measures the being of “the others”, implied in this is the ability to grasp a *ousia* as *to ti en einai*: that we define the temporal boundaries of their being not according to any particular motion (or attribute brought about by motion), but rather to the time of their living as a whole.

We have now said a great deal about the difference between how time measures the being of motion itself, and how time measures the being of the others. Drawing on Simplicius’ interpretation, we said that “the others” have their being measured by time insofar

³⁵² “This is clear: that a definition and a *to ti en einai* belongs primarily and simply to *ousiai*. It is not that they do not belong to other things likewise, just not primarily” (*Met.* VII.4 1030b5); “*To ti en einai* is called the *ousia* of each (*Met.* VII.6 1031a17)

³⁵³ *Met.* VII.10 1035b14-17.

as “the extension of their being” is not simultaneous, but involves motion. We have also shown that “the extension of their being” is not reducible to any particular motion, for it includes their motion and rest. We also saw that Simplicius made use of the vocabulary of *energeia* and *entelecheia* to understand the relation between the ways of being in time for “the motion itself” and “the others.” Simplicius’ use of these terms clearly does not refer to something outside of time, but neither did it simply mean the motion “itself”. The importance of Aristotle’s reference to “the others” is that it points beyond the being of motion itself, though he does this in the vaguest possible way. Aristotle’s main concern in this text is to show that being in time depends on being in motion, even for those things, events, deeds – *ta pragmata* – that are not themselves motion. While we may wish that there could be some definitive list of what is included as “the others”, Aristotle only tells us that the limiting case is those things that always are,³⁵⁴ or their opposites, which always are not.³⁵⁵

The challenge is to see whether activities can be included in this sense of being in time, or not. Activities are distinguished from motions by the simultaneity of past-perfect and present progressive, in the examples of seeing, thinking, and living. It seems evident from our experience of engaging in such activities that it is possible for them to be happening at one time, and not at another. We see, we think, we live; we close our eyes, we sleep, we die. The instances of activity that we experience are presumably in time, insofar as there is a certain time of their being that is exceeded by a greater time. But this does not have to mean that seeing, thinking, and living are themselves motions, or that they become and perish in the

³⁵⁴ “It is clear that those which are always being (*ta aei onta*), as always being (*hē aei onta*), are not in time” (*Phy.* IV.12 221b3-4). According to Simplicius, “he adds ‘as always being’, because, though they are simultaneous (*hama*) with time, their motions and changes are in time because it is possible to find a greater time than each of them takes (Diels 1882: 741.18-22).”

³⁵⁵ *Phy.* IV.12 222a4-9.

manner of motions (that is, as incomplete in their operation). If these are truly activities, and not eternal, there must be a manner in which there is a transition from being at one time, to not being at another, which is not properly a motion.

As we have seen, Aristotle links generation and destruction to being at one time and not being at another time: “as many things as pass away and come into being, and generally (*holōs*) are at one time but at another time are not, must be in time.”³⁵⁶ Does this “*holōs*” mean that “being at one time and not being at another” might have a broader meaning than that which pertains to specifically to becoming and perishing? Taking a wider view of Aristotle’s corpus, we can see that there are many instances where Aristotle speaks of being at one time and not at another that does not occur by way of generation and destruction (as motions).³⁵⁷ These are, relations (*pros ti*) and the acquisition and loss of habits (*hexeis*);³⁵⁸ the achievement of moral and intellectual virtues;³⁵⁹ and the transition from *dunamis* to *entelecheia* in the soul, when one exercises one’s capacity to see or think whenever one wishes.³⁶⁰ If, in the manner of these examples, there a way to pass from inactivity to activity that is not itself motion, we should be able to say with some confidence that activities can be

³⁵⁶ *Phy.* IV.12 221b29-31.

³⁵⁷ Note that Aristotle goes on to restrict the operative sense of motion such that it does not include generation and destruction as the argument of the *Physics* progresses. (For this is a transition between contradictories, for which there is no “middle” and thus the process cannot be continuous).

³⁵⁸ “Since the relations are not themselves alterations, there is no alteration of them, nor, becoming, nor generally change in any way, it is clear that neither are the habits (*hexeis*), nor is the acquisition or loss of them alteration” *Phy.* VII.3 246b11-14.

³⁵⁹ He calls the achievement of moral virtues “completions” (*teleioseis*) (and their loss or absence are called “ekstaseis”) (*Phy.* VII.3 246b2, 247a3). Of the intellect and knowledge he says there is no alteration nor becoming (247b1-2), that “their use and activity is not genesis” (247b8).

³⁶⁰ In the *De Anima*, speaking of there being two senses of *dunamis*, shows that 1) becomes active through alteration (frequent changes from a contrary state), and 2) becomes active by “another way” (*allon tropon*) (*DA* II.5 417b2).

at one time and not at another without being generated or destroyed per se. As such, it should also be possible that activities are in time without being affected by time (*paschein hupo chronos*).³⁶¹ without “perishing” in time due to the motion that displaces their presentness (*hē kinēsis existēsi to huparchon*).³⁶²

If this holds, we would do well to look closer at Aristotle’s argument that that time seems to affect and destroy what it contains. Aristotle’s suggestion that whatever is embraced by time is affected by time is based on the things we are “accustomed to say” (*legein eiōthamen*) about time: that “time wastes things away, that everything grows old by time, or is forgotten because of time.”³⁶³ He distinguishes this from how we are not accustomed to say that we have learned, become new or beautiful by time.³⁶⁴ At the end of the next chapter (*Phy. IV.13*), Aristotle gives this contention a more nuanced consideration. There, he suggest that it is “more correct” (*orthoteron*) to say that time is ignorant than wise,³⁶⁵ and that time is more (*malon*) a cause of perishing than becoming.³⁶⁶ This more measured, comparative description of time’s association with perishing and ignorance over becoming and wisdom shows that time does not have some unique power over and against that of coming to be, learning, newness and beauty. Rather, time is associated “more” with perishing insofar as perishing may continue beyond the duration of an activity. “Nothing comes into being

³⁶¹ *Phy. IV.12 221a31.*

³⁶² *Phy. IV.12 221b3.*

³⁶³ *Phy. IV.12 221a31-b1.*

³⁶⁴ *Phy. IV.12 221b1-2.*

³⁶⁵ “ἐν δὲ τῷ χρόνῳ πάντα γίγνεται καὶ φθείρεται· διὸ καὶ οἱ μὲν σοφώτατον ἔλεγον, ὁ δὲ Πυθαγόρειος Πάρων ἀμαθέστατον, ὅτι καὶ ἐπιλανθάνονται ἐν τούτῳ, λέγων ὀρθότερον” (*Phy. IV.13 222b19*)

³⁶⁶ *Phy. IV.13 222b19-20.*

without itself somehow moving and acting (*prattein*), but something can be destroyed and in no way moved.”³⁶⁷ This claim calls upon Aristotle’s understanding that motion is not something that merely is, but that it is always caused by something that exists actively. Moreover, Aristotle is tentative about even giving the power of destroying things to time. “Even this is not something that time does (*poiein*).”³⁶⁸ Given these statements, we must reconsider what it means to be affected by time. Time does not affect “other things” by moving (*kineisthai*) them, by acting (*prattein*) or by doing (*poiein*) anything to them. It affects them in the manner of a sort of change (*metabolē*) Aristotle here calls “*ekstatikon*”: a word difficult to translate, though perhaps best thought of as literally “standing out” of itself.³⁶⁹ While all changes and motions take place in time, time is associated “more” with perishing, ignorance, and forgetting – essentially, processes leading to the *steresis* of form – because when a cause ceases to actively move or enliven a being its departure from its perfection is carried out in subsequent time. When we fail to act, or fail to be actively, time does not come to a halt, but what *is* devolves and returns to the material potency from which it arose.

From this it seems that to be in time is not the measure of one’s activity in time, and one’s acting is not the measure of time. The activities of one’s being may cease, but time continues on. When beings stop asserting their being actively then all that is left is the dissolution of their matter in time. If we cease to live, the body rots. If we cease to think, we forget. But time does not oppose the activity of our being: it is not lying in wait to rob us of

³⁶⁷ *Phy.* IV.13 222b23-24.

³⁶⁸ *Phy.* IV.13 222b26.

³⁶⁹ *Phy.* IV.13 222b21. It is worth noting again that *ekstasis* is opposed to *teleiosis* in *Phy.* VII.3, when Aristotle shows that the virtues do not arise from alteration.

our youth and beauty, but it endures beyond the certain time (*tina chronos*) of any activities of the causes that generate and enliven individuals. Time may exceed us, but it does not overpower us.³⁷⁰ Being exceeded and embraced by time in some sense means being affected by time, because time does not wait for us to act, and does not stop just because any one of us is not acting. Insofar as there might be a “right time” (*kairos*) for our actions, time is something with which we must reckon. Just as the sleepers in Sardenia were mistaken about the passing of time when they were unconscious, we cannot equate our lack of awareness with the end of time.

Time is as such infinite (*apeiron*) in the sense of being a beyond (*exō*) that exceeds and embraces the natural existence of finite individuals. But recall what we saw earlier in *Phy.* III.4-6 regarding the infinite. Among the reasons Aristotle listed for believing in the infinite, the “greatest and most authoritative (*malista kai kuriōtaton*), which makes a common aporia for everyone” is that “number, and the mathematical magnitude seem to be infinite, as well as what is beyond the heavens (*exō tou ouranou*), because they do not come to an end (*hupoleipein*) in our thinking (*noēsei*).”³⁷¹ This common aporia brings us back to the original question with which we began the chapter: how does time, if it is infinite or what is always being grasped, participate in beingness? “Is it in the manner of an *ousia*, or as incidental (*sumbebēkos*) and following from some other nature? Or is it in neither way, but is there nonetheless an infinite and an infinitely many?”³⁷² The many ways that we speak of the infinite include 1) “what is impossible to pass through (*to adunaton dielthein*) by not being of

³⁷⁰ I am not in agreement with Ricoeur on this point. He claims that Aristotle’s account of time does not overcome the “invincible word” that “we do not produce time but that it surrounds us, envelops us, and overpowers us with its awesome strength” (Ricoeur 1990, vol. 3, p. 17).

³⁷¹ *Phy.* III.4 203b23-26.

³⁷² *Phy.* III.4 203b33-204a1.

such a nature as to go through (*diienai*),” 2) “what has passage (*diechodon*) but cannot be completed at all (*ateleutēton*), or scarcely (*molis*) so,” or 3) “by being of such a nature as to have a passageway (*diechodon*) or limit, does not have one.”³⁷³

Note again how this language resonates with the opening of *Phy.* IV.10. “First it is good (*kalōs echei*) to go through the aporia (*diaporēsai*) concerning time.”³⁷⁴ The difficulties (*aporiai*) we have encountered in the course of this chapter present themselves as though they might block the passage of our thinking. Yet, one by one we pass through them: we find a passageway (*diechodon*). At the outset of our investigation it might have seemed that time either wholly is not, or is only scarcely (*molis*) and faintly.³⁷⁵ But having encountered each difficulty we have found a way forward.

Inquiring about time’s infinity has encountered the limits of the scope of *Physics*. In *Phy.* III.4 Aristotle states, “Most of all it belongs to the one who studies nature to examine whether there is an infinite sensible magnitude.”³⁷⁶ This task yields only a negative conclusion. There cannot be an unlimited sensible magnitude because it is the very nature of a sensible body to have limits in two or more directions. Furthermore, insofar as the infinite belongs to sensible nature it does so in the manner of potential for matter to be embraced by form. In terms of sensible nature, the infinite is “what is of such a nature as to have a limit, but does not have one”: the infinite is in this sense what is embraced (by form) and not the

³⁷³ “ἓνα μὲν δὴ τρόπον τὸ ἀδύνατον διελθεῖν τῷ μὴ πεφυκέναι διέναι, ὥσπερ ἡ φωνὴ ἀόρατος· ἄλλως δὲ τὸ διέξοδον ἔχον ἀτελεύτητον, ἢ ὁ μόγις, ἢ ὁ πεφυκὸς ἔχειν μὴ ἔχει διέξοδον ἢ πέρας.” (*Phy.* III.4 204a3-7).

³⁷⁴ *Phy.* IV.10 217b30-31.

³⁷⁵ *Phy.* IV.10 217b34.

³⁷⁶ *Phy.* III.4 204a1-2.

embracing. In the context of searching for an infinite sensible magnitude, Aristotle speaks pejoratively of the soul's ability to always think of a beyond: for just because we can think of a man so big that he would exceed the city, doesn't mean that such a body can be.³⁷⁷

According to Aristotle, our ability to think of a beyond is out of place (*atopos*) when it applies itself to a body: our intuitions about the infinite thus exceed *Physics* as such.

However, our ability to think of a beyond is not out of place in our grasp of time. Aristotle concludes his discussion of the infinite in the *Physics* by asserting that "time and motion are infinite, and thinking is too, but what is taken does not remain."³⁷⁸

If time exceeds and embraces all motions, it is infinite in the sense of being beyond (*exō*) any motion. If time is infinite in this sense, it will not be "that beyond which there is nothing, but is that of which there is always a beyond."³⁷⁹ This sense of a "beyond" is not even captured by eternal motion in a continuous circle, because the *same* parts are taken again and again.³⁸⁰ A circular motion may be endless, but it is not infinite in the sense of reaching beyond itself, and not in the sense of the infinite that we have seen affirmed both with respect to the day and the games and with respect to time; they are "what is always taken as another and another." The infinite is "that of which, to those taking it by quantities (*kata poson lambanousin*) there is always something beyond (*exō*) to take (*labein*)."³⁸¹ If it is the soul that "takes [time] by quantities" (numbers motion), then time will be among the

³⁷⁷ *Phy.* III.8 208a15-20.

³⁷⁸ *Phy.* III.8 208a20-22.

³⁷⁹ *Phy.* III.6 207a1-2.

³⁸⁰ *Phy.* III.6 207a5-7.

³⁸¹ *Phy.* III.6 207a7-8.

senses of the infinite which “do not come to an end (*hupoleipein*) in our thinking (*noēsei*).”³⁸²

“What is taken always goes beyond every determinate amount, but the infinite is not a separate number, nor does infinity remain (*menei*), but it becomes, just as time and the number of time.”³⁸³

Thus while time exceeds the duration of our activity, this very exceeding is accessible to thought. Our thinking about time exceeds the certain time (*tina chronos*) of our thinking about it. If time is infinite then our thinking about time provides us with a passageway beyond the limits of our finite existence. This is because thinking has an openness that is akin to that of time. If time is infinite in the sense of being what is always taken as another and another, this is because our thinking does not come to an end when it grasps a portion of time. It grasps time, but does not hold onto it as though it were some definite thing remaining, but takes it as another and another. It limits time without stopping it, because thinking is not a motion, which ceases when it is limited.

Time is not unlimited in the sense of having a nature to which limits do not apply (like how sound is invisible). It is, perhaps, a passage that can be completed only scarcely. We have seen that time can ambivalently be spoken of both as limited and as unlimited in the analysis of the now. The now is both a limit, which is not time, and is numbering, which is time. This double sense of the now requires that the now is not merely a property of time, but is the activity of numbering beyond every determinate amount that is taken.

Having completed this long digression back to the discussion of the infinite in *Phy.* III, let us now return to *Phy.* IV.12. According to Aristotle’s analysis of what it means to be “in

³⁸² *Phy.* III.4 203b23-26.

³⁸³ *Phy.* III.7 207b13-16.

time” the now is in time in the sense that the aspects of number are in number. We count nows only in the sense that when we count something we are counting numbers or some aspect of number. It would seem from this that the now is “that by which we number”, which, as we saw, is not time. This is consistent with the sense in which the now as a limit is not time but is incidental to time. This would also indicate that the now might be included among the things that are “when time is”, which were also said to be cases of being in time incidentally. But this is only one way of considering the now. Aristotle has also stated that the now “numbers” and in this sense it *is* time. This contrast, which I have repeatedly referenced, carries with it the following illustration:

Insofar as the now is a limit (*peras*) it is not time but is incidental (*sumbebēken*), but insofar as it numbers (*arithmei*) it is time. For the limits belong only to that of which they are limits, but the number of horses – the ten – is also elsewhere (*allothi*).³⁸⁴

The reason that the now is not merely a limit is that the limit belongs to the particular thing that it limits. Since time is the number *of motion*, if the now were simply a limit *of motion* each now would belong to the particular motion that it limited. However, the nows are not different by belonging to different particular motions, but by being before or after one another in time: as Aristotle will consistently state, time as number is the same everywhere, equal and simultaneous.³⁸⁵

As we have seen, saying that the now “numbers” locates the activity of numbering in the now itself. This contrast between the now as a limit and the now as it numbers shows that the sense in which the now as a limit is not time, for it is said to be incidental to time. But

³⁸⁴ “ἡ μὲν οὖν πέρας τὸ νῦν, οὐ χρόνος, ἀλλὰ συμβέβηκεν· ἡ δ' ἀριθμεῖ, χρόνος· τὰ μὲν γὰρ πέρατα ἐκείνου μόνον ἐστὶν οὗ ἐστὶν πέρατα, ὁ δ' ἀριθμὸς ὁ τῶνδε τῶν ἵππων, ἡ δεκάς, καὶ ἄλλοθι.” (*Phy.* IV.11 220a21-24).

³⁸⁵ *Phy.* IV.14223b12-13.

consider, perhaps, that the contrast is between thinking of the now as a static limit, belonging to some particular thing, and thinking of the now as the activity of numbering. If the now is only incidentally a limit, this does not mean that the now is only incidentally the activity of limiting. The now as “numbering” is time. As we have seen, time is continuous and thus is only numbered by being limited. Thus the activity of limiting is involved to the activity of numbering. In this light, we do not have a contrast between the now as limiting and the now as numbering, but rather we have a contrast between the now as “a limit” and the now as numbering: for limiting belongs to numbering in the case of time. In this sense, what Aristotle is saying is that the now is not an abstract component of time, but is this activity of distinguishing the parts of time into their relative order. Since this activity of limiting need not “take time,” it is possible to limit time without causing it to stop and start.

In neither of the ways of considering the now – as a limit or as it numbers – does the primary and fundamental sense of being in time apply to it. The now does not come to be and pass away; it is not a motion. It does not “take time” to happen; it is not a part of time. The now is both that by which we number, and the now numbers, but the now is not numbered. It is thus incorrect both to say that we merely count a sequence of nows when we count time, and that the now is in time in the sense that things are in time as they are in number.

Since the now is not itself a (sensible) *ousia*, nor is it a motion, I have suggested that, as numbering, it might be understood as an activity. This poses a challenge to our adoption of Natali’s interpretation that activities are in time in this latter sense. If the now is indeed an activity of numbering beyond any determinate amount that is taken, it cannot be so in the manner of a *praxis* that is exceeded by time. However, knowing what the now is *not* is only part of the battle.

In order to build upon the positive account of the now that we have been working on

up to this point we might draw upon what Aristotle says about how the infinite is analogous to matter (*hule*) that is embraced (*periechetai*) by form.³⁸⁶ According to this analogy, we might consider to what extent time is embraced by the now. In the account of the now that we have considered thus far we have seen that the now embraces time by being two extremes - one before and one after – that are different from the time that is between them. However if all time were ultimately embraced by two nows as such it would not be infinite. We have seen that there is also a sense in which the same now belongs to something before and after.³⁸⁷ In this sense, the same now is also different as being both an end of something before and a beginning of something after. In *Phy.* IV.13 Aristotle resumes his discussion of the now by elaborating on this sense of its sameness and difference.

Phy.IV.13: Past and Future as other and same:

In chapter 13 Aristotle takes up the task of showing that the way that we speak of the now as a limit needs to be understood in the context of knowing that the now is also responsible for the continuity (*sunecheia*) of time. As such, the now must be considered as having two functions: the now is the continuity (*sunecheia*) of time as it holds together (*sunechei*) past and future, and it is a limit (*peras*) of time as being an end and a beginning. Notice that Aristotle is here resuming the discussion of the past and future, which as yet has been mentioned only once more since the beginning of chapter 10. In chapter 10 the past and the future were invoked in the context of claiming that it seemed that none of the parts of time exist. For time was said to be composed of past and future as its parts, and the now is not a part of time. Furthermore, the now appeared to determine (*diorizein*) past and future, which

³⁸⁶ *Phy.* III.7 207b1-2.

³⁸⁷ “Whenever we perceive the now as one, and neither as before or after in motion, nor the same but belonging to something before and something after, no time seems to happen because no motion has. But whenever there is a before and after, then we say that there is time” *Phy.* IV.11 219a32-b2.

led to the aporia of whether the now always remains the same, or is another and another. In chapter 11 Aristotle has spoken of the temporal stretch purely in terms of the before and after without referring to this differentiation in terms of past and future. The only other mention of the past and future prior to its mention in chapter 13 occurred in the passage from chapter 12 that I quoted earlier, but will examine more extensively here:

Time is the same everywhere simultaneously, but the before and after are not the same. For the change that is present is one, but as past and future it is different (*heteron*). For time is number not as that by which we number, but as numbered. So with this also it happens that the before and after are always different; for the nows are different. And number is one and the same for one hundred horses and one hundred men, but that of which the number is, is different: horses are different from men. Still as it is possible for motion to be one and the same again and again (*palin kai palin*), so also can time be, such as a year, a spring or a fall.³⁸⁸

From this we see how the function of the before and after is assimilated to the past and the future through the notion that time is numbered. In this passage, the past and future are mentioned as indicating the sense in which the change before is different from the change after along the same lines that the number of horses and men are different. Can it be that the past and future are merely invoked as synonyms for the before and after? Recall that in chapter 11 the distinctly temporal sense of the before and after was determined according to a continuous motion, where *we determine* the before and after. But when he refers to “the before and after” as “past and future” the difference belongs to the nature of what is counted. On the one hand the past change is as different from the future change as horses are from men: we are in each case counting a different kind of thing. On the other hand, when the

³⁸⁸ “καὶ ὁ αὐτὸς δὲ πανταχοῦ ἅμα· πρότερον δὲ καὶ ὕστερον οὐχ ὁ αὐτός, ὅτι καὶ ἡ μεταβολὴ ἢ μὲν παροῦσα μία, ἢ δὲ γεγεννημένη καὶ ἢ μέλλουσα ἑτέρα, ὁ δὲ χρόνος ἀριθμὸς ἐστὶν οὐχ ᾧ ἀριθμοῦμεν ἀλλ’ ὁ ἀριθμούμενος, οὗτος δὲ συμβαίνει πρότερον καὶ ὕστερον ἀεὶ ἕτερος· τὰ γὰρ νῦν ἕτερα. ἔστι δὲ ὁ ἀριθμὸς εἷς μὲν καὶ ὁ αὐτὸς ὁ τῶν ἐκατὸν ἵππων καὶ ὁ τῶν ἐκατὸν ἀνθρώπων, ὧν δ’ ἀριθμὸς, ἕτερα, οἱ ἵπποι τῶν ἀνθρώπων. ἔτι ὥς ἐνδέχεται κίνησιν εἶναι τὴν αὐτὴν καὶ μίαν πάλιν καὶ πάλιν, οὕτω καὶ χρόνον, οἷον ἐνιαυτὸν ἢ ἔαρ ἢ μετόπωρον” (*Phy.* IV.12 220b7-10).

motion we are counting is one and the same “again and again” the past and the future are likewise one and the same, again and again: it is like counting a succession of horses. Aristotle’s terminology of “the before and after” captures both of the sense in which the changes occurring in the past and future can be different, and the sense in which they can be the same: time is that which is taken as another and another, but what is taken may either be the same again and again, or it may be different, another and another. The past and future changes may be different in kind, or not.

To elaborate on how the past and the future changes are different in kind we might turn to the difference between the necessary and the contingent (*to hopoter etukhen*; literally “whichever happens”), articulated by Aristotle elsewhere.³⁸⁹ The difference between the necessary and the contingent pertains to our ability to make affirmations and denials that can be either true or false. Since not everything occurs by necessity, predictions regarding the future may be or not be, and we cannot say with certainty which statement is true until it has come to pass. An exception to this is the continuous circular motion of heavenly bodies, which is necessary throughout time.³⁹⁰ Despite the fact that this distinction would seem to map onto what Aristotle says here – regarding both the difference in kind between past and future, and their identity for motions that are the same again and again - Aristotle does not make use of it in the *Physics*. Why not?

Consider a related distinction that Aristotle does make use of in the *Physics*: between necessity and chance (*tukhe*). Having discussed the four causes in *Phy.* II.3, he turns to *tukhe*

³⁸⁹ *Int.* 9 18b7-19b4.

³⁹⁰ “We must inquire whether there is something that will be of necessity, or not...for if it is true to say that something will be, it is necessary that there is sometime (*pote*) that it is true” (*GC* II.11337b2-6). Having argued that the before and after of circular motion follow one another necessarily, he concludes, “Therefore it is in circular motion and becoming that there is absolute necessity” (*GC* II.11 338b15).

(and *automaton*), wondering if these are additional causes (Phy II.4-6). What he says about chance is closely related to what he says about contingency. “No one thinks *tukhe* is responsible for what is by necessity, or always, or for the most part.”³⁹¹ Similarly, “contingency is when it holds or will hold no more thusly than not thusly.”³⁹² *Tukhe* is related to the final cause (*hou heneka*), but it is an incidental (*kata sumbebēkos*), indefinite (*aoriston*) cause related to choice (*prohairesis*)³⁹³ and *praxis*.³⁹⁴ Similarly, contingency is the condition of our capacity to deliberate (*bouleuesthai*).³⁹⁵ Both of these phenomena are manifest in relation to our conscious seeking of ends of our own making in practical activity, but from different vantage points. *Tukhe* is acknowledged in retrospect (when we acknowledge that our aims have either been realized or thwarted by coincident causes outside of our control), and contingency is a manifestation of our declarations about the future. As such, these concepts find their proper home not in physics, but rather in ethics. Both are concerned with things that are not necessary and fall into the class of things “capable of being otherwise,” which are the objects of practical reasoning (*techne*, *phronesis*, and deliberation).³⁹⁶

Thus when Aristotle mentions that past and future are different in *Phy.* IV.12, he does not go on to investigate the difference between them in terms of necessity and contingency or chance because the *Physics* is not primarily concerned with human action (*praxis*) as distinct

³⁹¹ *Phy.* II.5 196b12.

³⁹² *Int.* 9 18b9.

³⁹³ *Phy.* II.5 196b18ff.

³⁹⁴ *Phy.* II. 5 197b2.

³⁹⁵ “There would be no need to deliberate or take pains, if indeed we could make [the assumption] that from this, there will be this, or if there is not this, there will not be this” (*Int.* 9 18b32-33).

³⁹⁶ *EN* VI.1 1139a9-15.

from any of the other causes of motion, or the choice and deliberation that informs *praxis*. In the *Physics* Aristotle is not concerned with the past and the future as different kinds of objects for our reasoning about our actions, but is rather concerned to show that they are different at all. This is the purview of the now.

Whereas in chapter 12 a past and a future change were called “different”, in chapter 13 Aristotle stresses the continuity of their difference in terms of the now. That is, as “binding together” (*sundei*) the past and future, the now is always the same; as a limit (an end and a beginning) the now is always different.³⁹⁷ It is this function of binding together, or being the continuity of past and future, that is a new development in Aristotle’s treatment of time that he sees fit to address at this point in his argument. Earlier we saw one sense of how the now holds time together. In *Phy.* IV.11 the now seemed to serve the function of embracing time in a certain manner: when the soul says the nows are two, whenever we think of the nows as extremes that are different from the middle. In thinking the nows as extremes, the now before is a beginning and the now after is the end which together limit and embrace the time in the middle. This sense in which the soul says the nows are two has led us to the definition of time as number with respect to before and after. However, insofar as the nows are two in this way, it is *the time between* them that is said to be different from the nows. It does not offer an account of how *the time beyond* them also belongs to the nows. I think that Aristotle reintroduces the language of past and future here in order to give an account of the now’s relationship to the beyond. Nonetheless, the possibility for doing so has been prefigured in Aristotle’s description of time as “what is always taken as another and another”, as opposed to saying it is always taken as “one and the same again and again” (*ten auten kai mian palin kai*

³⁹⁷ *Phy.* IV.13 222a15-16.

palin).

In chapter 13 Aristotle does not speak of the nows as two extremes differentiated from the time between them. Still, he here offers an explanation of how the now is both the same and different. Speaking of the now as two extremes would offer a sense in which the nows are sequential. However Aristotle does not go on from this description of the nows as two to speak of time as a sequence of nows, having already been numbered in their relative order. Instead he resumes his discussion of the now by entering into a deeper examination of the function of the now which does not depend on it being manifest (through speech) as two extremes. In fact, in chapter 13 he never mentions the nows being “two” at all, though this might seem to be implied in the sense of it being “different” (*heteron*) or “other” (*allē*), in the sense that as a dividing limit it is both a beginning and an end. Rather than speak of the now as one or two (or more) Aristotle characterizes the now as uniting and dividing.³⁹⁸ What this means is that the now(s) are not to be considered as discrete entities, collected together into a “number” of nows. Rather, the now is here characterized in terms of its dynamic function, which is double: holding together and distinguishing time, being the same as itself, and different from itself, all at once. Here again we see that the sense in which the now limits is connected to the sense in which it numbers. Each now is always oriented to the time beyond (*exō*) whenever it limits a portion of time, because it is never an end without also being a beginning. But unlike the continuous circle, the now is not the end and beginning of the same thing again and again. “The now is an end and a beginning, but not of the same thing.”³⁹⁹

This consideration also gives us Aristotle’s final word of the relationship of the now to

³⁹⁸ *Phy.* IV.12 222a18-21.

³⁹⁹ *Phy.* IV.13 222b5-6.

the point of the line. The sense of the now as a dividing limit (a beginning and an end) is imperfectly analogous to the way that the “remaining point” (*tēs stigmēs menousēs*) divides the line potentially. The sense of the now as “holding together” is imperfectly analogous to the mathematical line itself, which is continuous and uninterrupted. Whereas earlier Aristotle suggested that the now was similar to the points of the line in the sense of being like the extremes of the line, here Aristotle suggests that now is similar to the “mathematical line” itself. Here he makes no mention of the analogy to motion because, as I suggested earlier, this concept of the “mathematical line” has already assimilated into itself the role of motion.⁴⁰⁰ If we consider the point as “tracing out” the length, then it is always the same point through the course of its tracing. But, as always, Aristotle is careful to note the difference that we must account for in making use of any analogy. “The point is not always the same in thinking; for as dividing it is other, but as one, it is the same for everything.”⁴⁰¹ If now is *different* like the point – in that it is not always the same “in thinking” it – is it *one* like the mathematical line – that is, as moving along the course of time? Is the now *one* like a continuously moving body? Or could it be that the now is one just as thinking is one when what it thinks differs?⁴⁰² Is it that *whoever* is thinking the distinction is him or herself the same even when they think the difference? “The dividing and the uniting are the same (*tauto*) and according to the same (*kata tauto*), but their being (*to einai*) is not the same.”⁴⁰³

⁴⁰⁰ “Certain mathematicians, he says, think that a line is what is traced out by a moving point (13.222a14–17). Aristotle himself does not share this view. But he uses it nevertheless as a model for the relation between time and the now” (Coope 2005: 143).

⁴⁰¹ *Phy.* IV.13 222a17-18.

⁴⁰² Cf *DA* I.3 “*Nous* is one and continuous, just as thinking is. And thinking is of thoughts. These are one in succession, as number, but not as magnitude” (407a6-8). I will return to this passage in chapter 5 of this thesis.

⁴⁰³ *Phy.* IV.12 222a20-21.

Recall what was said about the relationship between motion and the point in the passage from *Phy.* VIII.8 I quoted earlier.⁴⁰⁴ “For if someone (*tis*) divides what is continuous into two halves, they use (*chretai*) the one point as two, since they make (*poiei*) it a beginning and an end. And thus do both the one who counts and the one who divides into halves.”⁴⁰⁵ The now is not simply the point that divides, but it is “someone’s” activity of marking distinctions. As such, “they use” the one point as two. This operation of making a division in what is continuous and *using* it as two shows how the same limit can serve two functions for the discerning observer.

Without getting to far ahead of ourselves, we might briefly consider what Aristotle says about the power of discernment (*to krinon*) in the *De Anima*.

Like what some say about the point, insofar as it is both one and two, in this way it [the faculty of discerning] too is divided. So insofar as it is undivided, what distinguishes is one thing and distinguishes at one time, but insofar as it has in it to be divided, it uses the same mark as two simultaneously. So insofar as it uses a boundary as double and distinguishes two separate things it acts in a way dividedly, but insofar as it acts by means of one thing, it acts as one and at one time.⁴⁰⁶

Here we have a glimpse of what happens when we pull back from the reified now of the *Physics* and turn our attention to the consciousness that is capable of dividing and uniting: acting in one way dividedly and in another way as one. The soul acts as both one and two with respect to the same thing – which is itself one but is “used” as two – at the same time. Aristotle’s account of the now in the *Physics* thus anticipates such a power without going on

⁴⁰⁴ *Phy.* VIII.8 263a24-30, quoted on p. 88 of this thesis.

⁴⁰⁵ *Phy.* VIII.8 263a24-25.

⁴⁰⁶ “ἀλλ' ὥσπερ ἦν καλοῦσί τινες στιγμήν, ἡ μία καὶ δύο, ταύτη καὶ ἀδιαίρετος καὶ διαιρετή. ἡ μὲν οὖν ἀδιαίρετος, ἐν τῷ κρινόν ἐστι καὶ ἅμα, ἡ δὲ διαιρετὸν ὑπάρχει, δις τῷ αὐτῷ χρηταὶ σημείῳ ἅμα· ἡ μὲν οὖν δις χρηταὶ τῷ πέρατι, δύο κρίνει καὶ κεχωρισμένα, ἔστιν ὡς κεχωρισμένως· ἡ δὲ ἐνί, ἐν καὶ ἅμα” (*DA* III.2 427a10-15).

to investigate this power. This will be my task in the next chapter of this thesis.

In what remains of chapter 13, Aristotle will go on to speak of how we “use” the now in everyday language. We do not merely use the term “now” explicitly as meaning uniting and dividing time, even though this is what the now “does” – or perhaps what we do – whenever we say it. We shall see that the way that we use the word “now” and other terms of temporal significance are indeed compatible with this analysis of the now as having such a dynamic function, since the significance of all the temporal adverbs that Aristotle goes on to investigate is shown to presuppose the account of the now that he has just provided. In particular, they all call on the way the now binds together the difference between past and future that it limits.

He first indicates that we say “now” with respect to some motion or action that is near (*eggus*).⁴⁰⁷ “He will come now” or “he has come now” are both phrases that are said about a motion that is or will be completed in close proximity to the now, though it is clear from the tenses of the verbs that they properly pertain to the future and the past respectively. This does not contradict the meaning of the now as itself neither future nor past, but rather speaks to the fact that the now binds together the future and the past that it limits.

Aristotle then treats five other adverbs that we use to speak of the time when something has happened or will happen: “Already” (*ēdē*), “sometime” (*pote*), “just now” (*arti*), “long ago” (*palai*), and “suddenly” (*exaiphnēs*). Three of them (“already” (*ēdē*), “just now” (*arti*), and “suddenly” (*exaiphnēs*)) all express some close proximity of something’s happening to what he here calls the “present indivisible now (*tou parontos nun atomou*).”⁴⁰⁸ When Aristotle

⁴⁰⁷ *Phy.* IV.13 222a22-24.

⁴⁰⁸ *Phy.* IV.12 222b8.

qualifies the now as “present and indivisible” here he shows that he is not contradicting his philosophical account of the now as uniting and dividing. Rather, he is showing how the now’s function of uniting and dividing past and future time is manifest in how we speak about what happens in time: the now is our reference for ordering motions no matter how remote they are from the time of our speaking about them.

The term that seems to pose the greatest challenge is “sometime” (*pote*). It is the only one among them that Aristotle treats in more than just a few brief lines of description. He introduces the term by contrasting it with the use of the now for what is “near.” However, it is not because of being distant from the now that the term “sometime” poses a challenge. For, the term “long ago” (*palai*) refers to something that is far off in time but it is self-evident that it is temporally determined by its very distance from the now. Rather, the reason that the term “sometime” poses a challenge is because it is possible to speak of anything as happening “sometime.” This would seem to uproot it from the continuous time that holds everything together in relation to the now. Unlike in the cases of the other terms mentioned, the meaning of “sometime” does not directly refer to the unifying and dividing now.⁴⁰⁹ Aristotle must provide an argument for how talking of things as happening “sometime” is consistent with his analysis that everything that we speak about as happening in time is ordered in relation to the now. Aristotle’s explanation for this is that when we say “sometime” the “when” appears as indefinite, but it is “defined” (*horismenon*) in relation to the sense in which we speak of the now as *near*.⁴¹⁰ In order for what happens “sometime” to belong to the continuous order of

⁴⁰⁹ We might compare this to the function of the term *pote* in the phrase *ho pote on*.

⁴¹⁰ “The time that is sometime is defined (*horismenos*) in relation to the former sense of the now” (*Phy.* IV.13 222a25-26. The “former sense of the now” refers to the meaning of the now he has just articulated for when we are speaking of what is “near” to the now.

before and after, “it is necessary that it is displayed (*peperanthai*) in relation to the now.”⁴¹¹

However, it seems possible to overlook this when we speak of things as happening “sometime.” We might speak of anything as happening “sometime,” which would lead to everything happening in a discrete portion of time. “If there is no time which is not sometime, then all time would be limited. Will time then come to an end?”⁴¹² Aristotle asks.

Aristotle responds to this, somewhat predictably, by referring to the eternity of motion. But notice that he does not make a simple equivocation between the eternity of motion and that of time. He calls into question whether, based on the eternity of motion, time is “other, or the same many times.”⁴¹³ We have already seen it argued twice that continuous motion in a circle cannot account for the difference between past and future: for, in continuous circular motion, the parts of time are one and the same again and again. Here again he makes this connection, but notes that time is both the same again and again, and not, just as the “sometime” may either be the same many times, or other. Remarkably, he makes use of an analogy to the circle here not in order to explain how time is the same again and again, but to show how it is different:

Since the now is an end and a beginning of time, but not of the same time, but an end of the past and a beginning of the future, it would be like the circle, which is somehow in the same way both convex and concave; so also is time always at a beginning and an end.⁴¹⁴

Notice that time is here said to be endless not like a point or heavenly body that continuously

⁴¹¹ *Phy.* IV.13 222a26.

⁴¹² *Phy.* IV.13 222a29-30.

⁴¹³ *Phy.* IV.13 222a32-33.

⁴¹⁴ “ἐπεὶ δὲ τὸ νῦν τελευτῇ καὶ ἀρχῇ χρόνου, ἀλλ’ οὐ τοῦ αὐτοῦ, ἀλλὰ τοῦ μὲν παρήκοντος τελευτῇ, ἀρχῇ δὲ τοῦ μέλλοντος, ἔχου ἂν ὥσπερ ὁ κύκλος ἐν τῷ αὐτῷ πως τὸ κυρτὸν καὶ τὸ κοῖλον, οὕτως καὶ ὁ χρόνος ἀεὶ ἐν ἀρχῇ καὶ τελευτῇ” (*Phy.* IV.13 222b1-5).

traces the same path the course of its circular motion without coming to an end. This might come as a surprise given the way that Aristotle has previously made use of the analogy between the now and the point and the moving body. On the basis of these earlier analogies, we might expect an explanation of how the now is both a beginning and an end in analogy to the point of a circle that potentially divides the motion by being “used” as a beginning and an end: as such it represents a potential division rather than an actual stop or break of its continuous and never ending flow. Instead, he says here that the now is a beginning and an end in the way that the circle is both convex and concave. The circle has two aspects: it both encloses and excludes, it bears a relationship to what it contains and what lies beyond it. It is in this sense that time is endless, and not in the sense that motion in a circle is endless.

There are two things we can take away from this. The first is that this is consistent with how the infinite is “that of which there is always a beyond.”⁴¹⁵ Earlier I speculated that the now itself has this relation to the beyond in the manner of our thinking of what is beyond the outer limits of the heavens and everything it contains. We thus have further evidence for this interpretation here. The second is that this discussion of the expression “*pote*” may serve to illuminate what is meant in the expression *ho pote on* that appeared repeatedly in chapter 11. Note that here in chapter 13 Aristotle speaks of *pote* as describing something that happens in a discrete portion of time. As such, this makes sense of why “that which being at some time” (OPO) is motion was not thought to capture the being (*to einai*) of the before and after of motion and time.⁴¹⁶ For, if what something is “being at some time” does not entail its relation to what is beyond it in time, it calls for an account of its relation to what is beyond its

⁴¹⁵ *Phy.* III.6 207a1-2.

⁴¹⁶ *Phy.* IV.11 219a20-25.

“sometime” by means of something other than the motion: “the being (*to einai*) is other (*heteron*) than it and is not motion.”⁴¹⁷ In that passage from *Phy.* IV.11, the being of the before and after was accounted for by our determining the before and after of the motion. “But we do indeed become acquainted with (*gnōrizomen*) time whenever we determine (*horisōmen*) motion, determining the before and after, and we say then that time has happened, whenever we take hold of (*labōmen*) the perception (*aisthēsin*) of the before and after in motion.”⁴¹⁸ Later on in chapter 11, the now was said to be the *same* as “that which being sometime (OPO) is the now.”⁴¹⁹ In analogy to the moving body and the point, the now was said to be the *same* in terms of what it is being sometime (OPO), but also different in being (*to einai*).⁴²⁰ Here in chapter 13, the “sometime” of a motion was said to be either the same, or other many times, because there are both motions that repeat identically again and again, and motions that are different in succession. The sameness and difference of motions is provided by the fact that there are different kinds of motion in time. However since the now must bound and contain both kinds of motions, it must itself account for both the sameness of past and future in the case of recurring cycles of becoming, and the possibility for the future to contain changes that are other than the ones that have occurred in the past. What this shows is that the meaning of “*pote*” in these analyses indicates something “given” as occurring in time, but fails to articulate its relation to all of the “sometimes” that precede or succeed it. The relation of what happens “sometime” to the time beyond it – whether this be the same or other than it – is grasped by the now, which is capable of being both a limit which

⁴¹⁷ *Phy.* IV.11 219a22-23.

⁴¹⁸ *Phy.* IV.11 219a20-25.

⁴¹⁹ *Phy.* IV.11 219b15-16,19,28.

⁴²⁰ *Phy.* IV.11 219b15-16,19,28.

is an end and a beginning (different in being) and holding together the sameness or difference of motions in an endless continuity.

What this ultimately demonstrates is that the limitations of using the analogy between time and motion to explain the function of the now are overcome when we consider the now as belonging to our ability to think of a beyond; time is “that of which, to those taking it by quantities (*kata poson lambanousin*) there is always something beyond (*exō*) to take (*labein*).”⁴²¹ In the analysis of the now in the *Physics* Aristotle makes use of the moving body and the point which each proved to offer only imperfect analogies to the sameness and difference of the now. The moving body was only the same and different insofar as we make known the difference of before and after in time by motion, and we make known the sameness of time by the sameness of the moving thing. We see this confirmed in *Phy.* IV.12 when Aristotle says that the moving thing is not in time simply, but only its motion is. Secondly, I have suggested that the analogy between the now and the point requires that we see how the point is “used” as two by the discerning activity of soul. The activity of discerning exhibits the function of simultaneous uniting and dividing which is lacking in the remaining magnitude considered independently. For, the point only “potentially” divides the line and serves as both the beginning and the end of it by being “used” as such by the consciousness that is determining it. The “mathematical line” is only held together by the “moving point”, which is not an accurate description of any sensible line, but rather corresponds to our experience of grasping our perception of the line as transitioning from here to there.

Phy.IV.14: the possibility of time without soul

⁴²¹ *Phy.* III.6 207a7-8.

I have thus far indicated many points in Aristotle's text that call upon the involvement of soul in order for time to be what Aristotle says it is. We began the previous chapter by seeing that the connection of time to motion called upon various modes of our awareness (perceiving, determining, saying): when we are not aware of any motion, no time seems to happen. The power of sensation accounts for why time is not without motion, and the determining power of the now calls upon the soul's power of discernment. Thus even Aristotle's "physical" account of time – which explains how time pertains to motion – is grounded in the connection between time and motion for our awareness: time is not without motion insofar as time is not apparent (to us) without motion also being apparent (to us). Based on Aristotle's treatment of time in *Phy.* IV.10-11, I have argued that time is not only not-without-motion, but is also not without the soul that perceives and determines, or "takes hold of," motion.

Our awareness of time is integral to the account of the now which is the heart of Aristotle's articulation of time. I have argued that Aristotle's account of now in the *Physics* can be seen to be consistent with Heidegger's claim that the now is characterized by its retention of the past and its anticipation of the future only as long as the now is understood to belong to an act of soul. The now itself does not retain the past and anticipate the future, but the soul that says "now" does this. Saying "now" distinguishes time's before and after even though the now never itself remains *now*. In Aristotle's text we have seen that the now can either be two – one before and one after – or the same now can belong to something before and after. Whether we consider the now as thusly different or the same there must be a before and after that it both unites and divides. We have also seen that the analogies to magnitude and motion that Aristotle makes use of for describing the before and after of time in the *Physics* fail to fully account for the activity of the now as uniting and dividing time, and, on the basis of this, fails to account for the numbering of motions with respect to the before and after. I have

offered suggestions for how certain activities of soul (discerning and thinking) may illuminate these functions precisely where the analogies to magnitude and motion fall short.

In the last of the chapters that are primarily devoted to time in the *Physics* Aristotle will explicitly ask the question that we have been seeking to answer from the beginning: is there time without there being soul? This question is embedded in a chapter that does not focus solely on the soul, but is preceded and succeeded with more reflections on time and motion: first Aristotle investigates how the speed of various particular motions are compared and determined by the now, and later he offers an argument for how circular locomotion is the primary measure for discerning time and making it known. I will now attempt to offer an explanation for how these arguments are inter-related.

In chapter 14, the question of how diverse motions are all in time comes to the fore. This has not been a significant issue since chapter 10. Aristotle's original reason for saying that time is not motion in chapter 10 made reference to the multiplicity of motions: that time is the same everywhere for everything, and that all changes are faster and slower but time has no speed. Since then, Aristotle has treated the relation of time to motion as though their relationship could be determined by the soul's reflection on a single continuous motion.⁴²² Aristotle has explored the relationship between the before or after of time and motion, and

⁴²² Sachs (1995) suggests that a motion only "has" time by being compared with another motion: "Time belongs not to bodies but to motions, and only insofar as the motions are brought into relation by measurement...A single motion, in isolation, lacking number, has no time. A revery is such a disconnected motion, and we do not know if it is long or short until we leave it and look at the clock" (Ibid, 133). If this is correct, then it is quite odd that Aristotle does not speak of the multiplicity of motion in *Phy.* IV 11-13. Furthermore, I think there is reason to doubt that what Sachs calls a "reverie" is indeed "a disconnected motion." Rather, a reverie – if this means being pleasantly lost in thought – corresponds with the sorts of human activity that Aristotle calls *energeia* (for instance, when Aristotle claims that *theoria* is *energeia* rather than a motion in *Met.* IX.6, and in distinguishing pleasure from motion (*EN* X.4 1174a30-1174b5), and saying it is accomplished by *energeia* (Ibid, 1175a21-22). Perhaps what Sachs is speaking of here as a reverie could apply to the temporality of imagination (*phantasia*) in Aristotle's account.

how time is the number of motion with respect to before and after, within making reference to the comparison of motions thus far. His account of the before and after of time in *Phy.* IV.11 has not made reference to the way that one motion may be before or after some other motion or that several motions are happening at the same time. Rather, he called upon the simultaneity of perception and motion and the determining power which characterizes the now as sufficient to elucidate the before and after of time. Here in chapter 14, too, he retains this notion that the before and after is primarily a function of “distance from the now” (*hē tou nun apostasis*), and is not merely given in the interrelation of multiple motions. Further evidence of this is that “the before is spoken of in opposite ways with regard to the past and the future,”⁴²³ showing that before and after are truly oriented to the now and not given in any particular motion or in the relationship between motions.

So if motions are before and after not in relation to one another primarily, but rather in terms of their distance from the now, then the function of the now as determining temporal distances from itself cannot be a motion. Therefore the appeal to soul that comes next cannot be an appeal to another kind of motion that mediates, reconciles, and compares motions occurring in time. Something other than motion is required to account for how motions are compared and related temporally. Thus, when Aristotle claims that, “we must examine also how time ever pertains to soul” this imperative does not come out of left field. The need to ask such a question arises out of his full examination of time in the *Physics* that we have seen: that the relationship of time to motion calls on some activity beyond that of motion itself. While this might seem paradoxical, it is this very activity beyond motion that must explain how motions are all in time. Let us examine Aristotle’s statements surrounding this point.

⁴²³ *Phy.* IV.14 223a8-10.

It is also necessary to examine how time pertains to soul, and because of what time seems to be in everything, the earth, the sea, and the sky. Is it that [time] is some affect (*pathos*) or disposition (*hexis*) of motion, for it is number, and these things [the earth, sea and sky] are all moveable (for they are all in place), and time and motion are simultaneous (*hama*) both according to capacity (*dunamis*) and to activity (*energeia*)?⁴²⁴

At first glance the claims in these sentences may seem to be merely strung together, and their relationship is not immediately clear. Is the answer to the question of how time pertains to soul supposed to also *explain* how time seems to be in everything – or are these two separate questions? Because of what (*dia ti*) does time seem to be in everything: the earth and sea and sky? If it cannot be explained through motion merely, can it be through some affect (*pathos*) or disposition (*hexis*) of motion? Is this how time is the number of motion? Finally, we shall have to figure out how all these claims might indicate that time and motion are simultaneous (*hama*) according to *dunamis* and *energeia*.

If we look at *Phy.* IV.14 as a whole, we can see that these two questions – 1) how time pertains to soul, and 2) because of what time seems to be in everything – lay the ground for the ultimate aporia regarding the existence of time, which cannot be reconciled within the confines of *Physics*. Aristotle’s full articulation of this aporia runs its course through this

⁴²⁴ “ἄξιον δ' ἐπισκέψεως καὶ πῶς ποτε ἔχει ὁ χρόνος πρὸς τὴν ψυχὴν, καὶ διὰ τί ἐν παντὶ δοκεῖ εἶναι ὁ χρόνος, καὶ ἐν γῇ καὶ ἐν θαλάττῃ καὶ ἐν οὐρανῷ. ἢ ὅτι κινήσεώς τι πάθος ἢ ἕξις, ἀριθμὸς γε ὢν, ταῦτα δὲ κινήτὰ πάντα (ἐν τόπῳ γὰρ πάντα), ὁ δὲ χρόνος καὶ ἡ κίνησις ἅμα κατὰ τε δύνάμιν καὶ κατ' ἐνέργειαν;” (*Phy.* IV.14 223a16-22). Ross (1936) takes the second question to be answered immediately in this passage: “It is worth asking (1) how time is related to soul, (2) why time is present everywhere. The answer to (2) is that time is an attribute (*ti pathos he hexis*) of movement, and that earth, sun, and heavens are alike subject to movement (being in place), and that time and movement are coextensive both in potentiality and in actuality” (Ross 1936: 391). On this last phrase Ross comments, “the things that are actually in movement are identical with those that are actually in time, and those that are potentially in movement with those that are potentially in time.” But Simplicius (1882) points out that, since time is the measure of rest as well as of movement (221b8), things at rest are actually in time. He may be right in suggesting that the reference is to “things that are capable of coming into being but have not yet done so” (Ibid, 610-611). Overall, I think it is problematic to assert that the statement that “time is an attribute (*ti pathos he hexis*) of movement” provides a sufficient answer to question 2. For reasons we have seen, the relation of time to motion cannot be explained by way of a motion’s orientation to place.

chapter, but is not ultimately resolved here. Indeed, Aristotle closes the book with the statement, “about time, then, both itself and that which is germane (*oikeiōn*) to our inquiry, has been said.”⁴²⁵ This concluding remark indicates that Aristotle is aware that the account of time that finds its home in the *Physics* in some sense attains to an articulation of time itself, but that this has nonetheless been an articulation of time that has as its focus an explanation of natural motion. In my reading, this final chapter of book IV shows why the account of time cannot fully resolve the relationship between the two questions stated above – how time pertains to soul and how time seems to be in everything – if we treat all being equally as characterized by being moveable. In the next chapter of this thesis I will go on to examine the relationship between the ability to move and be moved, perception, and the ability to number, as these belong to soul. In what remains of this chapter, the extremes (motion and *nous*) are juxtaposed: it is unclear how what numbers (*nous*) relates to what is numbered (motion) and how simultaneity (*hama*) exists with respect to locally disparate motions.

Returning now to the text, Aristotle has asked how time pertains to soul, but did not yet ask if time could be without the soul. It might be possible that time pertains to soul just as it does to all the various instantiations of *dunamis* and *energeia*, insofar as capacity and activity are manifest in all the things that are moveable by virtue of being in place. But when he asks “whether or not is it possible for there to be time without soul,”⁴²⁶ he indicates that the two questions he stated above may not have the same answer. If there is no time without soul, does this mean that time merely *seems* to be in everything, the earth, the seas, and the sky, but *is* not, in the absence of a soul able to count their motion? The earlier suggestion, that time is

⁴²⁵ *Phy.* IV.14 224a17-18.

⁴²⁶ *Phy.* IV.14 223a22-23.

number as “some affect (*pathos*) or disposition (*hexis*) of motion” strikes me as quite odd: it is very hard to see how an affect or disposition *of motion* could accomplish the numbering of motion. Accordingly, Aristotle now raises the question of whether the counting and countable-ness of time can be without the soul.

If nothing else is of such a nature as to count but the soul and the intelligence of soul (*hē psukhē kai psukhēs nous*), then it is impossible that there is time if there is not soul, unless as that which being at some time (OPO) is time, if for instance it is possible for there to be motion without soul. But the before and after are in motion, and insofar as they are countable, these are time.⁴²⁷

This is the *aporia* that we addressed at the opening of this thesis. I have argued that we ought to resist the temptation to approach Aristotle’s account of time as falling prey to the dichotomy between objectivity and subjectivity: to assume from the fact that Aristotle asks this question about soul that his account of time accords with the modern framework where there are, on the one hand, motions, and on the other hand, souls, and ask if time depends on one or the other. Having made the long journey through Aristotle’s analysis of time in the *Physics* we have discovered that it is our perception and determination of motion, and the way that this determining power is articulated in saying now, that frames his account of time. This shows that there is not, on the one hand, a pure intellectual act and, on the other hand, a moving act which must somehow be combined into an account of soul. For what we take hold of when determining the temporal sense of the before and after is *the perception of motion*, and not bare motion itself. If the numbering of time is the unique privilege of the thinking soul, it is not without the perceptive act of taking hold of motion as another and

⁴²⁷ “εἰ δὲ μηδὲν ἄλλο πέφυκεν ἀριθμεῖν ἢ ψυχὴ καὶ ψυχῆς νοῦς, ἀδύνατον εἶναι χρόνον ψυχῆς μὴ οὐσης, ἀλλ’ ἢ τοῦτο ὃ ποτε ὄν ἔστιν ὁ χρόνος, οἷον εἰ ἐνδέχεται κίνησιν εἶναι ἄνευ ψυχῆς. τὸ δὲ πρότερον καὶ ὕστερον ἐν κινήσει ἐστίν· χρόνος δὲ ταῦτ’ ἐστὶν ἢ ἀριθμητὰ ἐστίν” (*Phy.* IV.14 223a25-29).

another. If, perhaps, the question of how time pertains to soul calls upon some affect or disposition (*pathos* or *hexis*) of the perceptive part of the soul, but the numbering of time to infinity depends on the intellective part of the soul, then the idea that time is not without motion will not be in opposition to the idea that time is not without soul.

The sense of the before and after that time and motion share called upon our taking hold of the perception of the before and after of motion. Recall that in this analysis the before and after was that which being at some time (OPO) was motion, but the before and after had its being in something else and not motion. To suggest that there might be time without soul in the sense that “that which being at some time (OPO) is time” follows the same logic. He grants that perhaps something might be motion “sometime” without the soul to take hold of its perception of it. But, as we know from his explanation of the expression *pote* in *Phy.* IV.13, this would mean that what was before and after its “sometime” would always be beyond it. If all time were sometime, time would come to an end. Time is not an endless succession of “sometimes” strung together accidentally but is rather continuously exceeding everything that is being at some time. The activity specific to the intellective soul involves this ability to both grasp that which is being “sometime” and to grasp what exceeds it, to take hold of both what is within and what is beyond any “sometime”, as another and another.

Aristotle began this chapter by showing how different motions are compared and measured (in terms of their speed). He then addressed the question of how time seems to be in everything in the context of asking how time pertains to soul. Perhaps we can take this as meaning that the soul is receptive to all motions.⁴²⁸ We then saw that nothing other than “soul

⁴²⁸ Admittedly, this is not what Aristotle says here, for he suggests that time is number as “some affect (*pathos*) or disposition (*hexis*) of motion” (*Phy.* IV.12 223a19). But, as I will go on to show, this language closely echoes what he says about how the soul remembers in *DM*: memory is said to be a *hexis* or *pathos* of some sensation or undertaking (*hupolepsis*) whenever time has happened (*DM* I 449b24-26).

and the nous of soul” is of such as nature as to be able to number. I think that Aristotle chose his words carefully when he made this statement. He does not simply say that nothing other than *nous* can number, but rather he attributes the ability to number to “soul and the *nous* of soul” (*hē psukhē kai psukhēs nous*). Why this repetition? Why not simply say “nothing other than soul” or “nothing other than *nous*” can number? Are *nous* and *soul* synonymous? Indeed, we know from Aristotle’s discussion of soul in the *DA* that soul is not exclusively intelligence (*nous*), for there exist nutritive and sensitive souls that do not fully attain to the power of *noesis*, whereas in the human, having a soul involves nutritive and sensitive faculties, that attain their perfection in *nous*. Did Aristotle here, then, first mention soul generally, and then specify that what he *really* means by soul here is *nous*? Or is he doing more that just clarify and specify the sense in which he is speaking of soul here? I think that what Aristotle is doing here is showing that activities other than the purely noetic are also involved in the numbering of time. The activity of *nous*, isolated from the perceptive faculties on which the perception and determination of motion depend, might not be able to explain how the soul relates to motion, such that it can number time and not simply apply an abstract number to it. Time is number not as that by which we number, but as numbered. Had he simply claimed that nothing other than *nous* can number, we would have to take very seriously the possibility that “that which being “sometime” is time, for instance motion,” might exist independently from this intellectual act of numbering. However, I think there is good reason to doubt that Aristotle is presenting this as a real alternative, if we take his account of time in *Phy.* IV.10-14 as a whole. Firstly, as we have seen, the connection between time and motion was forged by the fact that “we perceive time and motion together” and “we apprehend time only when we have determined motion, determining the before and after: and then we say that there is time, whenever we have grasped the perception of the

before and after of motion.”⁴²⁹ Thus, the activities of perceiving, and determining (which I have argued belongs to *to krinon*), which are not themselves pure *nous*, would seem to be indispensable to our ability to number time (even if these do not fully accomplish the numbering of time as something always beyond the perception of a present motion without *nous*). Secondly, in chapter 13 Aristotle offered a compelling reason to doubt that “that which being at some time (OPO) is time, if for instance it is possible for there to be motion without soul” could adequately account for time as the number of motion with respect to before and after. There we saw that every “sometime” is in time not by virtue of itself but by virtue of its distance from the now. Furthermore, the *now* is time insofar as it “numbers.”⁴³⁰ Thus, there is no “sometime” without the act of numbering beyond every given sometime, and this act of numbering is here suggested “to belong to nothing other than the soul *and* the *nous* of soul.”⁴³¹

Thus, I am suggesting that, the resolution to the apparent dichotomy between time being “impossible without there being soul, unless as this OPO which is time, if indeed there can be motion without soul” requires that we bring to it an understanding of how moving and being moved belong to soul and pertain to the soul’s capacities for perception and determination, and to the higher cognitive activity of *nous*, which numbers beyond every determinate amount that is taken. The concession to the possibility that time might exist without soul “as that which being at sometime (OPO) is time”, is not a real alternative. For,

⁴²⁹ “ἀλλὰ μὴν καὶ τὸν χρόνον γε γνωρίζομεν ὅταν ὀρίσωμεν τὴν κίνησιν, τῷ πρότερον καὶ ὕστερον ὀρίζοντες· καὶ τότε φαμέν γεγονέναι χρόνον, ὅταν τοῦ προτέρου καὶ ὕστερου ἐν τῇ κινήσει αἰσθησιν λάβωμεν” (*Phy.* IV.11 219a22-25)

⁴³⁰ *Phy.* IV.11 220a22.

⁴³¹ *Phy.* IV.14 223a26.

the idea that time could be composed of a random assortment of motions occurring “at sometime” is inadequate to the full and rich conception of time that Aristotle offers us in the *Physics*. I take it that in the *Physics* Aristotle has provided sufficient proof that “that that which being at some time (OPO) is time, for instance motion” refers to a very weak account of time, one inadequate to the rich conception of time he has presented here. In order to prove the strength of the other possibility, however, we will have to move beyond *Physics*.

Within the confines of the *Physics* Aristotle is able to make some conclusions about time’s relationship to motion. We have seen that chapter 14 began with the conclusion that all motions and all changes are in time. Next, he addressed the involvement of the soul. As I have argued, the question of the involvement of soul becomes problematic because the soul’s involvement in numbering time is not itself a motion, nor it is clear that *nous* can relate directly to motion without depending upon the soul’s perceptive (and discriminating) faculties.

As such it is fitting that Aristotle next goes on to ask, “is there some particular sort of motion of which time is the number?”⁴³² Aristotle has already concluded that, “it is clear that all motion and all change are in time.”⁴³³ However while it may be clear that all motion and all change are *in time*, this does not necessarily mean that time is the *number* of all motion and all change. Perhaps it is only the number of “a certain sort” (*tis poias*); perhaps it is the number of “any kind whatsoever” (*hopoiasoun*).⁴³⁴

The question “of what sort of motion time is time the number?” has arisen here because of the dependence of time on the soul: insofar as “nothing other than soul and the

⁴³² *Phy.* IV.14 223a30-31

⁴³³ *Phy.* IV.14 223a14-16.

⁴³⁴ *Phy.* IV.14 223a31.

nous of soul is of such as nature as to number.”⁴³⁵ It is a different thing to ask “is every change and motion *in time*?” and to ask, “is time the *number* of all motion and change?”

What Aristotle is doing for the remainder of chapter 14 is offering an explanation for how time is “a number” of all motion, which he has claimed is precisely the way in which there is not time without soul and the *nous* of soul.

However, Aristotle does not take on an examination of soul or *nous* directly. Instead, he goes on to show how numbering is possible by virtue of simultaneity (*hama*). Simultaneity is something that Aristotle has presupposed since the beginning, both in showing that time is not motion,⁴³⁶ and as what is expressed by the now.⁴³⁷ But given that the diversity of motion has only come to the fore in *Phy.* IV.14, can simultaneity be understood through the interrelationship of motions alone?⁴³⁸ Simultaneity is precisely the characteristic of time that distinguishes time from motion. “It is possible for something else also to be moved now, and of each of the two motions there would be a number. Is there then another time, and would there be simultaneously (*hama*) two equal times, or not? For a time that is equal and simultaneous (*hama*) is one and the same time.”⁴³⁹

This treatment of simultaneity is more of an assertion than a robust argument. Perhaps simultaneity did not have the controversial status for Aristotle’s interlocutors that it does for

⁴³⁵ *Phy.* IV.14 223a25-26.

⁴³⁶ *Phy.* IV.10 218b10-14.

⁴³⁷ *Phy.* IV.10 218a26ff.

⁴³⁸ Einstein’s theory of relativity shows that it cannot. But rather than seek out an explanation of simultaneity as beyond motion, Einstein concludes that it does not exist.

⁴³⁹ *Phy.* IV.14 223b2-4.

us today.⁴⁴⁰ However, the ground upon which Aristotle is able to make this assertion about the simultaneity of diverse motions is provided by the way in which he has overcome the original aporia about there being no change in the indivisible now. The time that is one, equal, and simultaneous is the same for “motions that occur within the same limits (*tōn kineseōn tōn hama perainomenōn*).”⁴⁴¹ The unit of time is a delimited part of motion marked off by two nows, and all motions occurring within are in one, equal, simultaneous time, even when they are many, different (in speed and kind), and apart from one another. Furthermore, since simultaneity can apply to any of the diverse kinds of motion, it cannot be attributed to another kind of motion which somehow brings all these motions into a relationship. Nor can the word I am translating as “simultaneous” – *hama* – refer here to coincidence of place.⁴⁴²

For “motions are different (*heteron*) and separate (*chōris*), but time is everywhere the

⁴⁴⁰ I have already mentioned the way that Einstein brings out the problematic nature of our assumption of simultaneity. This also seems difficult for Coope (2005) in her interpretation of this passage. Her (admittedly “speculative”) interpretation of *hama* states that the idea that there can be a number of things one and together depends on the idea that “collections of things can be arranged in such a way that we are able to count several different collections in one and the same act of counting...just as we could use the same seven pebbles to count both horses and men on them, so also we can use the same now to count any changes that are simultaneous” (Ibid, 123). But the problem I see with this interpretation is that the units of time are not *a collection* of nows: the number of nows does not correspond to the number of simultaneous changes as do pebbles used to represent the number by which we count. There is no numerical correspondence between the number of simultaneous motions counted by the now, and the number of time. In Coope’s example, when the pebbles, the men, and the horses are counted in the same act, their simultaneity is accidental: we could count them at the same time or at different times, for, remaining what they are in time, the time of our counting them is accidental. By contrast, the simultaneity of diverse motions in time is not accidental to their being in the number of time. It is not merely that we “can” use the same now to count any changes that are simultaneous – rather, this is the only way that we count changes as simultaneous.

⁴⁴¹ *Phy.* IV.14 223b6-7.

⁴⁴² Aristotle says in *Phy.* V.3 that “things are said to be *hama* with respect to place (*kata topon*)” and this is contrasted with their being separate (*chōris*) (226b22-24). However, it is evident that he is not reducing the sense of *hama* operative here to that of place (the time is *hama* everywhere for motions that are in diverse places (*chōris*)).

same.”⁴⁴³

Building on this, Aristotle goes on to explain how disparate motions can be temporally identical by resuming his claim about how time measures motion and motion measures time from *Phy.* IV.12. He says that, for anything that is counted, each is counted by some one cognate (*heni tini suggenei*).⁴⁴⁴ Time is numbered by “some determined time” (*chronō tini horismenō*),⁴⁴⁵ and the quantity of both time and motion is measured by a motion determined in time (*hupo tēs hōrismenēs kinēseōs chronō*).⁴⁴⁶ Based on this, Aristotle suggests that “if the first measure is the cognate of all, circular locomotion is the measure most of all (*malista*), for its number is most knowable.”⁴⁴⁷

It is worth pausing here to consider whether this claim poses a challenge to the interpretation I have been offering. If circular motion is the measure most of all, does it supplant the role of soul in counting motion? The problem with this possibility is that it leaves unexplained how circular locomotion is determined (*horismenos*) by time. In itself, circular locomotion is continuous (*suneches*), even (*homales*), and exceeds the time of any finite change. Being continuous, it can be divided into even parts, which can be taken again and again as a consistent measure of time. But it is not time, for in itself it is not determined into parts. Rather, it is *determined by time*, and only as such is it “the first measure.”⁴⁴⁸ And

⁴⁴³ *Phy.* IV.14 223b11-12.

⁴⁴⁴ *Phy.* IV.14 223b13.

⁴⁴⁵ *Phy.* IV.14 223b14.

⁴⁴⁶ *Phy.* IV.14 223b17-18.

⁴⁴⁷ *Phy.* IV.14 223b19-20.

⁴⁴⁸ We might consider Pierre Aubenque’s (2013) reflections on this point. Recognizing that movement requires (or “presupposes”) divisibility, he wonders whether this means that movement likewise “founds” divisibility, at least in the sense that it “reveals” divisibility.⁴⁴⁸ On the one hand, “C’est le mouvement circulaire des corps

if we understand Aristotle's argument to be conservative of what he has established earlier, we can see that this determination (*horismenon*) is the function of no motion, but rather of the now, which is said by the soul, and establishes a unit of time when the soul says the nows are two. It is thus important not to conflate the significance of "measure" (*metron*) and "number" (*arithmon*) if we are going to understand the meaning of this passage. Time is said to be "measured" (*metreitai*) by motion, but time is numbered (*arithmeitai*) by a certain determined time (*chronō tini horismenō*).⁴⁴⁹ Numbering is the distinctive purview of the soul and, if this is consistent with what he said about the now in *Phy.* IV.11, there must be some way to show that the activity of the *nous* of soul depends upon the soul's ability to discern (*krinetai*) determinate limits in what it has perceived as continuous.⁴⁵⁰ Circular motion "measures" time in the same way that a ruler "measures" a length: once it has been limited it provides a standard, and as such its number is the "most knowable" (*gnōrimotatos*), but circular motion does not accomplish the activity of numbering time.⁴⁵¹

Having indicated the sense in which circular motion is the first and most knowable measure of time – but nonetheless is not time – Aristotle now offers a more sympathetic interpretation of why some say that time is the sphere itself. Initially he disparaged this claim,

célestes qui divise l'espace céleste en régions du Ciel." On the other hand, "Ce qui est premier ici, ce n'est pas la divisibilité de l'espace, mais bien le mouvement lui-même comme division. Le mouvement ne décrit pas un espace qui serait déjà là, car ce serait supposer que l'espace existe déjà avec l'infinité de ses parties, mais le mouvement est ce par quoi il y a un espace en général et par quoi cet espace *se révèle rétrospectivement à nous* comme *pouvant être divisé*" (Ibid, 428, italics mine). He makes motion primary, but his interpretation also seems to show that the ability to divide space belongs to us – to our retrospective division of space once we have perceived motion. I would thus challenge the "primacy" of movement on the basis that his own interpretation seems to show that divided space belongs to our (recollective) ability.

⁴⁴⁹ *Phy.* IV.14 223b14.

⁴⁵⁰ *Phy.* IV.14 223b27.

⁴⁵¹ Cf Julia Annas (1975: 98) who claims that Aristotle equates number and measure.

saying that it is “too simple-minded a statement to need examination of the impossibilities that follow from it.”⁴⁵² But now, having clarified that time is not the sphere, but that circular locomotion is indeed the most knowable measure, he is able to give this claim some (limited) credence. The reason why we are accustomed to speak of human affairs and all other motions of natural generation and destruction as “circular,” is because “all these things are discerned (*krinetai*) by time, and come upon an end and a beginning just as if according to some going around (*tina periodon*). For indeed time itself seems to be some circle.”⁴⁵³ Time *seems* to be a circle, because cyclical motions are easiest to count, and because so many recurring motions of human events and natural generation and destruction can be understood as cyclical. But in no way does this avowal of the things we are “accustomed to say” about time mean that Aristotle has abandoned his earlier claim that the motion of the sphere is not time. The reason why it might appear as though the circular motion is primary, is because, of all motions, it is relatively easy to count (if we also relate it to rectilinear motions along the diameter).⁴⁵⁴ But what is truly primary in the numbering of time is not a motion disassociated from what numbers it. If what is truly primary is in fact an ensouled activity, the reason we do not see this activity as exemplary of the measuring of finite motion is that the activity does not appear

⁴⁵² *Phy.* IV.10 218b7-8.

⁴⁵³ *Phy.* IV.14 223b27-29. Given our anticipation of Aristotle’s exploration of the faculty of discernment (to *krinon*) in the *DA* III.2 (that we have touched upon above) we have reason to expect that even the circular character of these kinds of finite motions is manifest through an activity of the soul.

⁴⁵⁴ Indeed, as Aristotle argues in *Cael.* I.4, if when we determine a circular motion as moving from point A to point B along the circular path, we are in fact measuring it by means of rectilinear motion (along the diameter which distinguishes A from B). If we consider circular motion purely according to itself – without making reference to linear motion – we would have no means to divide the beginning from the end at all: it would simply be simultaneously present, always complete, in itself.

as something extant and accessible by perception.⁴⁵⁵ As Aristotle says in concluding this paragraph: “Apart from the measure, nothing else reveals itself alongside the thing measured, but the whole is a number of measures.”⁴⁵⁶ Though an act of soul is not manifest to the senses as something existing apart from what it is engaged with, as a motion external to the soul is, it is nonetheless what is always at work in the numbering of time.

The final paragraph of the *Phy.* IV.14⁴⁵⁷ has often perplexed interpreters of this text.⁴⁵⁸ This is not without reason, for this passage – which one might hope to offer some sort of conclusion, given its place at the end of *Phy.* IV.14 – makes no mention of time, the now, or motion, at all. For Aristotle here offers what might appear to be a naive assimilation of the numbering of time to the numbering of determinate things: animals and triangles. What he says here is that ten livestock and ten horses are all the same number, being equal numerically, but they are not the “same of ten nor are they the same ten.” He compares this to the way in which different kinds of triangles (such as equilateral and scalene) can be counted together – as “three” of the same kind of *figure* – despite the different relationships between the lengths of the sides in each kind. What these examples convey is that things can be called the “same”, and numbered accordingly, “if they do not differ by the differentia, but not if they do.”⁴⁵⁹ What I take Aristotle to be doing here draws on what he has said about definition in

⁴⁵⁵ Recall Heidegger’s claim that in saying now “we are not addressing ourselves to anything extant,” but are “addressing ourselves to the being that we ourselves are.”

⁴⁵⁶ *Phy.* IV.14 223b34-224a2.

⁴⁵⁷ *Phy.* IV.14 224a2-16

⁴⁵⁸ For instance, Hussey (1983) suggests that Aristotle is here wavering between the view that time is an abstract number (i.e. equating the separable number of horses and triangles with the number of time) and the view that it is a number of change (Ibid, xli–xlii and 161). Wicksteed and Cornford (1957) claim that this passage is “worthless.”

⁴⁵⁹ *Phy.* IV.14 224a7-8.

Met. VII.12: on how we define the primary being of each by dividing the genus.⁴⁶⁰ This dividing process, like all dividing processes, is potentially infinite. But it comes to a stop when we hit upon something's *ousia*: "We always tend to go on until we have to the indivisible (*adiaphora*),"⁴⁶¹ and "if this holds, it is clear that the ultimate differentia (*hē teleutaia diaphora*) is the *ousia* and definition (*horismos*) of it."⁴⁶² In the case of livestock and horses, and of various triangles, we count them when we have determined the ultimate differentia of the being we are seeking: we stop dividing when we have grasped the beingness of what we have in view, and from this we are able to collect the individuals into a group, and number them.

But how is this relevant to his discussion of time? I think that Aristotle is here showing that there is a potential indeterminacy involved in our counting of anything. If we were to count the ten livestock and ten dogs according to the differentia "four-footed," their number would be twenty.⁴⁶³ This is similar to the difference between saying there are three

⁴⁶⁰ Coope (2005) hits upon this idea, in a way that is different from how I am interpreting it. She claims that "his view is that number is like a genus": that number can be divided into two, three...ten, and that ten can be divided into ten dogs and ten sheep, just as "figure" can be divided into triangle, square, and circle, and the triangle can be divided into scalene and equilateral. Thus, according to her reading, "Aristotle is here treating the number ten as a genus" (ibid, 120). Despite her expressed intentions, I see this interpretation as falling into the problem that it portrays Aristotle as treating number as abstract: for there is nothing more abstract than the idea of a number that can apply to any and every kind of being. For the differentia, in the case of Coope's interpretation, has no intrinsic relationship to the genus (it just so happens to apply to dogs, triangles, or time). To call the ten dogs a "kind of ten" works against the nature of numbering as it works for Aristotle (where the kinds that enable numbering are not themselves kinds of number, but kinds of *ousiai*).

⁴⁶¹ Met. VII.12 1038a16.

⁴⁶² Met. VII.12 1038a19-20.

⁴⁶³ An interesting aspect of the examples Aristotle has chosen here is lost if we translate *prosbatos* as "sheep." I have translated it as "livestock", as it can refer to any four-footed livestock: sheep, cattle, or any four-footed animals kept for slaughter. The fact that this name can apply to various species of animals emphasizes the role of the differentia for determining how we specify the beings that we are counting. We could divide the genus "animal" with four-footed, but this applies to both dogs and livestock (though the former are not used for slaughter, whereas the latter are).

triangles, or saying that there are, say, one scalene and two equilateral triangles. Perhaps we could also divide the ten dogs, and say there are six Border Collies and four German Shepherds. In each case we are numbering, but according to different differentiae. Thus far in this thesis, I have made a sharp contrast between our grasp of time and our grasp of natural *ousiai*, such as horses or dogs. I have suggested that such beings offer themselves to us as distinct, remaining what they are while we count them, unlike the parts of time. But Aristotle is here, I think, showing that any act of counting involves “numbering”: a process of dividing a genus until we reach something indivisible has to happen, even though any process of division is potentially limitless. The various animals may be able “to be what they were” (*to ti ēn einai*) without our counting them, but in counting them as belonging to a group we have divided a species from a genus. This process of division might go on forever (if the unity of their beingness escapes our notice) to the point where we are counting their body parts or the parts of their magnitudes, which can be determined as infinitely small. But they “are called the same if they do not differ by the differentia” that has been grasped as ultimate.

We can see this as parallel to how we determine motion and thereby count time, up to a point. Take, for instance, our “primary measure”: circular locomotion. When it is determined, it is the most knowable cognate for the number of time. But, as it is moving, how is it defined? As *to ti ēn einai*? *To ti ēn einai* defines the sense in which a being is indivisible from itself throughout “a certain time” (as I have argued in relation to my analysis of *Phy.IV.12*). But circular motion only has a temporal “definition” by being externally limited to “a certain time” (since it is itself infinite): it might be defined as a summer, or a fall, or as a year, but it is never temporally defined as being what it was infinitely. Furthermore, circular locomotion, as the measure of time, can always be divided further: the parts of a revolution

are just as much parts of time as a whole revolution.⁴⁶⁴ We do not reach a point in our dividing where we are counting something else (as we do when we divide the dogs into the parts of their bodies, or when we divide the triangles such that we are measuring the lengths of their sides). It would seem that there is no “ultimate differentia” when we divide a circular motion.

Or is there? Recall again that our account of the connection of motion to time in the *Physics* began by establishing the connection between the perception of motion and the perception of time. It is not motion itself that we determine when we divide time into parts (before and after, past and future, or the seasons), but rather our perception of motion. Could there be something endemic to the act of perceiving motion that is indivisible – which cannot be divided further? This is a possibility that I will investigate in the next chapter of this thesis, when we turn to look at Aristotle’s remarks on the divisibility of sensation in *DS* 6-7.

What have we attained in the focused discussion of time in *Phy.*IV 10-14? I have offered a conservative reading of these chapters: conservative in the sense that I have attempted to show that as the argument progresses nothing is lost or is merely stated in contradiction in such a way that cannot be explained as belonging to the unfolding of the argument. The argument progresses by presenting aporiae and then does its best to find a way through them. In *Phy.* IV.14 Aristotle has presented a possible opposition between the numbering of time by “soul and the nous of soul” and motion, which, as this OPO which is time might exist without soul. This possible opposition creates the imperative to ask about the meaning of togetherness or coincidence (*hama*) of motions as it belongs to time (simultaneity). I have at the end suggested that the way to understand this will require that we

⁴⁶⁴ *Phy.* IV.10 218b2-3.

reconcile the perception of motion, and the determination of a perception of motion, with the act of numbering time beyond any present perception. We will have to see how the *nous* of soul that numbers, though itself separable from the body, takes up into its activity the act of perceiving motions everywhere, which is inseparable from the body. I see the possibility of turning to soul for our way forward, based on Aristotle's reformulation of the question of how time pertains to motion in *Phy.* IV.11⁴⁶⁵ when he asks how time pertains to soul in *Phy.* IV.14.⁴⁶⁶ We have already seen how motion alone fails to provide an adequate account of how motions are determined such that they can serve as a measure of time. It will be the task of the next chapter of this thesis to see if, and how, Aristotle's account of the soul's perception and determination of motion can fulfill some of the functions necessary to account for time, that motion alone has failed to provide.

⁴⁶⁵ “τί τῆς κινήσεώς ἐστίν” (*Phy.* IV.11 219a3).

⁴⁶⁶ “πῶς ποτε ἔχει ὁ χρόνος πρὸς τὴν ψυχὴν” (*Phy.* IV.14 223a16).

CHAPTER 4: Time and the Soul Part 1: Sensation

The thesis that I have been pursuing maintains that Aristotle's account of time in the *Physics* points beyond the scope assigned to *phusis*, which is focused primarily on motion and on the sort of being that has in itself the principle of its motion and rest. Thus far I have carefully considered each step of the argument in *Phy.* IV.10-14 – the most focused treatment of time available to us in Aristotle's corpus – and shown that it runs up against the limitations of physics: that is, of an account of time that simply pertains to motion. Aristotle began this account by claiming that even though time seems to belong to motion most of all, it is not itself a motion. If time is not a motion – and thus time cannot relate to motion *as being itself a kind of motion* – how, then, are we to account for the relationship between time and motion? I have drawn our attention to the areas of this text when Aristotle refers to the soul – both when he explicitly refers to soul by name (*psukhē*), or by referring to the ways in which we perceive and determine motion, discern or make known the distinction of the before and after – and suggested that by understanding time to be a power of soul we might find a way through the aporiae that have come to light in the “physical” account of time. I have argued that the treatment of time in the *Physics* unfolds between two main aporiae: the first is that none of the parts of time seem to exist, insofar as these are the past and the future divided by the now. The power of the now to distinguish past from future, and thereby establish a part of time by being two, was seen only to be tenable insofar as the now is not exactly like the point of the line, or the moving thing's motion. Aristotle shows that these analogies are insufficient to account for the now, and I have argued that his description of the now as articulated by the soul opens the possibility of understanding the function of the now as some power of soul. By focusing on the appeals to the soul and to the activities of our awareness mentioned in the

Physics, I have argued that we might attain an understanding of the “active” function of now in numbering time that is lost if we simply reify the now and try to understand it as something existing apart from soul. The “dual nature of the now” (its sameness and difference, its ability to unite and divide) can only be a paradox unless we consider these characteristics in light of the fact that Aristotle describes them as expressions of the ensouled, who are capable of perceiving motion, of simultaneously uniting and dividing a before and after that are different, of saying the nows are two (and that time is between them), and of thereby numbering time beyond any determinate part of time that is taken.

The aporia in which the argument of *Phy.* IV.10-14 culminates is the question about whether time depends primarily on soul or on motion. This I took to be a question that emerges genuinely from the argument leading up to it, since the soul has been present in the argument since the beginning, even if it is not Aristotle’s primary focus in the *Physics*. If the soul has such an important function in articulating time, as I am arguing it does, we must understand why it is sidelined in the account of time in the *Physics*: why it is relegated to a sort of shadowy and ghostlike – crucial, yet un-accounted for – role in this treatise. An explanation for this requires understanding the relationship of physics to psychology for Aristotle.

I have suggested that there is a cohesive relationship between physics and psychology, despite the fact that Aristotle treats them in different works.⁴⁶⁷ In order for a question that emerges in the *Physics* to point beyond physics to psychology for its fulfillment, physics and psychology must not be altogether discrete disciplines. This is because, in the *Physics*, the

⁴⁶⁷ See chapter 1 of this thesis, p. 7-8.

meaning of soul is absorbed into that of nature.⁴⁶⁸ *Phusis* is inclusive of both inanimate and animate being: animals and their parts, plants, and the elemental bodies.⁴⁶⁹ But in the *Physics*, what distinguishes living beings (animals and plants) from the animal's organs and the elemental bodies is not addressed.⁴⁷⁰ In the *De Anima*, Aristotle distinguishes out the principle of life from the whole of nature. As Aristotle states in *DA* II.1: "Bodies seem to be beingnesses (*ousiai*) most of all (*malista*), and, of these, the natural ones, for these are the principal sources of bodies. And, of natural bodies, some have life and some do not."⁴⁷¹ He claims that the soul is that which distinguishes a body that has life from one that does not, and goes on to make the soul his primary focus in the *DA*.

Thus in the *Physics*, the principle of life (soul) is simply absorbed into that of nature, whereas in the *DA*, Aristotle makes a distinction between the living and the non-living, such that what it means to be alive comes into view. In his *Physics* Aristotle treats all natural being according to its capacity to move and rest, whereas his psychology treats of natural beings

⁴⁶⁸ I am drawing here on Sachs (2001), who uses this phrasing when speaking of the relationship between Aristotle's psychology and *Physics*: "The word for soul hardly appears in the *Physics*, and plays no important role there, but that is because its meaning is absorbed into that of nature" (ibid, 2). Obviously I do not fully agree with the claim that the soul "plays no important role" in the account of time, but Sachs overall explanation for how Aristotle's understanding of the soul relates to his understanding of nature in his introduction (as the soul's recollection of itself through its encounter with the world outside of it) is otherwise consistent with how I am understanding the relationship between these texts.

⁴⁶⁹ *Phy.* II.1 192b9-11.

⁴⁷⁰ Note that Aristotle does not include the parts of plants as a distinct kind of natural being, since he considers the parts of plants to be ensouled (because it is possible to fulfill their living function (nutrition and growth) when they are separated). By contrast, a hand or eye separate from the body is no longer a hand or eye, for in this condition it is deprived of its vital activity (*DA* I.5, II.2).

⁴⁷¹ *DA* II.1 412a11-13. Though my translation of *ousia* as "beingness" may be jarring, I find it preferable to "substance," which though common, runs the risk of being misleading. Substance is etymologically closest in meaning to *hupokeimenon*, which is merely one meaning of *ousia*, and not the paramount meaning of it.

that not only have the ability to move and rest, but also powers of awareness.⁴⁷² The aporia we encountered near the end of the discussion of time in the *Physics* asked whether time depends on soul, or, perhaps, only on motion. But we see here that the living is characterized not only by powers that distinguish it from the rest of nature, but also by a power that they share in common. It is worth noting that there is some continuity between the powers that characterizes natural beings (having the principle of motion and rest) and the powers that characterize living beings. By keeping in mind that physics and psychology are intrinsically related, and are not merely discrete and unrelated disciplines, we will have a better chance of understanding the relationship between what Aristotle says about time in the *Physics* to what he says about time in the *DA* and *PN*.

While there are differences between the way that motion belongs to nature in general and how it belongs specifically to living beings,⁴⁷³ there is one point in particular that Aristotle makes in *DA* I that we ought to have before us as we begin to look at the psychology of time. This is the way that Aristotle argues emphatically against the views of his predecessors who claimed that the soul moves the body by itself moving.⁴⁷⁴ The soul might

⁴⁷² “The ensouled is reputed to differ from unsouled in two ways in particular: in movement and in sensation; and we have nearly accepted these two things about the soul from those who have come before us” (*DA* I.2 403b25-28). In *DA* III.3 Aristotle claims that there are two characteristics of soul: 1) motion in place and 2) thinking, discerning, and perceiving (427a18). As Russon (1996) points out, “‘Sensation’ is given very broad scope by Aristotle in Book I” (Ibid, 781 fn 11). On *aisthēsis* as awareness in general see Kahn (1966: 22-25) and Benardete (1975: 611-622).

⁴⁷³ As the argument of the *De Anima* progresses Aristotle will show that the way that motion belongs to living beings is distinct from the way it belongs to inanimate nature, at the beginning of the *De Anima* this is expressed in terms of *kinesis* taken simply. It would be interesting to explore further whether the difference between the kind of motion that characterizes living beings – self-motion – and how motion pertains to natural being – which possess the principle (arche) of motion – can itself give us any insight into the question of whether or not there can be time without soul. Unfortunately, this question is beyond the scope of this thesis, but I thank Eli Diamond for bringing it to my attention in his review of my thesis.

⁴⁷⁴ *DA* I.2-5.

be said to move only incidentally (like a passenger in a ship) and not according to itself.⁴⁷⁵

This indicates that if we come to the conclusion that there could not be time without soul, we have excluded the possibility that what exceeds, embraces, and numbers time is itself a motion. The soul may be what causes local motion in a living body, but the soul does not itself move. This furthermore suggests that the powers of awareness that uniquely characterize the soul cannot be reduced to motions.

For instance, while, in *DA* I.3, Aristotle suggests that, “one would say that the soul is moved by things it perceives most of all, if it moves.”⁴⁷⁶ However, he later (in *DA* I.4) goes on to refine this idea, claiming instead,

For, it is better, perhaps, not to say that the soul pities, or learns, or thinks discursively (*dianoieisthai*) [insofar as he has just shown that these are or involve motions], but to say rather that the human does these with his soul, and this not in the sense that the motion is in the soul, but that it sometimes goes up to the soul, and sometimes comes from it; for example, perception comes from the things here, but recollection (*anamnesis*) goes from the soul to the motions or stopping places (*monas*) in the sense organs.⁴⁷⁷

Here we have mention of the two capacities of soul that will frame this chapter of my thesis: sensation and recollection. These are said not to be motions of the soul *per se*, but rather to involve motions that come to or go from the soul. In this chapter I will argue that these capacities of soul are crucial for discovering how motion and activity are reconciled in the

⁴⁷⁵ *DA* I.3 406a4-13.

⁴⁷⁶ *DA* I.3 406b11-12.

⁴⁷⁷ “βέλτιον γὰρ ἴσως μὴ λέγειν τὴν ψυχὴν ἐλεεῖν ἢ μαρθάνειν ἢ διανοεῖσθαι, ἀλλὰ τὸν ἄνθρωπον τῇ ψυχῇ· τοῦτο δὲ μὴ ὡς ἐν ἐκείνῃ τῆς κινήσεως οὔσης, ἀλλ’ ὅτε μὲν μέχρι ἐκείνης, ὅτε δ’ ἀπ’ ἐκείνης, οἷον ἢ μὲν αἰσθησις ἀπὸ τωνδὶ, ἢ δ’ ἀνάμνησις ἀπ’ ἐκείνης ἐπὶ τὰς ἐν τοῖς αἰσθητηρίοις κινήσεις ἢ μονάς” (*DA* I.4 408b14-18).

soul such as to provide a ground for the reconciliation of “soul and the *nous* of soul” (which numbers), and motion (which is numbered), in Aristotle’s account of time in the *Physics*.

To begin, we should consider how Aristotle characterizes the relationship between the multiple powers or “parts” of soul that are commonly considered to be manifestations of life. In *DA* II.1-3 Aristotle addresses the relationship between the multiple powers that are traditionally thought to characterize the ensouled. Here, Aristotle is concerned to show how these powers are related to one another, such that there might be a definition of the soul that attains a full articulation of each of them. In the account he provides in these chapters there is an ambivalence present in what it means for a power to exist “separately.” On the one hand, there is nutrition, and the sensation of touch, both of which appear as being able to exist “separately” from the powers exceeding them (nutrition as separate from sensation and thought, touch as separate from the other senses, though not from nutrition). These can be “separate” in the sense that there exist plants and simple animals that are fully alive in their own right when they fulfill these powers alone. On the other hand, Aristotle here suggests that *nous*, alone among the powers of the ensouled, might admit of being separable, as the eternal is separable from perishing.⁴⁷⁸ Thus, the former powers (nutrition and touch), which are least separable in this latter sense, are separable from powers that belong to other living beings, whereas *nous* is said to be separable even though it (or at least the dianoetic power

⁴⁷⁸ *DA* II.2 413b27. Though here the sense of “separable” is stated in temporal terms (the eternal is separable from the perishing), the sense in which *nous* is separable is in some passages stated in terms of it not being “mixed” with body (*DA* I.3 407b2-3, III.4 429a24-25). While this might seem to indicate Aristotle holds that *nous* is separate from the body (as was held by some of Aristotle’s predecessors, and, as Bretano (1867:115-128) for example, argues is Aristotle’s own position), Russon argues that *nous* is separable from “unreconciled otherness”: “mind is not ‘bodily’ in the sense of having a particular organ through which it works...but it is ‘embodied’ in the sense that it depends on a bodily situation in that precisely what *nous* does is make the whole body of its world an act of self-cognition” (Russon 1996: 796).

derivative from it) belongs to beings for whom living involves all the powers of soul, including nutrition and touch.⁴⁷⁹

In order to understand this, Aristotle will speak of the powers of soul as being related to one another as a succession of capacities (*en tō ephexēs dunamei*).⁴⁸⁰ In *DA* II.3 Aristotle explains this by means of an analogy to the relationship between geometrical figures.⁴⁸¹ He suggests that we may understand the relationship between three- and four-sided figures as a succession (*ephexēs*) of different figures, but that we may also understand this as a relationship within a single kind of figure: wherein the former is present as a capacity of the latter. Within the quadrilateral, the triangle is present potentially, in that the four-sided figure involves three sides, but also a fourth. As involving a fourth side, the quadrilateral is not simply a triangle plus another side, but is rather a figure with its own identity, in which the three-sided is merely within its full articulation, as a capacity (*dunamis*). Similarly, for a more complex living being, who has more than just the simplest power of soul (nutrition), the simpler power becomes a capacity for the next power (perception). What this means is that, though there are triangles and plants, which do not need another side or any other powers in order to be what they are, the quadrilateral and the animal need the three sides and nutrition (respectively) but these alone fail to attain to what they are. Something else is required. Without nutrition, the animal or human will die, and so is not capable of perceiving, or thinking. But if the animal or human only attains nutrition, it is, in a sense, only potentially alive: it is reduced what we call today a “vegetative state.” As such, sensation or “awareness”

⁴⁷⁹ *DA* I.3 415a10.

⁴⁸⁰ *DA* II.3 414b30.

⁴⁸¹ *DA* II.3 414b28-415a13.

is not simply a power added on for some living beings, but, for them, it unifies and completes the capacity enabled by nutrition.

As we move forward with our investigation of the activities of soul involved in articulating time, we shall see how this schema of the relationship between the powers of soul pertains to the relationship between sensation, memory, and recollection. Each of these powers exist “separately” in that there are some animals that attain only to sensation, others that also attain to memory, and finally, there are humans capable of all three. The ways in which time is grasped in each case shows a development from capacity to activity: from an awareness of the present, to an ability to number all time, which requires an awareness that extends beyond the time *in which* one is aware. The powers that are manifest among diverse living beings in succession from one being to another are all found working together in our – human – awareness, and a logical examination of these powers shows how they unfold continuously in our own awareness and articulation of time. We shall first see that sensation is a kind of awareness that is immediately identified with an awareness of time. However, even if sensation is crucial for our ability to grasp time in some way, sensation alone is inadequate to account for the full articulation of time that Aristotle has presented to us in the *Physics*: to number motion as before and after or “take time as another and another”.

A “sense” of time?

In both the *DA* and *DM*, Aristotle will speak of there being some animals who have “perception of time (*aisthēsin chronou*).”⁴⁸² The possibility that time is something we (and some other animals) perceive seems, on the one hand, to be consistent with what we saw

⁴⁸² Appetites and desires may come into conflict for those living things that “have a sense of time (*en tois chronou aisthēsin echousin*)” (*DA* III.10 433b8); “If memory were a part of the intellect, it would not belong to many other animals, perhaps not even to the mortal ones, since, even as it is, it does not belong to them all, because they do not all have sensation of time (*chronou aisthēsin echein*)” (*DM* I 450a16-19).

about the connection between perceiving motion and perceiving time in the *Physics*.⁴⁸³ But, on the other hand, perception alone would be inadequate to account for time as the number of motion (which, in the *Physics*, was said also to involve *nous*). In order to discover the extent to which one can have “perception of time” we shall now go on to investigate how temporality as it has been articulated in the *Physics* pertains to Aristotle’s account of sensation.

In our conclusions to the last chapter we briefly dealt with Aristotle’s claims about the simultaneity and divisibility of motion. Emerging from the questions about how time pertains to soul,⁴⁸⁴ and whether or not there could be time without soul⁴⁸⁵ Aristotle asked if there is some sort of motion of which time is the number,⁴⁸⁶ and then made two claims about how time numbers motions various in kind and separate in place: 1) that each motion does not have its own number of time, but that different motions are in one and the same time simultaneously (*hama*),⁴⁸⁷ and 2) that circular motion is our first measure by virtue of having been limited into equal parts.⁴⁸⁸ The first claim, about simultaneity, is not there presented as requiring a lengthy proof, but is merely laid down as such. This might be unsurprising, given

⁴⁸³ *Phy.* IV.11 219a4.

⁴⁸⁴ *Phy.* IV.14 223a17.

⁴⁸⁵ *Phy.* IV.14 223a22. The fact that these reflections, which concern to the problem of how time pertains to motion, emerge from the questions about how time pertains to soul and whether or not there can be time without soul (and the impossibility of numbering without soul), indicate that not even the relationship between time and motion can be explained until we differentiated the soul from the rest of nature. Since this distinction is not made in the *Physics*, the questions about soul remain unanswered, and the claims about simultaneity and the first measure appear as ungrounded assertions.

⁴⁸⁶ *Phi* IV.14 223a30.

⁴⁸⁷ *Phy* IV.14 223b4.

⁴⁸⁸ *Phy* IV.14 223b13-20.

that Aristotle presupposed simultaneity at the beginning of *Phy.* IV.10, as being necessary in order to enter into a discussion about the relationship of time to motion.⁴⁸⁹ But if simultaneity (along with the related claim that time, unlike motion, has no speed⁴⁹⁰) is indeed precisely what distinguishes time from motion, it is worth considering whether simultaneity is something that should and can be proved, or at least explained further. When we turn to the account of sensation in *DA* and *DS*, we will be looking to see if what Aristotle says about the simultaneity of perception can ground the assertion about the simultaneity of motions that Aristotle makes in the *Physics*. Next, the claim about the divisibility of circular locomotion into equal parts that can serve as a measure for all motions likewise appeared to be necessary in order to account for the numbering of diverse simultaneous motions. But again, the activity of dividing or limiting such a motion, and numbering a diversity of motions according to this measure, was not explored at length in *Phy.* IV.14. Even though, as we saw, the divisibility of a continuous motion is given some basis in Aristotle's account of the now from *Phy.* IV.11, Aristotle did not in the *Physics* go on to show how the ability of the now to determine or divide the before and after can apply to various instances of motion (and rest) so as to ground the claim that they are simultaneous. Nor was the problem of how the potentially infinite divisibility of circular locomotion yields a determinate measure addressed at this point, even though the salience of this problem seemed to be hinted at when Aristotle

⁴⁸⁹ *Phy.* IV.10 218b10-14.

⁴⁹⁰ *Phy.* IV.10 218b14-17. Simultaneity is not only a requirement for the possibility that several motions can be in the same time, but is also required in order for motions to have different speeds. If no motions ever occurred simultaneously there would be no differentiation between their speeds. Furthermore if time itself had a speed it could not be that in which motions occur without affecting the speeds of the motions. We might try to circumvent this necessity by treating time as itself a motion with speed (as in the theory of relativity), in relation to which the speeds of other motions are determined. But this destroys simultaneity – every motion will have its own time and its own measure – and we are left trying to collect motions within some (supposedly) absolute, and yet unstable velocity.

spoke of the numbering of animals and triangles. I suggested that these examples serve to draw our attention to the need to establish a common, “ultimate,” differentia in order to number anything. However, it is particularly difficult to see how there can be an ultimate differentia with respect to the divisibility of circular locomotion. I then asked if there is something endemic to the act of perceiving this motion that is temporally indivisible, such that it might ground Aristotle’s assertion about simultaneity. This question shall serve as our passageway into Aristotle’s reflections on the simultaneity and divisibility of the act of perceiving, which Aristotle discusses in *DA* III.1-2, and *DS* 6-7.

Relationship of DA to PN

Before turning to these texts, I should first say a few words about the relationship between the *DA* and *DS*, and why I think that these texts can be considered together to address the above question. Aristotle’s treatise *On Sensation and the Sensible (DS)* is the first part of what editors have called the *Parva Naturalia (PN)* – the small treatises on nature – which also includes his treatise *On Memory and Recollection (DM)* that we will be looking at subsequently. In all of the seven treatises that have been organized into this collection Aristotle endeavours to account for how the body is involved in our living activities: he gives more latitude to talk of the elemental nature of matter there than in the *DA*, and takes greater pains to show how the material and moving causes operate with respect to the animate powers that he takes as his focus in each treatise. Accordingly, the focus on the embodiment of the activities of animals means that the way that sensitivity is empowered by nutrition is examined in greater detail there than in the *DA*, where nutrition and sensation are treated as

separate “parts” of soul, treated in separate chapters.⁴⁹¹ Accordingly, what Aristotle has said about time – that it is not motion but is not without motion – can equally said about the powers of soul treated in the *PN*. We might even go so far as to say that the seven subjects treated in the *PN* are all pre-eminently temporal: they pertain directly for what it means to live in time.⁴⁹² I thus find it fitting that we look at the first two treatises from the *PN* (*DS* and *DM*), along with his treatment of the parts of soul that accomplish these functions (the so-called “common sense”⁴⁹³ and imagination) as they are articulated in the *DA*, in order to continue our exploration of how time is “something of motion” – that it is “not without motion”, though it is not itself motion – and to discover if the difference and relation between time and motion can be understood according to these powers of the soul.

The relationship of *DA* to *PN* is unlike the relationship between physics and psychology (wherein the latter transcends the former by making the fundamental distinction between life and the rest of nature). Rather, *PN* functions as a sort of appendix to *DA*.⁴⁹⁴

⁴⁹¹ Aristotle begins the *DS* by considering the first principles of health and disease, and so considers how sensation is something that either protects and preserves life, or destroys and extinguishes it (*DS* 1 436a17-b7). As such his account of the proper senses in *DS* 1-5 concerns these not only as the fulfillment of our well being but also how smelling, tasting and touching contribute to our ability to nourish our bodies.

⁴⁹² The topics of the *PN* are 1) sensation, 2) memory, 3) sleep, 4) dreams, 5) divination in sleep, 6) length and shortness of life, and 7) youth and old age, life and death, respiration: all of which concern the lives of animals and the certain time (*tina chronos*) of their living embodiment.

⁴⁹³ Given Block’s (1988) critique of the supposition that Aristotle provides an account of the “common sense” per se in the *DA*, I have put it in quotation marks.

⁴⁹⁴ The relationship between *PN* and *DA* has become a matter of dispute among scholars, particularly those who are concerned with Aristotle’s account of the common sensibles in both treatises. Kahn (1966) argues that Aristotle’s view of the common sense is more complete in the *PN* than in the *DA*: that the relationship of it to memory, dreams etc. provides a more natural opportunity to explore it at length than is provided in the context of the *DA* (*Ibid*, 62-63), whereas Block (1988) argues, against Kahn (1966), that Aristotle’s account of the common sense in the *PN* demonstrates a development of his thinking, and differs significantly, from the account of the common sense provided in *DA*. Block suggests that authors who find these texts compatible are guilty of reading the account of the *PN* into the *DA*. However, if this is possible, and if the *PN* does provide solutions to difficulties raised in the *DA* but never resolved there, it seems to me sound to read them together, if our aim is to

Having provided an account of soul holistically in *DA*, which attains to the most pure expression of soul as separable from the body (*nous*) in *DA* III.5, in the *PN* Aristotle is concerned with (quite literally) “fleshing out” certain capacities of the souls of animals: capacities that are common (*koina*) to the soul and to the body.⁴⁹⁵ However, Aristotle makes it clear that he intends for the account of the *PN* to be compatible with that of the *DA*, when he states at the beginning of *DS*: “Let what has been said about the soul be taken as granted (*hupokeisthō*).”⁴⁹⁶ Furthermore, though Aristotle sets out to focus on certain powers of animals the *PN*, the way he does so integrates the powers of the elements, the function of nutrition in relation to sensation (as preserving health), and the parts of the body involved in sensation. So we can see that the account of soul there shows the relationship of these living powers to all the kinds of being that he lists as existing “by nature” in the *Physics*: animals and their parts, plants (nutrition), and the elemental bodies.⁴⁹⁷ As such, we can consider the *PN* as both confirming and integrating the projects undertaken in the *De Anima* and the *Physics*. The *DS* in particular provides a suitable starting point for addressing the simultaneity and divisibility of motion that arose in the *Physics*. For, Aristotle is more concerned there than in the *DA* to show how the act of perception involves bodies, and thus, as we shall see, for reconciling the motions involved in perception to these activities of the

know and not only to be faithful to the word of the text. Furthermore, with regards to the account of the *DS* in particular, I find that the relationship between *PN* and *DA* is the opposite of what Kahn suggests: the problem of the simultaneity and divisibility of perception which is explored at length in *DS* 6-7 is not ultimately resolved there, but rather the resolution is found in *DA* III. I will thus be reading these texts as capable of informing one another and do my best to offer a reading cognisant of the differences between what is said in each text.

⁴⁹⁵ *DS* I 436a9.

⁴⁹⁶ *DS* I 436a6.

⁴⁹⁷ *Phy.* II.1 192b9-11.

soul. Nonetheless, we shall see how the problem of the simultaneity and divisibility of perception is not fully resolved in the *DS*: for this we must turn to *DA* III.

Context of arguments about simultaneity and divisibility in DA and DS

My purpose in turning to Aristotle's psychology is not to offer a complete or systematic commentary of his account of soul. Rather, I am focusing on certain arguments that pertain directly to the questions about the relationship of time to soul that we have uncovered in the *Physics*. Nonetheless, we will need some understanding of the context of these arguments in order to understand their meaning properly: we will need to have in mind how these arguments function relative to Aristotle's own purposes in order to accurately see how they might serve our own purpose of understanding the relationship of time to soul. The arguments about divisibility and simultaneity in *DS* 6-7 and *DA* III.1-2 that we will examine arise in a context where Aristotle has already dealt quite extensively with the perception of what he calls "proper" (*idion*) to each sense (colour, sound, taste, smell, and feel) and, to a lesser extent, those he calls "common" (*koinon*) to them all (magnitude, motion and rest, unity and number, shape, and size).⁴⁹⁸ The objects of each of the proper senses are the qualities that "one would say that the soul is moved by things it perceives most of all, if it moves,"⁴⁹⁹ and to which the sense organs can be understood as being mostly in a relation of passive receptivity

⁴⁹⁸ Note that Aristotle lists the common sensibles differently at different points. In *DA* II.6 the list includes motion, rest, number, shape, and magnitude (418a19), in *DA* III.1 the list includes motion, rest, shape, magnitude, number, and unity (425a17), and in *DS* 1 the list includes shape, magnitude, movement and number (437a9). I have provided the a list comprehensive of them, for it does not seem to me that these differences are significant, since, as Aristotle explains in *DA* III.1, some of these (number, rest) are apprehended by negation (*apophasei*) (425a20), and they all have in common that they are perceived by motion (425a18). Relevant to our purposes, motion and number appear in all three lists: these are the components of the "definition" of time in *Phy.* IV.11.

⁴⁹⁹ *DA* I.3 406b11-12.

to their objects.⁵⁰⁰ Aristotle's method in the *DA* is to begin from the side of the object,⁵⁰¹ to show that there is activity (*energeia*) on the side of the perceptible, in relation to which the sense faculty is in potency (*dunamis*)⁵⁰²: receptive to the qualities transmitted by motions in the media between perceiver and perceived, such that the animal receives the qualities as sensible forms without receiving the matter of the underlying object into its body.⁵⁰³ In the *DS* Aristotle's arguments proceed in a similar fashion, but with greater emphasis on how the characteristics of the elemental bodies are involved in the act sensation, distinguishing his view from the natural philosophies of his predecessors.⁵⁰⁴

Having treated the proper sensibles individually in *DA* II.6-12 and *DS* 1-5, Aristotle then presents a series of problems that arise if sensation is considered according to the passive receptivity of these senses alone, operating individually. In both texts Aristotle proceeds in a similar manner. In *DA* II.12, Aristotle concludes his account of the proper sensibles with a puzzle. If sensation is some manner of passivity (*to paschein ti*), does this mean that

⁵⁰⁰ The sense in which perception as a whole involves being moved (*kineisthai*), and thus involves some kind of passivity (*paschein*) and alteration (*alloiousthai*) of the sentient is addressed in *DA* II.5. There Aristotle shows that even though these are not precise terms when applied to the act of sensation, we still make use of them in the articulation of how the sentient being passes from a state of being potentially sentient to being actively sentient (418a1-6). These terms (passivity, alteration) must be included (albeit in a qualified way) in an account of sensation in order to account for how the sentient being takes hold of the sensibility of each particular (*ta aistheta tōn kath' hekasta*), which are external (*exōthen*) to the being that is sensing them (417b22-28). At this point in the argument, Aristotle has not yet distinguished the different sensible objects into three kinds (proper, common, and incidental). Once this distinction has been made it becomes evident that the perception of the proper sensibles (colours, sounds, etc, belonging to each of the five senses) involve motion and activity from something external to the perceiver (*DA* II.6 19; II.7 420a22). The common sensibles, which are perceived by all the five senses acting together, include motion, but are not apprehended passively.

⁵⁰¹ "One must speak first, for each of the senses (*aisthēsin*), of the perceptibles (*aisthēton*)" (*DA* II.6 418a7).

⁵⁰² *DA* II.5 417a7; *DA* II.11 424a1-3.

⁵⁰³ *DA* II.12 424a18-19.

⁵⁰⁴ A greater concern for the body is of course consistent with the aim of the treatise: to provide an account of those characteristics of animals "common to body and soul" (*DS* I 436a9).

inanimate bodies are altered and affected by sensible qualities in the same way as these are received by the perceptive organs of the animal? Is the air itself smelling or hearing? Aristotle concludes *DA* II by suggesting this alternative: “Or is smelling perceiving (*aisthanesthai*), while the air being affected merely becomes perceptible?”⁵⁰⁵ In *DA* III Aristotle then moves on to consider the “active center of sensation”:⁵⁰⁶ the common operation of all the senses working together that precedes and conditions the receptivity of the various sense organs. Similarly, in *DS* 5 Aristotle shows that his account of sensation according to the proper senses considered individually is complete when he concludes the chapter by saying, “let this be the determination, then, with respect to each sense organ.”⁵⁰⁷ However, instead of beginning from the conclusion achieved in *DA* III.1-2, in *DS* 6 Aristotle begins from a different, deeper aporiae: he begins from the assumption that perceptibility originates in the prior existence of external bodies themselves, and the problems that arise if perceptibility is thought to be caused by magnitude or motion alone. These – magnitude and motion – Aristotle considers to be “common sensibles”: qualities that are grasped by all the senses working together. We will see that his attempt to explain our grasp of them as separate from our grasp of the proper sensibles fails, nor can they be grasped by the senses working individually. In working through the problems posed by magnitude and motion for the account of sensation that only considers the proper senses individually, Aristotle begins to reveal the active center of sensation that precedes and conditions the independent operation of

⁵⁰⁵ *DA* II.12 424b17-18.

⁵⁰⁶ I borrow this phrasing from Diamond 2015, who speaks of this transition as disclosing the “active moment of awareness” (Ibid 142), and “the principle of general awareness” (Ibid 143).

⁵⁰⁷ *DS* 5 445b33.

the individual senses, just as he does in *DA* III.1-2. In *DS* 7 this is revealed primarily as the temporal unity of the act of perceiving.

DS 6-7: simultaneous perception and the perceptibility of time

Simultaneous perception is encountered in *DS* 7 as a problem that is part of Aristotle's broader consideration of the limitations of our ability to perceive, which begins in *DS* 6. Aristotle presents two aporiai in *DS* 6 that lead to the culminating aporia regarding simultaneity in *DS* 7: if it is impossible to perceive several things simultaneously, then there must be such a thing as imperceptible time. Though Aristotle offers preliminary responses to each of the aporiae that arise in *DS* 6, it is not until we reach Aristotle's claims about the perceptibility of time that we have attained a perspective from which the earlier aporiae can be resolved. We will see how the perceptibility of time is decisive for answering the concerns about the limitations of our ability to perceive external bodies as magnitudes, and the limitations introduced by the mediation of motion between perceiver and perceived, in *DS* 6. In general, we can see *DS* 6-7 as speaking to the concern over whether there are dimensions of our world – whether magnitude, motion, or time – that fundamentally escape our grasp, not merely on occasion, or in cases of accident or defect, but according to themselves. We will see that these arguments are similar to Aristotle's attempts to understand time through the analogies to motion and to magnitude in *Phy.* IV.11, but that, in the end, the nature of time was revealed to be something beyond magnitude or motion considered unto themselves. In both *Phy.* and *DS*, the activity of soul emerges from out of the insufficiency of magnitude and motion alone to account for time and our grasp thereof.

The problem of the divisibility and continuity of time has been at issue throughout our discussion of time in the *Physics*, and I have suggested that there is a reconciliation of these

conflicting attributes in the soul. In the *DS* 6 the problem of divisibility comes to the fore in the context of examining how bodies become sensible. Aristotle's immediate concern in the first half of this chapter is to show that perceptible bodies are not "made up of" imperceptible parts (*sugkeimenon ouk ech aisthētōn*).⁵⁰⁸ Aristotle must defend his account from this possibility, because the notion that sensible objects are made up of imperceptible parts seems to follow from the fact that the "sensitivity" of external things – the colours, tastes, scents, sounds, textures, and temperatures that we are able to apprehend – always belong to some continuous magnitude. He asks, "if all body is capable of division to infinity, are the sensible qualities, such as colour, flavour, smell, weight, sound, cold and hot, light and hard and soft, likewise divisible, or not?"⁵⁰⁹ Does the divisibility of perceptible qualities correspond directly with the way divisibility pertains to magnitude? If all sensible qualities belong to magnitudes (as such qualities do not exist apart from some body), does it then follow that all objects of sensation are divisible to infinity just as a magnitude is? Does this then mean that every perceptible body consists of parts so small that it is impossible to perceive them, such that perceptible bodies are "made up of" parts that are fundamentally imperceptible? If the sensible qualities (colours, sounds etc) are indeed grasped by perception (since they are external) and thus are not cognized or discerned directly by the intellect (*nous*),⁵¹⁰ it might seem that their perceptibility or imperceptibility corresponds to the conditions of these as they belong to magnitudes.

⁵⁰⁸ *DS* 6 445b14.

⁵⁰⁹ *DS* 6 445b3-7

⁵¹⁰ *DS* 6 445b16-17.

In order to respond to this, Aristotle engages in an elaborate argument about what “divisibility” means for perceptible magnitudes. The first step of this argument involves a rejection of atomism. He urges us to resist the temptation to try to solve this problem by adopting the logic that all bodies are made up of indivisible parts, dismissing this solution by referring to his arguments against atomism from the *Physics*.⁵¹¹ But it is worth considering how the atomist doctrine relates to the problem of divisibility as it pertains to perception, and why it must fail here, just as it did in the *Physics*.

The logic seems to me to be that if all bodies are continuous, and thus divisible into smaller and smaller halves without limit, there would seem to be a sense in which they *could be divided* into parts so small as to escape detection by the senses. However, this does not mean that we can turn around and say that all bodies are “made up of” imperceptible parts. For the notion that something is “made up of” parts presumes that these parts pre-exist the whole. Such self-subsisting parts would have to be indivisible: in order for them to be grasped, the dividing process must ultimately stop. So we cannot have it both ways, and say that, 1) because bodies are divisible, this division yields parts so small as to be undetectable, and 2) these continually dividing parts can then serve as building blocks of the bodies. Anything that is “made up of” parts is as such not continuous, but already partitioned. Thus the sense in which perceptible magnitudes are continuous, and thus divisible, precludes the possibility that they are made up of indivisible parts. The idea that imperceptible parts divided from a continuous magnitude are also the parts that “make up” the magnitudes

⁵¹¹ “If this supposition is true, it would seem to support the theory of atomic magnitudes, for that account might provide a resolution. But this is impossible, as has been said in our account of these things as they concern movement” (*DS* 6 445b17-21).

contradicts itself. The rejection of atomism in this context relates to Aristotle's central contention that perception cannot be explained as "a gradual build up of discrete data."⁵¹²

For the moment, however, Aristotle is not making any general or conclusive claims. Rather, he makes the apparently more moderate claim that, "The resolution of these questions will make clear why the kinds of colour, flavour, sound and the other sensible qualities are limited."⁵¹³ Aristotle maintains that there are limits to the sort of "divisibility" that is at work in sensation of sensible bodies, but that these limitations are not due to the atomic character of external bodies themselves. Rather, he goes on to show that the limitations arise from the side of the sentient subject. This involves a transition from thinking about the divisibility of perception in terms of dividing homogeneous bodies, to thinking about its divisibility into qualities that we perceive heterogeneously. What we take hold of when we perceive an external body is neither a collection of indivisible parts, nor is it a continuous and undivided mass. Perception, it seems, involves a kind of dividing that has limits: the limitation of the qualities into a finite number of kinds (*eidē*).

The first limit, presupposed here, is due to a limit in the divisibility of kinds of sensible qualities themselves. This rests upon what has already been established about the proper senses. The number of kinds of qualities is limited: it is not possible for there to be more kinds of qualities than those that pertain to the five senses.⁵¹⁴ The first division into sensible kinds thus arises on the side of the embodied perceiver, where the capacities of its

⁵¹² I borrow this phrasing from Russon (1996) who claims that "Aristotle's story is not of the gradual build up of apparent unities from discrete data of discrete senses" (Ibid, 788 fn 25).

⁵¹³ *DS* 6 445b21-23.

⁵¹⁴ *DA* III.1 424b22-425a14.

various organs are the basis for the heterogeneity of qualities.⁵¹⁵ This division into kinds cannot be derived from the adherence of the qualities in homogeneous magnitudes. Insofar as the perceiver has eyes, ears, a nose, a tongue, and flesh, the external body appears to them as having colour, sound, smell, flavour, and texture/temperature. The division of the sensible into kinds indicates that the form of receptivity of the sentient sets limiting terms through which the object becomes perceptible.⁵¹⁶

This first limit can be taken for granted at this point in the text, based on the preceding arguments. Here in *DS* 6 Aristotle is making a further point about the limitation of the sensible into kinds. He is claiming that there is not only a limitation into five senses, but that, furthermore, there are limitations to the number of colours, sounds, smells, flavours, sounds, and textures/temperatures. These limitations are twofold. First, the variety of each of these qualities is limited by extremes (*eschata*) (black and white (for sight), high and low, (for sound), sweet and bitter (for taste), etc.): a range within which a quality can be perceived.⁵¹⁷ Second, any particular attribute that we perceive is a limitation (*peperanthai*) within the continuous range contained between the extremes.⁵¹⁸ Thus, analogous to the way that the

⁵¹⁵ Aristotle's defense of this rests on the determinate nature of both animate and inanimate bodies. The sensitive body both incorporates and exceeds the limitations of the elemental bodies. This is because it is the soul, which integrates and organizes the powers of the elements such as to make them capable of higher functions in the organs, that causes the body to be capable of perception, and not vice versa. In *DS* 2 Aristotle criticizes the sort of materialism which tries in vain to associate each sense with an element (as if the nature of the element itself could be responsible for the activity of sense), by the simple fact that there are five senses and only four elements (*DS* 2 437a20-22). Speaking generally of the organs and of the elements that mediate perception as "bodies", Aristotle says in *DA*, "If there is no other body, and no quality other than those of bodies, there can be no sense apart from the list" (*DA* III.1 425a12-14).

⁵¹⁶ My understanding of the significance of this limitation is influenced by Russon (1996: 788), who states quite boldly, and correctly in my view, that the sentient experiences itself in the act of sensing an object.

⁵¹⁷ *DS* 6 445b24. Cf *DA* II.11 422b23-33.

⁵¹⁸ *DS* 6 445b24.

continuous magnitude is divisible to infinity, so are the divisions within the range of qualities that we can receive. The sentient is in this manner in a state of indeterminate receptivity to its proper objects: capable of receiving as great a variety of qualities as there are potential divisions within this continuous range.

This alone would seem to undermine Aristotle's claim that the number of kinds of each quality are limited. However, he goes on to suggest that there is also a sense in which the divisibility of the continuous is limited insofar as the continuous is distinguished into equal parts:

What is continuous can be divided into unlimited unequal parts [such as division of magnitudes into progressively smaller halves], but into finite equal parts; while what is not in itself continuous can be divided into finite kinds [such as the different sense organs]. Since, then, the qualities (*pathe*) are spoken of as kinds, and there is always continuity in these, one must take hold of the difference between capacity and activity (*to dunamei kai to energeiai heteron*).⁵¹⁹

In order to establish a measure of the continuous, we divide it into equal parts. If we turn our attention to inquiring about what we have the capacity (*dunamis*) to perceive (as opposed to simply asking "what are we perceiving actively"), we find that we are able to make use of a determinate vocabulary for the different kinds of sounds that we hear, or colours that we see: "the qualities *are spoken of* as kinds." Since the qualities are already limited in extent (between contrary extremes), this sort of division yields a finite number of these parts. The variety of colours, flavours etc. that we are able to perceive can be distinguished with greater or less precision, but insofar as we distinguish them in relation to some equal measure they are determined as having a limited variety.

⁵¹⁹ "τὸ μὲν οὖν συνεχὲς εἰς ἄπειρα τέμνεται ἄνισα, εἰς δ' ἴσα πεπερασμένα· τὸ δὲ μὴ καθ' αὐτὸ συνεχὲς εἰς πεπερασμένα εἶδη. ἐπεὶ οὖν τὰ μὲν πάθη ὡς εἶδη λεκτέον ὅτι δυνάμει καὶ τὸ ἐνεργεῖα ἕτερον" (DS 6 445b28-32).

Still, this manner of differentiation and division remains somewhat fluid. There is no absolute way that we distinguish the qualities into kinds, and it would seem that we can determine the qualities in terms of measures that are more or less precise, just as we could train, focus, or habituate our sensibilities to be capable of perceiving more subtle differences in sound or colour. (As an example, we might think of the well-worn cliché about northern cultures having so many words for snow.) Therefore we cannot, from the basis of this claim about there being limited kinds, presume that our ability to perceive is due to our organs being “made up of” determinate kinds of objects, just as we cannot presume from the divisibility of magnitudes that bodies are made up of indivisible parts.

Rather, perception is, as Aristotle says in *DA* II.12, “some *logos* and *dunamis* of each [sense].”⁵²⁰ The way in which perception is a capacity (*dunamis*) is that the quality can be perceived by virtue of the receptivity or indeterminacy of the particular sense, which is capable of apprehending anything within its range. This is mirrored on the side of the object: the magnitude that is itself continuous and undivided is capable of endless division. The way in which perception is a *logos* – or ratio – is that the particular sensible form (*eidē*) is received in the individual sense organ as a limitation within the range of its capacity. The reception of this determination is the activity of perceiving, by which we divide and discern the possible *aistheta* as a finite number of kinds. In this way we see that the determinate aspect of perception is not a set of values that pre-exist either the receptive capacity of our faculties or the act of being limited by a sensible form. Aristotle’s bid that “we must take hold of the difference between capacity and activity” shows that the perceptibility or imperceptibility of

⁵²⁰ *DA* II.12 424a28

bodies will be explained in terms of the relationship between *dunamis* and *logos* in this scheme.

He goes on to provide some examples of how this is so. At first, it might seem that there are ways that magnitudes are absolutely imperceptible. They might exceed the range of the extremes that we are able to perceive (which Aristotle will elsewhere say destroys or damages the sense⁵²¹), or they might exhibit a distinction too subtle to be apprehended by a determinate measure. But the examples Aristotle goes on to make use of show us in what sense all magnitudes are nevertheless perceptible. He gives us concrete examples of each of the two kinds of division. First he considers how we see a millet seed: when our vision comes upon it, the ten-thousandth part of it (*to muriostemorion*) escapes our notice.⁵²² Second, he considers hearing song: the sound of the smallest interval (*diesis*) escapes our notice as we listen to the continuous melody. In both cases, the small part (*ta micra*) of what we perceive as continuous is *potentially* perceptible, though not *actively*, unless it were separated. Thus the case is the opposite of what he originally suggested: the minute parts of perceived bodies are not fundamentally imperceptible, rather, insofar as the minute part could be actively divided out and separated from the rest of the perception it would be actively perceptible.

But there is an ambiguity in this answer. For the two examples he just gave refer to different kinds of dividing. Dividing up a millet seed into very small parts is like dividing something continuous into an endless number of unequal parts, whereas dividing the intervals of musical scale is dividing into a limited number of equal parts. Only the latter is the sort of division that yields a distinctly perceptible kind. The small interval distinguishes a *kind* of

⁵²¹ *DA* II.12 424a28-32.

⁵²² *DS* 6 445b32-446a2.

sound, whereas if we divide the millet seed, we do not, in dividing it, divide it into a more subtle differentiation of colour. He makes use of a third example that speaks to this. We are able to taste a drop of flavour if we taste it alone, but this flavour – presumably its sweetness – would be overpowered and subsumed by a contrary flavour if it were merged with the all salty water of the sea.⁵²³ Likewise, what we see of the millet seed – its sensible form – is its colour, and the colour of the ten-thousandth part would be subsumed and overpowered by the colour of its environment if it were separated from the rest of the seed. Thus the divisibility of the magnitude does not correspond to the divisibility of the quality in this case, unlike musical scale. This is why Aristotle will go on to elaborate on the way in which these qualities are potentially perceptible, even when they are not actively sensed in separation.

When there is no extremity of the sense power (*hē tēs aitheseōs huperochē*) to correspond to the sensible object itself, even when separated (for the extremity is in potency to a higher power), a sensible object of such a size will not be sensed in activity. But all the same it will be sensible. For it is already in potency, and will be in activity when [such a sense power] comes to it.⁵²⁴

Aristotle's language here seems to run the risk of being misleading. I do not think he means by *huperochē* that which exceeds the range of perceptible qualities: something beyond the extremes of high and low, black and white: the kinds of motions that he says elsewhere to be destructive of the sense power.⁵²⁵ To speak of the qualities as overpowering motions would be out of place in this discussion, which remains focused the divisibility of qualities

⁵²³ *DS* 6 446a8-9.

⁵²⁴ “ὁ μὴν ἀλλ’ ἐπειδὴ οὐδ’ ἡ τῆς αἰσθήσεως ὑπεροχὴ καθ’ αὐτὴν αἰσθητὴ οὐδὲ χωριστὴ - δυνάμει γὰρ ἐνυπάρχει ἐν τῇ ἀκριβεστέρᾳ ἢ ὑπεροχῇ - οὐδὲ τὸ τηλικούτον αἰσθητὸν χωριστὸν ἔσται ἐνεργεῖα αἰσθέσθαι, ἀλλ’ ὅμως ἔσται εἰσθητόν· δυνάμει τε γὰρ ἔστιν ἤδη, καὶ ἐνεργεῖα ἔσται προσγενόμενον” (*DS* 6 446a10-15).

⁵²⁵ *DA* II.12 424a28-32.

and the magnitudes in which they inhere. Accordingly, what I take him to mean by *huperoche* here is that which exceeds our discernment in terms of a determinate measure of articulable kinds: a very subtle difference within the gradient of our capacity, which, in some scenarios, we might not have the acuity to discern from its surroundings, such as the drop of sweetness in the sea water, or the tiny yellow seed particle that disappears from view in the surrounding brown soil. Only then does the talk of this “extremity” being separated make any sense. For if we could separate the relatively small power of a colour or flavour from the colour or flavour of its environment, these would be perceptible, as yellow or sweet. If I am right about this, then Aristotle is saying here that conditions might arise within which these would be discernible, not as bare quantities of magnitude, but because they will be discerned in terms of the kind of quality they exhibit.

Thus, through these examples Aristotle has shown that the infinite divisibility of a continuous magnitude is not what defines the perceptibility of a body ultimately. Rather, perceptibility is due to the divisibility of the qualities into kinds, which are discerned according to a limited number of variations. It is for this reason that Aristotle claimed earlier that “one must take hold of the difference between capacity and activity” to make sense of this. His concluding remark to this section of the argument reads, “Since these [qualities] are immanent in that which is already actively perceptible, and not only in the whole but also in separation, the colours, flavours and sounds must be limited in number.”⁵²⁶ What is

⁵²⁶ *DS* 6 446a17-20. Notice that Aristotle’s reference to the “whole” in this passage runs the risk of being ambiguous. If we consider the millet seed as a “whole” then we are not talking about it as a proper sensible, but as an incidental perceptible: a determinate individual or *ousia* of which certain qualities can be predicated. For this reason its divisibility is more complicated, and exceeds the scope of the present argument (which is why it is possible to talk of it as being separable into infinitely small parts). But if we remain cognisant of the limitations of the present argument, we have to understand the millet seed that we see in terms of its colour, which is viewed as a “whole” of perceptible determinations that vision covers in an act of sensing something externally present to

potentially perceptible is in every case defined relative to what is actively perceived, but only insofar as the qualities are divided into kinds can the colour, flavour, or sound be actively perceived on its own, or according to its own nature as a colour, flavour, or sound: as a species of a genus (a yellow colour, or a sweet flavour). Aristotle's argument here thus confirms what he claimed in *DA* II.11: at the extreme limits of vision and touch, the invisible and intangible are also, in a way, perceived by their proper senses: as privations or qualities perceptible to a very small degree.⁵²⁷

Aristotle has shown here the sense in which magnitudes are and are not perceptible. Perceptibility is defined by limiting terms set by the perceiver. These are limitations not in the sense of excluding or leaving out dimensions of our world; rather, it is only through these limitations that anything is actively perceived. Aristotle has thus shown that perception cannot be explained as a gradual build up of discrete data at the level of the proper sensibles. We do not receive the qualities as determinate kinds or indivisible parts independent from one another, which we are then tasked with combining into general kinds: colour, for instance, is not made up of red and yellow and blue combined into orange, green and purple. Rather the colours are received as limitations within our perceptible range, from white to black: its privation in utter darkness. Analogously, sound is not simply made up of various notes or combinations thereof, but is articulated by equal divisions that fall within the range between high and the low. For each limitation that is passively received in an act of perceiving some external body enables the division of the spectrum into possibly discernible determinate

our senses. Considered in this way, the millet seed is seen in the same manner that the liquid is tasted or the music is heard.

⁵²⁷ *DA* II.11 424a14.

kinds, which are limited in number. Divisibility is as such both something that happens to the perceiver when he or she perceives, and something that he or she does.

Having established this, we might wonder if this insight can shed any light on the question we are asking about the divisibility of time. Aristotle has here shown how the divisibility of sensible qualities yields a finite number of kinds insofar as the continuous is divided into equal parts. This sort of dividing occurs when the soul takes hold of an “ultimate differentia”: something that is not divided further and, as parts taken indivisibly, can be taken as another and another kind, each of equal measure. The differentia at work in this activity is ultimate not because the magnitude could not be divided further, but, rather, the limitation of its divisibility is based on limiting terms set by the perceiver: what is required in order to be able to discern a palpable difference between the kinds. Consider how this might pertain to the divisibility of the circular motion of the heavens. Recall that when Aristotle speaks of the units of time that are taken again and again in *Phy.* IV.12 he does not speak of them as distances or magnitudes. Rather, the year is divided into the seasons, “such as a spring or fall.”⁵²⁸ The seasons are as such a finite number of kinds into which the continuous changes within a year are temporally divided. This sort of division is akin to the way that the qualities are here said to be differentiated: as species of a genus. Indeed, Aristotle is here in the *DS* only speaking of the proper sensible qualities. Motion and time are not grasped by the senses working individually. But insofar as there is an analogous way that all the sensible qualities are defined, there may be some basis for understanding the divisibility of circular motion in this way. If this holds, it will mean that the indivisible part of the perceived motion is

⁵²⁸ *Phy.* IV.12 220b13-14.

established on the basis of limitations belonging to the receptivity of the perceiver. We will investigate this hypothesis further as we proceed.

The example of the musical interval will be taken up again in the aporia of *DS* 7. We will have to keep Aristotle's arguments about the divisions of the scale in mind when he comes to speak of our ability to perceive a harmony, which has profound consequences for he understands our ability to perceive tout court. Aristotle's understanding of how sound is divided will be taken up to account for the instance of harmony: where a proper sense encounters an object that seems to be both one and two. The peculiar qualities of a harmony will serve as paradigmatic for the problem of whether or not it is possible to perceive two qualities in one and the same indivisible time. But the problem of time as it relates to perception already begins to come to light in the second half of *DS* 6.

The next aporia concerns the divisibility of motions mediating sensation. In the second half of *DS* 6 Aristotle focuses on this aspect of perception, with a view to his overarching concern about the limitations of perceptibility. There, Aristotle explores the way that perceiver and perceived are related by motion in the medium between them. This involvement of motions in perception poses a problem, similar to the one we just encountered regarding the divisibility of magnitude. Since no motion is accomplished simultaneously (it is not there and here at the same time) this must mean that there is some time (*tina chronon*) between the initiation of the motion (emerging from the sensible) and its arrival in the body of the percipient. It would seem that it must "first come to the middle."⁵²⁹

There is also an additional problem that follows from this, which Aristotle mentions a few lines down. Considering that it seems that sensible information changes as it makes its

⁵²⁹ *DS* 6 446a24.

way to us, as sounds seem to be altered by the winds, is it impossible that several perceivers, if they are at different distances from the object, perceive the same thing at the same time? Though this problem has implications that go beyond our concerns here, we shall address it insofar as it pertains to the temporality of perception, and the possibility of simultaneous perception for several perceivers.

Aristotle offers a response to these problems here in *DS* 6, which, as we shall see, is only provisional. His response has two parts, which do not offer separate solutions to the two problems articulated above, but concern them both together. The first involves understanding the character of light as it operates in the medium of the transparent. The second depends on the numerical identity of the object perceived. Though both begin to form a solution to the problem of there being some time between perceiver and perceived (insofar as there is motion between them), I will show that a more powerful response is offered in *DS* 7.

First, let us consider with Aristotle whether the character of light can serve as a solution. If not all perceptible qualities are subject to the same conditions, but one – seeing – exhibits a different kind of mediation, and thus a different temporal relation between perceiver and perceived, perhaps it can provide the basis from which we can say that the time of perception is, at the very least, not *in every case* separate from the time when the perceptible begins to become perceptible.

Before treating the peculiar characteristics of light, Aristotle makes a revealing statement: he juxtaposes the temporal character of the activity of perceiving with the temporality of the mediation of the motions involved in joining the perceiver to the object's sensible form.

Even if 'hearing' and 'having heard', 'perceiving' and 'having perceived' are simultaneous (*hama*), and there is no genesis of them, but are without becoming, all

the same no less, just as the sound of the blow has already been struck when it has not yet reached the hearing...is not thus also the colour and the light?”⁵³⁰

Aristotle here presents an account of the temporality of perception, which echoes the language he used when he distinguished the temporality of *energeia* from that of motion in Met. IX.6. However, whereas in Met. IX.6 Aristotle distinguishes the temporality of *energeia* and motion according to different kinds of acts, here Aristotle shows that even though perceiving (specifically, hearing) is simultaneous and not a motion, insofar as it involves motion it would seem to require that the sensible is active in a part of time exceeding the time in which we are aware of the sensation: a part of time when the blow has already been struck but the sound is not yet heard that is distinct from the time when the simultaneity of hearing and having heard this particular sound can begin to take place.

It is interesting that, while acknowledging the involvement of motion in the act of sensation, Aristotle still maintains that perceiving is not ultimately reduced to motion: that the involvement of motion does not compromise the simultaneity of perceiving and having perceived. But in order to resolve the dichotomy between these two times – a time of moving wherein we are not aware of this motion, and a time of acting wherein we are – he does not turn his attention directly to the act of soul as capable of accounting for this difference. Rather, he looks to the nature of mediating motion itself: specifically, asking whether the light that makes colours perceptible is a motion like that which brings sound to our hearing.

Light, Aristotle claims, follows a different logic (*allos logos*).⁵³¹ Though Aristotle often speaks of the affection of the medium as *kinēsis*, he here⁵³² makes a distinction between

⁵³⁰ “καὶ εἰ ἅπαν ἅμα ἀκούει καὶ ἀκήκοε καὶ ὅλως αἰσθάνεται καὶ ἥσθηται, καὶ μὴ ἐστὶ γένεσις αὐτῶν, ἀλλ’ εἰσὶν ἄνευ τοῦ γίνεσθαι ὁμῶς οὐδέν ἦττον, ὥσπερ ὁ ψόφος ἤδη γεγεννημένης τῆς πληγῆς οὐπω πρὸς τῇ ἀκοῇ ... ἄρ’ οὖν οὕτω καὶ τὸ χρῶμα καὶ τὸ φῶς;” (DS 6 446b3-10).

kinds of motion: local motion (*phora*) is not the same as an alteration (*alloiōsis*). Only local motions are strictly subject to the conditions he mentioned above: which travel from here to there and as such must “first come to the middle” before they reach their end (in this case, the body of the sentient subject). Even if the transmission of sound *seems* (*dokei*) to require such a kind of traveling motion, the same cannot be said of how light works in relation to seeing colour: “light is due to something being (*tō einai*), and not some motion.”⁵³³

Though it might seem that Aristotle is making a distinction between hearing, as involving local motion, and sight, as involving alteration, he is in fact reflecting on how alteration, and not local motion, can account for both the simultaneity of perceptibility and perception, in the case of seeing a particular colour, and their temporal differentiation, in the case of hearing a particular sound.⁵³⁴ For, he says it is possible for something to be altered all at once (*athroon*), or part by part,⁵³⁵ illustrating this with the observable phenomenon of water freezing into ice. Though water can crystalize into ice in an instant, a very large body of water does not freeze all at once, but first the surface which is in contact with cold air freezes, and then the freezing deepens, layer by layer, as each part affects the next with which it is in contact. We should understand the sound as altering the medium in a similar way, and not as traveling from here to there, as a body moving in place. So, when there is a great distance between the origin of the sound and the listener, the sound will affect the body of air between

⁵³¹ *DS* 6 446b27.

⁵³² *DS* 6 446b27-447a12.

⁵³³ *DS* 6 446b28.

⁵³⁴ Cf *Phy.* VII.2 244b2-245a12, where Aristotle distinguishes altering and being altered (which refers to the modification of perceptible qualities) from moving and being moved (243a3-244a15).

⁵³⁵ *DS* 6 447a3-7.

them part by part until it impacts our eardrums, resulting in some temporal mediation. Light, on the other hand, does not alter the medium of sight in this way: in *De Anima* Aristotle describes light as the activity (*energeia*) of the transparent (whether air, or water) qua transparent.⁵³⁶ the condition (*hexis*) whereby colours can be actively perceived.⁵³⁷ Though Aristotle does not use these words (*energeia* and *hexis*) to describe light here in the DS, the way they convey the sense of light being something active consistent with the way that he here describes light as having a special role in the mediation of vision: it is not a passive (*paschein*) medium, but is rather active in that it makes (*poiei*) vision happen.⁵³⁸

I understand Aristotle to be showing here that light demonstrates something unique about vision, but that it also reveals something about perception in general. Since that which acts upon the sense organ is not, in either sight or hearing, a body moving from here to there, it is not the case that there is always some time between the activity of the sensible and the activity of sensing it. The simultaneous act of light indicates a provisional solution to the aporia that is at issue in the second half of *DS* 6, if we anticipate the emergence of the common operation of the senses from this discussion of how they operate individually. If it is not the case that some time *always* intervenes between perceptibility and perception, it is possible that, when the senses are working together, we might grasp the time between the moment when the blow is struck and the sound reaches our ears, even if this difference can not be apprehended by hearing alone. Consider, perhaps, the way that we see lightning and hear thunder and can thereby become aware of the temporal difference between these two acts

⁵³⁶ *DA* II.7 419a10-11.

⁵³⁷ *DA* III.5 430a15-16.

⁵³⁸“Reasonably, when there is a medium of the sense organ, it is not all affected (*paschein*) simultaneously (*hama*), except in the case of light, as was said. And the same goes for vision: for light makes (*poiei*) vision” *DS* 6 447a9-12; cf *DA* III.5 “light makes (*poiei*) colours that are in potency colours in activity” (430a17).

emerging from the same thing. Though Aristotle does not make use of this example, such a grasp of both the sameness and difference of perceptible qualities is consistent with what he says in the *De Anima* about our ability to distinguish proper sensibles belonging to one and the same thing. Moreover, it would be illustrative of his suggestion in *DA* III.1 that the reason why we have several senses rather than one is so that the common sensibles (such as motion) “might be less able to escape our notice.”⁵³⁹ Furthermore that the simultaneity of light for vision is in some sense unique does not indicate that vision is just an exception to the rule, but rather revealing of something important for sensation in general, is indicated by Aristotle at the beginning of the *DS* when he suggests that it is chiefly by sight that we perceive common sensibles.⁵⁴⁰ This may also be why in *Met.* IX.6 Aristotle singles out the simultaneity of “seeing and having seen” as an example of *energeia*, and yet here in *DS* 6 shows that applies also to hearing, and to perceiving in general: because what is principally manifest in seeing, is also true for sensation in general.

The second problem concerns the possibility for several perceivers to perceive the same thing at the same time. Due to the alteration of the medium, there are cases where the distance of the perceiver from their object affects the way in which they perceive it (as in the case of the large body of water that freezes part by part). Likewise, if several perceivers are perceiving the same thing at different distances, they would not be perceiving it at the same time. Aristotle’s response is that this does not mean that they are having a different kind of perception. What each perceives is the same in kind: one’s distance from the object does not

⁵³⁹ *DA* III.1 425b5-6.

⁵⁴⁰ *DS* I 437a8. Note that this conflicts with what Aristotle says in *DSV* 2 455a24 – that common sense is most present together with touch – but that this claim is made to a different purpose: since touch is for some animals separable from the other organs, for them there is no difference between common and proper sensibles: for the proper sense of touch is the whole of their capacity.

mean that one is receiving different information about the object, even though they might discern it more clearly if they are at the appropriate distance. Each act of perceiving is numerically one, such that several acts of perceiving are numerically many, but the object they are perceiving is nonetheless one. This is because what we are perceiving is not simply a local motion (which is different in its being when it is here or there):

The first of the movers which all perceive is one and the same in number, but the proper is different in number, but the same in kind, on which account (*dio*) many see and smell and hear simultaneously (*hama*). For these are neither bodies, but are some *pathos* or motion (otherwise this would not have come together (*sunebainen*)), nor are they without body.”⁵⁴¹

The reason is that we do not perceive motion simply, but we perceive motion arising from some body (the “first mover”). The origin of the motion from a self-identical source places a limit on the possible variation that its perceptible qualities can undergo en route to our own perceiving of them. The kinds of perceptible qualities, we have seen, are limited and where each falls within the range between possible extremes is determined by the numerically identical object that all are perceiving. Thus the sensation that various observers are all having is the same in kind (for they are all embodied perceivers capable of the same kinds of sensible apprehension in their organs), even if the experience of sensing them is numerically different.

However, this “numerical difference” between the experience of each perceiver still seems that it would be open to possibility that they could each be perceiving at different times, especially if they are at different distances from the “first mover” (the bell, the incense

⁵⁴¹ “ἡ τοῦ μὲν κινήσαντος πρώτου, οἷον τῆς κώδωνος ἢ λιβανωτοῦ ἢ πυρός, τοῦ αὐτοῦ καὶ ἑνός ἀριθμῷ αἰσθάνονται πάντες, τοῦ δὲ δὴ ἰδίου ἑτέρου ἀριθμῷ, εἶδει δὲ τοῦ αὐτοῦ, διὸ ἅμα πολλοὶ ὁρῶσι καὶ ὁσμῶνται καὶ ἀκούουσιν. ἔστι δ’ οὔτε σώματα ταῦτα, ἀλλὰ πάθος καὶ κίνησις τις - οὐ γὰρ ἄν τοῦτο συνέβαινεν - οὔτ’ ἄνευ σώματος” (DS 6 446b22-26).

or the fire). How, then, can he confidently state that “many see and smell and hear simultaneously (*hama*)”? In order to understand this claim, we must see Aristotle as responding to the objection raised by those who argue that it is *impossible* for one person to hear, see, or smell the same as another. He allows that it might be *possible* in some sense for there to be some difference - “there is a sense in which the first and last hear and smell the same thing, and a sense in which they do not” – but this does not mean that it is *impossible* that they perceive the same thing at the same time. This solution follows a similar logic to the one regarding the time of perception for the individual: in some cases there may be an interval of time between when the object becomes perceptible and when it is perceived, but not in all cases. The possibility of simultaneity is what is at stake here, not the possibility of temporal difference. If it is possible for these acts to occur simultaneously, it will also be possible to discern a temporal difference between them when it arises. Accordingly there is no time within our act of perceiving that fundamentally escapes our notice. Thus Aristotle has defended the possibility of simultaneous perception in the face of these challenges.

DS 7: the impossibility of imperceptible time

In *DS 7* Aristotle will take these provisional solutions further, and show how it is that simultaneous perception is not only possible, but is requisite in order for there to be sensation at all: that not only is time perceptible in some conditions and according to some proper senses, but “it is possible to perceive all of it.”⁵⁴² He begins the chapter by presenting another *aporia*, which I will show ties into the *aporiae* he has just addressed regarding the divisibility and simultaneity of our perception of the qualities belonging to magnitudes and the motions mediating these perceptions. The question is “whether it is possible to perceive two together

⁵⁴² *DS 7* 448a26.

(*hama*), in one and the same indivisible time, or not.”⁵⁴³ By asking this question, Aristotle is taking up what he has established about the senses working individually. Aristotle’s response to this question is treacherous, largely because he spends the first part of the chapter examining a position that he does not hold to be true: that each sense receives its proper quality one at a time. Nonetheless, he seeks to show what would be more or less possible if one were to take this perspective.

Aristotle entertains three possible ways of considering how two qualities might be perceived as one. First, he considers the way in which one quality might overpower the other such as to yield only the perception of the dominant quality. If each quality is essentially a motion, then a stronger motion would override the weaker one, such that we would only perceive the stronger one. But on this account we would not be perceiving two qualities at the same time, but only one. It would as such be “more possible” to perceive something that is presented simply than when it is mixed with something else.⁵⁴⁴ Second, he considers the possibility that the two qualities are in an equal relation such that one does not overpower and subsume the other, but they enter into a mixture (*memigmena*). However, in this case as well we do not perceive them as two, but as one homogeneous mixture. This hypothesis only serves to show that if it is impossible to perceive two qualities when they belong to the same sense, it will be “less admissible” to perceive two simultaneously when they belong to different senses.⁵⁴⁵ Thirdly, he considers that, perhaps, the various qualities could be apprehended together by virtue of the fact that there is an analogous relationship between

⁵⁴³ *DS* 7 447a14.

⁵⁴⁴ *DS* 7 447a19. Aristotle shows further that even the stronger motion is made less perceptible when it is mixed than when it appears alone (447a23).

⁵⁴⁵ *DS* 7 447b21-24.

them: white is to sweet as black is to bitter. But even if this were so, this does not provide a sufficient ground for having a diverse perception. Rather, Aristotle claims that this only shows that it is *even less possible* to perceive sweet and black simultaneously than to perceive white and sweet simultaneously.⁵⁴⁶ Aristotle finds he must take a new starting point, one which does not presume that the various senses operate individually, or that the various qualities must act upon one another (be overpowered or combined) in order to be perceived simultaneously.⁵⁴⁷

At 448a20 Aristotle begins to present the view that he takes as his own. But again he proceeds by distinguishing it from an impossibility raised by another point of view. Some say that the notes in a harmony are not heard simultaneously, but that the temporal difference that intervenes and distinguishes them escapes one's notice, such that the time in which they are perceiving involves parts that are imperceptible. This is similar to the problem raised in chapter 6: that there is some time in the middle between when the motion has arisen from the perceptible prior to its grasp by the percipient. But here, rather than wondering about the time between the beginning and the end of the motion, he is concerned with the idea in order to have perception of a harmony, some time must intervene between each of the notes that make it up.

⁵⁴⁶ *DS* 7 448a18-19.

⁵⁴⁷ Note that this argument closely parallels the discussion of mixtures in *DG* 1.10. Not only does Aristotle present the same difficulties pertaining to mixture (in terms of overpowering or combining into one) as he does here in *DS*, but he also considers the possibility that mixtures are merely cases of juxtaposition where the difference cannot be discerned by perception (*DG* 1.10 327b34-328a6). However, just as in the present argument, this suggestion only serves the rhetorical purpose of giving Aristotle the occasion to announce the need for a fresh start. (See Frede 2004: 289). Ultimately, Aristotle will argue in the *DG* that mixtures are possible among material elements, but we can see both from his argument there and here in *DS* that mixtures of bodily elements will not be sufficient to account for sensation.

The harmony is a special sort of combined perception. It is a sort of “mixture” of two sounds, but they are combined in such a way that does not annul the difference and replace it with the average. It is not like the way that red and yellow, when mixed, become the colour that mediates between their difference – orange – or hot and cold become warm. When we hear two notes ringing at once what we hear is neither what each of them sounds like on their own, nor is their difference transformed into the sound of one note that falls between them on the scale (the mean). The composition of the harmony is similar to the way that the syllable is not just a combination of discrete letters, but has its own distinct vocal expression that is different from the sum of parts.⁵⁴⁸ Those who account for this phenomenon by positing imperceptible time deny the simultaneity of harmony, and can understand it only as a succession of discrete and distinct sounds.

For Aristotle, how we understand our hearing of the harmony has serious consequences for how we understand our activity of perceiving. The harmony might seem to be a special case, but Aristotle shows that an inability to account for this phenomenon undermines the very basis of our ability to perceive at all. In response to the theory that we do not hear the sounds of the harmony simultaneously, Aristotle says:

This is not true: it is not possible for time to be imperceptible and escape our notice, but it is possible to perceive it all. For if, when someone perceives himself or anything else in continuous time (*sunechei chronoi*), it is not possible that he is then unaware that he is, and anything in this continuity is of such a size that it is altogether imperceptible, it is clear that then it would escape his notice whether he

⁵⁴⁸ Compare what Aristotle says of unity in terms of the syllable in *Met.* VII.17: “Since that which is composed of something in such a way that all is one, not as a heap (*sōros*) but as a syllable – the syllable is not its letters, for BA is not the same as B and A, nor is flesh fire and earth, because after dissolution the flesh and the syllable are no longer, but the letters are, as are fire and earth – therefore the syllable is a this (*ti*), nor merely the vowel and the consonant, but something else...it would seem that the this (*ti*) is not an element, but is the cause of its being this flesh, or this syllable, and similarly in other cases. And this is the beingness of each: for it is the primary cause of its being” (*Met.* VII.17 1041b11-28).

is himself, and whether he sees and perceives. And if he perceives nevertheless, there could be neither time nor thing (*pragma*), nothing in which he is perceiving, except as he might see in some part of the time, or some part of the thing, if indeed there is some part of magnitude, or of time, or of thing that is entirely imperceptible due to its extreme smallness.⁵⁴⁹

I take this passage to be central to resolving the problems that we have encountered, not only in *DS* 6-7, but also the ones we have carried with us from the *Physics*. As such, we will explore its consequences at length.

Aristotle's central claim here is that the continuity of time and perception are inextricable. Denying this has two dire consequences: 1) there would be parts of time in which we are not aware of ourselves and our own activities 2) we would not be able to perceive the whole of anything. However, I will argue that by affirming this connection between the continuity of time and perception we will be able to resolve the problem of simultaneous perception of several qualities that opened this chapter.

First, let us consider the importance of Aristotle's suggestion that "when someone perceives himself or anything else in continuous time (*sunechei chronoi*), it is not possible that he is then unaware that he is," and that claiming that there are imperceptible times means that there would be times in which "it would escape his notice whether he is himself, and whether he sees and perceives." Aristotle discusses "perceiving that we see and hear" in several other texts, but it is only here that it is shown to have an explicitly temporal

⁵⁴⁹ "ἢ τοῦτ' οὐκ ἀληθές, οὐδ' ἐνδέχεται χρόνον εἶναι ἀναίσθητον οὐδένα οὐδε λανθάνειν, ἀλλὰ παντὸς ἐνδέχεται αἰσθάνεσθαι. εἰ γὰρ ὅτε αὐτὸς αὐτοῦ τις αἰσθάνεται ἢ ἄλλου ἐν συνεχεῖ χρόνῳ, μὴ ἐνδέχεται τότε λανθάνειν ὅτι ἐστίν, ἔστι δέ τις ἐν τῷ συνεχεῖ καὶ τοσοῦτος ὅσος ὅλως ἀναίσθητός ἐστι, δηλον ὅτι τότε λανθάνοι ἂν εἰ ἔστιν αὐτὸς αὐτόν, καὶ εἰ ὁρᾷ καὶ αἰσθάνεται. Καὶ αἱ αἰσθάνεται ἔτι, οὐκ ἂν εἴη οὔτε χρόνος οὔτε πρᾶγμα οὐδὲν ὃ αἰσθάνεται ἢ ἐν ᾧ, εἰ μὴ οὕτως, ὅτι ἐν τούτῳ τινὶ ἢ ὅτι τούτου τι ὁρᾷ, εἴπερ ἔστι τι μέγεθος καὶ χρόνου καὶ πρᾶγματος ἀναίσθητον ὅλως διὰ μικρότητα" (*DS* 7 448a25-b4).

significance. In *DA* III.2 the idea that “we perceive that we see or hear” raises a concern for whether this can be accomplished by the proper senses acting alone.⁵⁵⁰ In *DSV* 2, Aristotle explicitly states that “perceiving that we see and hear” is accomplished not by the individual proper senses, but by the perceptive part of the soul as one.⁵⁵¹ This formula also appears in *EN* IX.9, where Aristotle claims that the goodness of life is revealed by the pleasure we have in being aware that we are active (in ways that include seeing and hearing, but extend beyond it to include walking, and thinking); just as in the passage from *DS* 7 under consideration here, he claims that the awareness that we see and hear is a direct expression of our being aware that we are.⁵⁵²

The specifically temporal significance of perceiving that we see and hear is related to the role it has in *DSV*: that “there is really only one sense, that which is strictly speaking the sense organ is one, though what it is to sense is different for each mode (*genos*).”⁵⁵³ In that text, however, there is no mention of this oneness and difference as simultaneous. However,

⁵⁵⁰ “Since we perceive that we see and hear, it is necessary either to perceive by sight that one sees, or by means of another” (*DA* III.2 425b12-13).

⁵⁵¹ “There is a common capacity associated with all (of the proper senses) by which one perceives that one sees and hears (for it is not by sight that one sees that they see: one both discerns (*krinei*) and is able to discern that sweet is different from white not by taste, nor by sight, nor by a combination of the two, but by some common part of the whole percipient: for sensation is one and the ruling (*kurion*) perceptible faculty is one, but it senses the being of each kind differently, such as sound or colour” (*DSV* 2 455a16-22).

⁵⁵² “The one who sees perceives that he sees, the one who hears that he hears, one who walks that he walks, and similarly for all the other human activities there is something that perceives that we are active (*energoumen*), so that we perceive that we perceive, and we think that we think, and [to perceive or think] that we are perceiving or thinking is [to perceive or think] that we are (*esmen*)” (*EN* IX.9 1170a29-a1).

⁵⁵³ I am here borrowing Kosman’s somewhat liberal translation of *DSV* 2 455a21 (Kosman 1975: 516).

this same idea⁵⁵⁴ forms Aristotle's solution to the problem of simultaneous perception of different qualities at the end of *DS* 7:

What is possible for the thing (*tōn pragmatōn*) is also possible for the soul. For what the same and one in number is white and sweet, and many other qualities as well, if the attributes (*pathē*) are not separable from one another, but it is to be for each is different. So we must suppose likewise for the soul that the faculty of perception as a whole is the same and one in number, but what it is to be is different, differing sometimes in genus and sometimes in species. So that there shall be simultaneous perception (*aisthanōit' an hama*) of what is one and the same, but not the same in *logos*.⁵⁵⁵

I am suggesting that this solution – the unity and difference of both the soul and its perceptible object – is intimately related to “how perceiving that we see and hear” ensures the connection between the continuity of perception and that of time.⁵⁵⁶ In *DA* III.2 Aristotle will show in greater detail how it is necessary that both numerical unity and difference in being are perceived simultaneously. But what concerns us most of all here it to see how simultaneous perception and the continuity of our awareness are connected. For, it might seem as though Aristotle's claim about the continuity of our awareness of time conflicts with his claim about perception occurring in one and the same indivisible (*atomos*) time. If what is continuous is

⁵⁵⁴ Cf Russon (1996) who cites 448a25-b4 as referring to the “sense faculty as a whole” in support for his claim that “sensation is always self-sensation” (Ibid 788).

⁵⁵⁵ “ἢ ὥσπερ ἐπὶ τῶν πραγμάτων αὐτῶν ἐνδέχεται, οὕτω καὶ ἐπὶ τῆς ψυχῆς. τὸ γὰρ αὐτὸ καὶ ἐν ἀριθμῷ λευκὸν καὶ γλυκὺ ἐστὶ, καὶ ἄλλα πολλά, εἰ μὴ χωριστὰ τὰ πάθη ἀλλήλων, ἀλλὰ τὸ εἶναι ἕτερον ἐκάστω. ὁμοίως τοίνυν θετέον καὶ ἐπὶ τῆς ψυχῆς τὸ αὐτὸ καὶ ἐν εἶναι ἀριθμῷ τὸ αἰσθητικὸν πάντων, τῷ μέντοι εἶναι ἕτερον καὶ ἕτερον τῶν μὲν γένει τῶν δὲ εἶδει. ὥστε καὶ αἰσθάνοιτ' ἅ ἅμα τῷ αὐτῷ καὶ ἐνί, λόγῳ δ' οὐ τῷ αὐτῷ” (*DS* 7 449a12-20).

⁵⁵⁶ The connection between these passages is not self-evident. For instance Gregoric (2007) does not mention the first passage (448a25-b4) at all in his (otherwise) extensive commentary on simultaneous perception in *DS* 7 (Ibid, 130-144). Instead, he finds the solution to the problem of simultaneous perception in the second passage (449a5–20) alone. He does, however cite 448a25-b4 in another context, in his chapter on “Perceiving that we see and hear” (Ibid, 188). In my view the significance of Aristotle's solution is lost if we do not understand how these passages work together.

always potentially divisible, as Aristotle so often reminds us, then how can Aristotle describe the time of perception as both *suneches* and *atomos*?

Perhaps Aristotle only suggests that the time of perception is *atomos* counter-factually, just as the bulk of the argument of *DS* 7 involves presenting positions that he does not hold to be true and showing what could be more or less true on the basis of them. Indeed, Aristotle refers to the time of perception as *atomos* at the beginning of the chapter in the form of a question.⁵⁵⁷ Later on in the chapter he resumes the question again, asking “whether it is possible to perceive many at once (*hama*), or impossible.”⁵⁵⁸ Though, again, this is stated as a question, the fact that he raises it again indicates that it has not been proved impossible by the intervening arguments, which includes the passage on the continuity of perception and time. Furthermore, not only does he stress that simultaneity (*hama*) must again be understood as indivisibility (*atomos*) – “By *hama* I mean in one indivisible time in relation to several (*pros allēla*)”⁵⁵⁹ – but he also clarifies what he means by *atomos*: “not as indivisible [per se], but indivisible as everything is continuous (*ōs panti onti sunechei*).”⁵⁶⁰

I take this as meaning that it is safe to say that Aristotle neither means *atomos* as a part of time with its own determinate limits, nor, since it is continuous, does he mean it is indivisible as itself being a limit in time. What I understand this to mean is that the time of perceiving is not divided for us, prior to our activity of perceiving it. The continuity of time

⁵⁵⁷ “There is also another such aporia concerning sensation: whether it is possible to perceive two together (*hama*), in one and the same indivisible time, or not.” *DS* 7 447a14.

⁵⁵⁸ *DS* 7 448b19-20.

⁵⁵⁹ *DS* 7 448b20.

⁵⁶⁰ *DS* 7 448b23. Alexander reads *ōs panti onti sunechei* as “continuous as a whole” (157 19), which also seems possible given the preceding argument about how we perceive the line as a whole and not part by part (*DS* 7 448b4-18).

and the continuity of our awareness (of time, of ourselves, of anything) are one and the same. Were they not – if time were continuous but awareness was not – then we would only ever be perceiving some parts of whatever we are perceiving. If awareness were somehow continuous, but time was not – as is the claim of those who posit imperceptible “parts” of time that go unnoticed in the continuum of our awareness – then it would somehow have to be divided into tiny parts prior to our awareness, and again, we would only be perceiving some parts, and never the whole, of anything. Aristotle argues that that this is not true. But this would be precisely the consequence if the now were anything other than a power of soul.

The now and simultaneous perception.

It is fitting at this point to consider how the account of simultaneous perception that we have just seen relates to Aristotle’s account of the now in the *Physics*. Aristotle’s argument, that the continuity of time and the continuity of our awareness are one, provides us with a sense of time that is indivisible (*atomos*). I have suggested that this means that perception does not take place in a limited portion of time, or in a *limit* of time, in that there are no temporal limits or divisions involved in perception at all. But if this suggestion is going to hold we will have to figure out if there is any relationship between the time of perception and the account of time that Aristotle provides in the *Physics* in terms of the now. The now, which both limits and numbers time, makes no appearance in the DS. This is surprising given the tremendous importance it has in the *Physics*: “there would be no time without the now, and no now without time.”⁵⁶¹ How, then can Aristotle speak of the perception of time at all without also speaking of the now?

⁵⁶¹ *Phy.* IV.11 220a1.

The argument that I have been making throughout this thesis is that the now cannot be understood as something separate from the powers of soul. But does that mean that the now belongs to the perceptive power of the soul? Indeed, we have seen that Aristotle's account of the now in the *Physics* is founded on the idea that "we perceive motion and time simultaneously (*hama*)."⁵⁶² Yet, nowhere in the *DA* or *DS* does Aristotle go into detail about how we perceive motion. He consistently includes motion in his various lists of the "common sensibles," and he claims in *DA* II.6 that these, like the proper sensibles, are perceived as themselves (*kath' auto*) and not incidentally (*kata sumbebēkos*).⁵⁶³ He furthermore uses the example of motion to show that the common sensibles are perceived by more than one sense: "a certain motion is perceptible both by sight and touch,"⁵⁶⁴ and even claims in *DA* III.1 that all the common sensibles are perceived by motion.⁵⁶⁵ But these statements are worthless to us unless we can answer the following questions: 1) Can we perceive motion without making use of the now: distinguishing before and after such that we can be aware of something traveling from here to there, or changing from this to that? 2) How can perceiving make use of the now if the time of perception is indivisible?

Understanding this will require that we make sense of how the account of the common sense emerges from the examination of the proper sensibles individually. I have argued that the account of perception in *DS* 6-7 Aristotle shows us how to move beyond the assumption that perception can be explained as being "made up of" the independent operation of the

⁵⁶² *Phy.* IV.11219a4.

⁵⁶³ *DA* II.6 418a8-20.

⁵⁶⁴ *DA* II.6 418a20.

⁵⁶⁵ *DA* III.1 425a17.

proper senses: that each aporia that Aristotle presents in these chapters work to expose the limits of an account of perception that fails to take hold of the active center of awareness animating and unifying perceptive life. The decisive limitation of such an account of perception is encountered in *DS 7* when Aristotle questions our ability to obtain a unified perception of different qualities, and shows that it cannot be the case that the soul combines different bits of information that impact us in different parts of our bodies or one after the other, that have no intrinsic relation to one another. In *DS 7* Aristotle makes a claim that reminds us that, prior to the division of our awareness into different qualities, there is a center of sensitive awareness: we perceive ourselves and whatever else in continuous time, and, as long as we are doing so, it cannot escape our notice that we are doing so. There is nothing intervening in this activity that itself creates boundaries or divisions between colours and sounds, or between white and black. Having been reminded of this we are then able to see that the perceptive soul is a single center of awareness, and not an amalgam of distinct awarenesses, based on the way that perception reveals both the numerical identity and the specific differences of what it perceives, and does so in indivisible time.

This shows, furthermore, that the soul is not simply passive in relation to various, numerically distinct objects, but actively distinguishes the sensible forms that it receives as affections (*pathē*), so as to reveal to itself the numerical unity of perceptible wholes that comprehend the various attributes. This common activity of the senses is something that must be understood not only in order to explain how we grasp common perceptibles like motion and magnitude, but also to reveal the distinctly *living* principle at work in perception: something beyond and irreducible to the alterations of the perceptible media that affect animate and inanimate bodies equally. Perhaps the air becomes smelly, but smelling is

perceiving, while the air being affected only becomes perceptible.⁵⁶⁶ “We are not simply affected by sensible forms in streams of environmental stimuli, but are consciously aware of these affections.”⁵⁶⁷ Again, this hinges on there being an awareness common to all the senses, over and above the differences of the organs. From the perspective of having revealed the active center of sensation in the second half of *DS* 7 (448a20-449b3), we can understand Aristotle’s argument in the first half (*DS* 7 447a12-448a19) as trying to grasp this unity according to the common structure of each of the senses: the capacity to receive the affections is analogous for each sense as a ratio (*logos*) within a range of receptivity (*dunamis*), as was shown in *DS* 6. But Aristotle shows that it is impossible, even on the basis of their analogous structure, to bring about a unified awareness out of their presumed disparateness: even if there are some qualities that we might call “co-ordinate” (*sustoichōs*) from one sense to another (such as sweet and white), even these cannot be perceived simultaneously,⁵⁶⁸ *insofar as simultaneity is understood as mixture of independent attributes that nullifies their difference*. Simultaneity, then, must mean something else, which he goes on to address by way of the harmony, and which we have already explored. Still the analogous structure of the senses does take us some way towards seeing that they must be founded in one comprehensive activity: that the senses, even when considered independently, are all doing the same kind of thing. The comprehensiveness of this activity also reveals the identity between awareness and time: time is not divided by their being different things going on in it, because a variety of things can be perceived as happening at the same time.

⁵⁶⁶ *DA* II.12 424b17-18.

⁵⁶⁷ Diamond 2015: 142.

⁵⁶⁸ *DS* 7 448a15-19.

What if we take a similar approach to addressing the relation of sensation to the now? We can, for instance, note some similarities in structure between the way Aristotle speaks of the now in the *Physics* and his account of the simultaneity and divisibility of perception. A perceptible object is one and the same in number, but its attributes differ in being, and the same is said of the perceptive soul. Similarly in *Phy* IV.11 Aristotle argues that the now is the same (as OPO), but differs in being.⁵⁶⁹ Furthermore, the now is said to be responsible for the continuity and uniting (*henōsis*) of time,⁵⁷⁰ which is similar to how the simultaneity of perception is indivisible as continuous. The striking difference, which I have already pointed out, is that the now is said to divide time (potentially), whereas nowhere in the *DS* or *DA* does Aristotle speak of sensation in terms of divided time. Is this function of (potentially) dividing time something that belongs properly to the now of time, over and above the activity of perceiving? This would raise the problem exposed by considering the harmony: time is divided, but it escapes our notice that it is divided. As I have already suggested, when Aristotle speaks of the simultaneity of perception, he cannot mean that we perceive in the now understood as a limit in time.

This difficulty might be solved along the lines taken by Gregoric's (2007) interpretation. Gregoric argues that the kind of simultaneity that pertains to perception differs from that which pertains to the now. He suggests that in the *Physics* Aristotle employs a "strict notion of simultaneity" ("the now as an indivisible point of no duration by which time is limited") whereas in the *DS* the notion of simultaneity ("a time which is one and indivisible

⁵⁶⁹ *Phy.* IV.11 219b11-12.

⁵⁷⁰ *Phy.* IV.13 222a10, 20.

relative to things perceived’) is “flexible.”⁵⁷¹ According to this reasoning, we might say that the problem is not that that perception provides no account of the now, but simply that the kind of now that belongs to perception is less strict and more flexible. However I do not see how it can be possible to keep the conceptions of simultaneity in *DS* and *Phy.* apart. For, as I argued in chapter 2 of this thesis, Aristotle’s comparison of the now to a static point breaks down over the course of Aristotle’s argument in the *Physics*, revealing rather a conception of the now that actively determines and numbers time. Beyond the opening aporia *Phy.* IV.10 (which Gregoric takes to be Aristotle’s conclusive account of the now, rather than its initial, problematic presentation) the now is never simply a point of no duration limiting time. The analogy to the point persists in *Phy.* IV.11, but only to show that the now cannot be thought of as a limit in this sense.⁵⁷² What Gregoric calls the “flexible notion of simultaneity” is in fact the only notion of simultaneity that Aristotle endorses. Otherwise, simultaneity could not be said of motions at all (for no motion happens in the now which is only a limit). In the *Physics*, too, the meaning of simultaneity speaks to a time that is one and the same relative to several (motions).⁵⁷³

So, if Aristotle does not present two different notions of simultaneity, how is the now related to the activity of perceiving? Aristotle explicitly mentions the now in relation to perception only in *DA* III.2, where he shows that the ability to discern the differences in the objects of perception is exhibited by the simultaneity of our speaking now and saying that the difference is now:

⁵⁷¹ Gregoric 2007: 130.

⁵⁷² *Phy.* IV.11 220a11-22.

⁵⁷³ *Phy.* IV.14 223b2-4.

Clearly it is not possible to discern separate things with separate faculties, therefore it is not possible that they should be discerned in separate times. For just as the same (person) says that good and bad are different, so too when he says the one is different he also says so of the other (and the when is not incidental, I mean the way it is when I say now that they are different rather than that they are different now), he both speaks now and says that the difference is now; therefore, they are distinguished at the same time, so that it is an indivisible [act] in indivisible time.⁵⁷⁴

This could be further evidence for my claim that the now is a power of soul. Here Aristotle has shown that the unity of the perceptive faculty of the soul (which, as we have seen in *DS* 7, is revealed by the continuity of our awareness that we perceive, and thus to the perceptibility of time), and the basis from which it perceives differences simultaneously, is exemplified in the simultaneity of the act of saying that they are different “now.”

Still, it is not clear from this how we might be able to perceive motion, with or without making use of the now. For nowhere in his account of sensation does Aristotle speak of the nows being two, with time between them. But it is possible, as we have just seen, to say at the level of perception that there is a difference now. Is it possible, then that the difference in being (*to einai*) that we perceive now, is not restricted to differences in quality, but could be that exhibited by motion: that of before and after? Recall Aristotle’s words from the *Physics*:

Whenever we perceive the now as one, and neither as before and after in motion, nor the same but belonging to something before and something after, no time seems to happen because no motion has. But whenever there is a before and after, then we say that there is time.⁵⁷⁵

From this we can see how we might have the ability to perceive motion. We can say that

⁵⁷⁴ “ὅτι μὲν οὖν οὐχ οἷόν τε κεχωρισμένοις κρίνειν τὰ κεχωρισμένα, δῆλον· ὅτι δ' οὐδ' ἐν κεχωρισμένῳ χρόνῳ, ἐντεῦθεν. ὥσπερ γὰρ τὸ αὐτὸ λέγει ὅτι ἕτερον τὸ ἀγαθὸν καὶ τὸ κακόν, οὕτω καὶ ὅτε θάτερον λέγει ὅτι ἕτερον καὶ θάτερον (οὐ κατὰ συμβεβηκὸς τὸ ὅτε, λέγω δ', οἷον νῦν λέγω ὅτι ἕτερον, οὐ μέντοι ὅτι νῦν ἕτερον, ἀλλ' οὕτω λέγει, καὶ νῦν καὶ ὅτι νῦν)· ἅμα ἄρα. ὥστε ἀχώριστον καὶ ἐν ἀχωρίστῳ χρόνῳ” (*DA* III.2 426b23-30).

⁵⁷⁵ *Phy.* IV.11 219a32-b2.

there is a difference now with respect to a motion in the same way as we say there is a difference between white and sweet, because the now is not only two “in number” as “a before and after in motion” (which are not simultaneous), but is simultaneously two insofar as it “belongs to the before and after” whenever it is said. To perceive the now as one, without recognizing this difference, means that no time seems to happen. But to perceive the same now as two requires that we are able to simultaneously take hold of its difference in being, which is precisely what Aristotle says perceiving is capable of in *DS* 7 and *DA* III.2.

In the *Physics*, Aristotle shows us the error of taking this duality of the now too “strictly” (to use Gregoric’s term): as some absolute division without length or breadth, as something outside of the soul’s own activity, like a point that limits and divides a line. If we use the now as two in the manner of a point – as a beginning and an end of two different lines – it would have to stand still (*histasthai*) or rest (*eremein*) in order to serve this dual function.⁵⁷⁶ As such, in the *Physics* it was hard to see how we might distinguish the before and after of motion, without stopping it.

The idea that the same now could only be two by coming to rest seemed to be fatal to the understanding of the now in the *Physics*: in this sense of being a static limit, the now is not time.⁵⁷⁷ But this is because Aristotle was not able to explain in the *Physics* that this is exactly what the perceiving soul is capable of doing when it perceives motion, without stopping it or interrupting its continuity. The conflict between the continuous motion (which we are perceiving) and resting point (which might divide it) seemed

⁵⁷⁶ *Phy.* IV.11 220a13, 220a17.

⁵⁷⁷ *Phy.* IV.11 220a21

insurmountable in the *Physics*. But the act of perceiving transcends this dichotomy, for perceiving is an activity, not a motion. Immediately after having shown that the soul could not *be moved* by contrary qualities in the same genus (such as sweet and bitter), or by qualities of different genus (such as these and white) at the same time, Aristotle says,

Like what some say about the point, insofar as it is both one and two, in this way it [the faculty of discerning] too is divided. So insofar as it is undivided, what distinguishes is one thing and distinguishes at one time, but insofar as it has in it to be divided, it uses the same mark as two simultaneously. So insofar as it uses a boundary as double and distinguishes two separate things it acts in a way dividedly, but insofar as it acts by means of one thing, it acts as one and at one time (*hama*).⁵⁷⁸

The act of perception is not itself simply a passive receptivity of the soul to motion: perception is not simply a matter of being moved. For, our awareness could not be one and be moved by contrary motions at the same time. It follows that perceiving motion does not mean simply being moved by the motion we are perceiving. For, if perceiving motion was simply receiving an imparted motion it would require something else, like the point, in order to arrest the motion so as to distinguish the before and after. The analogy to the point can be applied to our account of perceiving motion, where it could not apply to the now of the *Physics*, insofar as it does not refer to some extant point that divides and stops the motion, serving first as an “end” and then as a “beginning.”⁵⁷⁹

⁵⁷⁸ “ἀλλ' ὥσπερ ἦν καλοῦσί τινες στιγμήν, ἡ μία καὶ δύο, ταύτη καὶ ἀδιαίρετος καὶ διαίρετή. ἡ μὲν οὖν ἀδιαίρετον, ἐν τῷ κρινόν ἐστι καὶ ἅμα, ἡ δὲ διαίρετον ὑπάρχει, δις τῷ αὐτῷ χρήται σημείῳ ἅμα· ἡ μὲν οὖν δις χρήται τῷ πέρατι, δύο κρίνει καὶ κεχωρισμένα, ἔστιν ὡς κεχωρισμένως· ἡ δὲ ἐνί, ἐν καὶ ἅμα.” (*DA* III.2 427a10-15).

⁵⁷⁹ Cf *Phy.* VIII.8: Insofar as a motion is continuous, we cannot say that the moving body “has arrived” at a mid-point and “has departed” from that mid-point in the now: we can only say that it “is” there “at the now”, which is only a potential, and not an actual, division (262a28-32). Only when the body actually stops is there an actual division in motion (but then it would not have arrived and have departed again in the same now).

Rather, the before and after of motion must be perceived just as in the case mentioned above: in saying that the good and bad are different, the two are not distinguished at different times, but instead, “when he says the one is different he also says so of the other.” So to say with respect to motion that we are perceiving a difference now is to distinguish the before and after at the same time. The before and after are distinguished without limiting time in the sense of “stopping” it, just as we can be said to distinguish sweet and bitter, or sweet and white, or good and bad without requiring some imperceptible part of time to step in and do the dividing for us. The difference of the before and after of motion can thus be perceived in indivisible time.

The limitations of this “sense of time”:

We have seen how Aristotle’s account of perception grounds the concept of simultaneity articulated in the *Physics*, insofar as the soul is able to simultaneously perceive several things relative to one another. We have also seen that this is only possible insofar as perception is not altogether passive in relation to its object: that there is rather an “active center of awareness” at work in perceiving such that several perceptions can be distinguished at once, and are not divided by some external factor (such as imperceptible parts of time). On the basis of this active center of awareness, the time of perception is said to be one and the same, indivisible and simultaneous. Nevertheless, this does not mean that perception is locked into a static moment or takes place in a division of the now. Our awareness of time is continuous, which is based on our awareness of ourselves and of our perceiving in continuous time. In every act of perception, there is simultaneity of past-perfect and present progressive: we are seeing and have seen, hearing and have heard, perceiving and have perceived, at the

same time. Accordingly, the activity of the now of determining the before and after is not something that exists apart from the activity of perceiving.

However, if the account of time were to stop here it would remain incomplete, and would not fulfill the promise of what was offered in the *Physics*. For, while the great achievement of perception centers on how it reveals simultaneous difference, its limitation is precisely due to its requisite simultaneity. That is, perception only happens while there is simultaneous activity shared by perceiver and perceived: only so long as the external object is present to our ongoing awareness do we “sense” it.⁵⁸⁰ Our awareness of anything beyond its presence to us is not accessible to perception alone (or at least, not to the account of perception we have covered so far).

We can note here how the account of perception that we have just witnessed makes it possible for us to speak of the “present.” In chapter 2 of this thesis I disputed the claim that Aristotle’s now is made up of a combination or confusion of two distinct concepts: present and instant.⁵⁸¹ Many consider the now to be a combination of present and instant because they assume that Aristotle failed to distinguish what are in fact two distinct conceptions of time: that of time as a flowing passage (past, present and future) and time as a changeless order (earlier and later).⁵⁸² Aristotle does not speak of the present at the beginning of *Phy* IV.10 when he sets up the aporia of time being composed of parts that do not exist: the past

⁵⁸⁰ “Since the activity (*energeia*) of the sensation and of the sensible are one, though they are different in being, it is necessary that hearing and sound meant in that way, or flavour and tasting, cease or persist together. But it is not necessary to say this of their abilities (*kata dunamin*)” (*DA* III.2 426a16-20).

⁵⁸¹ The claim that the now combines or confuses the concepts of present and instant is made by Barreau (1973: 402); Owen (1979: 141, 151); Sorabji (1983: 8); Waterlow (1984: 104).

⁵⁸² This is the dichotomy pioneered by McTaggart (1908) between the “A-series” (past, present, and future) and the “B-series” (earlier and later) as different ways of conceiving of the ordering of events (*Ibid*: 458).

and the future distinguished by the now. I argued in chapter 2 that this was because an account of the paradoxes of the now (namely, its sameness and difference, its ability to unite and divide) was required in order to make possible our notion of the present. I have provided an account of the sensation of the before and after of motion that deepens our understanding of these paradoxes: I have shown the structure of the soul's activity of discernment provides the vantage point from which one can say that there is a simultaneous sameness and difference of motion that the *Physics* sought in terms of the now. Whereas in the *Physics* Aristotle makes scarce use of his word for "present,"⁵⁸³ in the *DM* Aristotle will speak of "the present" (*ta paronta*) as belonging to sensation (*aisthēsis*): "for by this we become acquainted with neither future (*to mellon*) nor past (*to genomenon*), but only the present (*alla to paron monon*)."⁵⁸⁴

If it seems odd that Aristotle does not speak of the present in his account of sensation itself, this is because the distinctions between past, present and future only become significant once he is giving his account of memory and recollection. On the basis of memory it becomes possible to distinguish the past from present, and, as I shall argue, the deliberative reasoning that Aristotle introduces in his account of recollection provides the basis for our ability to have some awareness of the future. By contrasting the time of which we are aware in sensation to that of which we are aware in memory (and recollection), Aristotle can then speak of the present in relation to its limitations: as being an awareness of

⁵⁸³ When Aristotle does mention the present later on in the *Physics* he does so in a manner that is consistent with what we have discovered about the time of sensation. He refers to it as a time that is one and indivisible: "Time is the same everywhere simultaneously, but it is not the same as before and after; for the change (*metabolē*) being present (*parousa*) is one, but as past (*he gegenemene*) and future (*he mellousa*) it is other (*hetera*)" (Phy IV.12 220b7-8). " 'Already' (*ēdeē*) is the part of future time which is near to the indivisible present now (*ta paronta nun atomou*)" (Phy. IV.13 222b7-8).

⁵⁸⁴ *DM* I 449b13-15.

neither of the past nor the future “but only the present” (*alla to paron monon*).

Nonetheless, looking back at the account of perception we have seen so far, we can say some things about what it does and does not mean when Aristotle says in the *DM* that perception is “of the present.” It does not mean that we are sensing a distinct part of time located between the past and the future. For we are sensitively aware in indivisible, continuous time, not in a “present” part of time that has been divided from the past and future. The time of our perceiving is not divided. Rather, we distinguish the contents of our perception in indivisible time. This contrasts with what Aristotle says about the divisibility of time in relation to thinking in *DA* III.6: “in thinking each half [of the line] separately, the intellect divides the time as well.”⁵⁸⁵ I will argue that Aristotle’s account of memory and recollection is required to make this dividing of time possible at the level of thinking.

We can also say something positive about the meaning of the present for sensation based on what we have discovered. Sensation is of the “present” in that it is of what *presents* itself to us. That which is present refers to the simultaneity of the activity of the perceiving soul and what it perceives: the external and particular sensible things that ignite our ability to be actively aware of our world.⁵⁸⁶ The requisite presence of an external cause is what distinguishes the activity of sensation from that of thinking. As Aristotle explains in *DA* II.5, the ways we understand the relationship of capacity to activity for both sensation and thinking are parallel, except for this difference:

Active perception is of the particular (*kath’ hekaston*), while knowledge is of universals, which are in a way (*pōs*) in the soul itself. Thinking is up to oneself, whenever one wishes, but sensing is not up to oneself. For it is necessary that the

⁵⁸⁵ *DA* III.6 430b13.

⁵⁸⁶ I am here drawing on Aristotle’s description of our ability to sense as like fuel (*to kauston*) which does not burn without being ignited by fire (*DA* II.5 417a8-10)

sensible is present (*huparchein to aisthēton*). Similarly, this also holds with respect to the kinds of knowledge that deal with sensible things, and for the same reason: that the sensibles are among those that are particular and external (*ta aisthēta tōn kath' hekasta kai tōn exōthen*).⁵⁸⁷

From this we can see how the kind of awareness possible for perception is distinguished from that of thinking. In what follows, I will show that we must move beyond the perception of external particulars and make the transition to thinking of universals in the soul in order to fulfill the promise of the account of time in the *Physics*. Even though the unity and difference of the act of perceiving showed how we could perceive the before and after as a simultaneous difference of a present motion's "being" while it is happening, we do not perceive anything that is before or after what is present together with our act of perceiving it, whether this be a proper sensible, like colour, or a common sensible, like motion. We become aware of these by perceiving them while they are in our presence, but cannot directly perceive them before or after the time in which they are present to us. Recall Aristotle's statement from *Phy.* IV.10:

Nothing that is divisible is limited by one limit, whether it is continuous in one or many [dimensions]. But the now is a limit, and it is possible to take hold of time as limited. Still, if there is simultaneity (*hama*) according to time, and this is neither before nor after, but in the same time and in the now, then if both the before and the after are in this here now, then what happened ten thousand years ago would be

⁵⁸⁷ "αἴτιον δ' ὅτι τῶν καθ' ἕκαστον ἢ κατ' ἐνέργειαν αἰσθησις, ἢ δ' ἐπιστήμη τῶν καθόλου· ταῦτα δ' ἐν αὐτῇ πῶς ἐστὶ τῇ ψυχῇ. διὸ νοῆσαι μὲν ἐπ' αὐτῷ, ὅποτε βούληται, αἰσθάνεσθαι δ' οὐκ ἐπ' αὐτῷ· ἀναγκαῖον γὰρ ὑπάρχειν τὸ αἰσθητόν. ὁμοίως δὲ τοῦτο ἔχει καὶ ταῖς ἐπιστήμαις ταῖς τῶν αἰσθητῶν, καὶ διὰ τὴν αὐτὴν αἰτίαν, ὅτι τὰ αἰσθητὰ τῶν καθ' ἕκαστα καὶ τῶν ἑξωθεν" (*DA* II.5 417b19-28). Perhaps one might object at this point that we have neglected the way in which one is said in *DS* 7 to perceive himself in continuous time (*DS* 7 448a27). If the limitation of perception is the requisite simultaneity of the presence of the object of perception, why is it not sufficient that he is always perceiving himself? I think Kosman's account of how perceiving that we perceive differs from the kind of self-consciousness where we divide ourselves into subject and object provides a response to such a question: "Self-consciousness, we must be careful here to note, does not mean being conscious of oneself, but of consciousness being conscious of itself. Reflective self-consciousness cannot be pure and immediate self-consciousness in this latter sense, since consciousness when taking itself for object is immediately alienated from itself, dividing itself into subject and object, the witnessing and the witnessed self... the perceptual awareness of which we are speaking presents itself, as Moore notes, as total transparency" (Kosman 1975: 516).

simultaneous with what is happening today, and nothing would be either before or after anything else.⁵⁸⁸

Despite the ability of the soul to distinguish “*the before and after*” of a present motion simultaneously, there is also “*either a before or an after*” beyond the simultaneity of perceiver and perceived: a before and an after which are mutually exclusive, and cannot be simultaneously present, such that there is a difference between what happened ten thousand years ago and what is happening today. The sameness and difference of time is not identical to the sameness and difference of the contents of perception, because one does not directly perceive an external particular that was or will be before or after it is being perceived. Such a grasp of what is beyond the present sensation is required in order for the soul to fulfill the function attributed to it in the *Physics*: “whenever we think the extremes as different from the middle, and the soul says the nows are two – one before and one after – then we say that this is time.”⁵⁸⁹ In order to explain how the soul is capable of doing this, we will have to look beyond perception of the present to Aristotle’s account of memory and recollection.

⁵⁸⁸ “οὐδενὸς γὰρ διαιρετοῦ πεπερασμένου ἐν πέρας ἔστιν, οὔτε ἂν ἐφ’ ἐν ἣ συνεχὲς οὔτε ἂν ἐπὶ πλείω· τὸ δὲ νῦν πέρας ἐστίν, καὶ χρόνον ἔστι λαβεῖν πεπερασμένον. ἔτι εἰ τὸ ἅμα εἶναι κατὰ χρόνον καὶ μήτε πρότερον μήτε ὕστερον τὸ ἐν τῷ αὐτῷ εἶναι καὶ ἐνὶ [τῷ] νῦν ἔστιν, εἰ τὰ τε πρότερον καὶ τὰ ὕστερον ἐν τῷ νῦν τῷδὲ ἔστιν, ἅμα ἂν εἴη τὰ ἔτος γινόμενα μυριοστὸν τοῖς γε νομμένοις τήμερον, καὶ οὔτε πρότερον οὔτε ὕστερον οὐδὲν ἄλλο ἄλλου.” (*Phy.* IV.10 218a23-30).

⁵⁸⁹ *Phy.* IV.11 219a27-28.

CHAPTER 5: Time and the Soul Part 2: Memory

We are now prepared to look at Aristotle's account of memory and recollection in the *DM*. As noted earlier, this treatise follows the *DS* in Aristotle's *Parva Naturalia*. It is thus fitting that it picks up where the *DS* left off in its consideration of the simultaneity of perception. We will see that Aristotle's account of the temporality of perception that we just traced forms the basis from which memory is distinguished. But we will also see that Aristotle argues that memory belongs properly to the "perceptive part" of the soul. It will be the task of the first part of this chapter to figure out how both these things can be true: that memory is essentially different from perception, but still depends on and belongs properly to the capacity for perception, such that it is possible for animals that have no higher intellectual abilities to remember. Our concern with these issues is to understand what they tell us about how living beings grasp time: how the awareness of time afforded at the level of perception develops through memory and recollection. We shall now turn to the text, giving a close reading of Aristotle's arguments that pertain to these concerns.

DM 1: Opening questions and preliminary response (DM 1 449b4-23):

Aristotle begins his investigation of memory by asking three questions: What is it (*ti esti*)? What is its cause (*aitia*)? To which part of the soul does this affect (*pathos*) and that of recollection belong?⁵⁹⁰ The first thing Aristotle says after asking these questions is to indicate an empirical difference between memory and recollection: the people who are good at remembering are not the same as the people who are good at recollecting.⁵⁹¹ As the

⁵⁹⁰ *DM* 1 449b5-6.

⁵⁹¹ *DM* 1 449b6-7.

argument of the *DM* progresses, we will see that this is due to the fact that the answer to this third question – to which part of soul do these belong – is different in the case of memory from that of recollection. However, before we can understand how memory and recollection belong properly to different parts of the soul, we must begin by addressing the first question.

Aristotle claims that “First, then, one must consider what sort of things is it possible to remember (*poia esti ta mnēmoneuta*).”⁵⁹² Thus the question “what is memory” becomes a question about the nature of the object of memory. Just as he began his account of sensation in *DA* II by considering the nature of sensible objects, here he proceeds in a similar manner, by considering the nature of what it is that we remember.⁵⁹³ Aristotle shows that the nature of what we remember is distinguished by its time. He proceeds to rule out the parts of time one after the other – first the future,⁵⁹⁴ and then the present⁵⁹⁵ – until he arrives at the conclusion that “memory is of the past.”⁵⁹⁶ Perhaps it seems facetious to proceed in this manner to such an (seemingly) obvious conclusion. But, as I indicated at the end of the last chapter, the distinction of the past and the future from the present is not as obvious as one might assume. Perception is “of the present” not in the sense that we perceive only a distinct part of time with determinate limits, cut off from the past and the future. Nor is the present a static cross-section or limit in time in which no change could take place. Rather, as I have argued, the time of perception is continuous, and we only perceive “the present” in the sense that we

⁵⁹² *DM* 1 449b9.

⁵⁹³ This is in fact the methodological principle that Aristotle outlined for himself in *DA* II.4, and follows in relation to both nutrition and sensation (*DA* II.4 415a21).

⁵⁹⁴ *DM* 1 449b11-12.

⁵⁹⁵ *DM* 1 449b13-15.

⁵⁹⁶ *DM* 1 449b15.

perceive a particular sensible object only while it is present to us, for only insofar as it is in this way “present” are we capable of being actively affected by its qualities. The limitations of the present are not temporal limits per se, but limitations in the sense that we can only perceive some particular thing when it is in our presence.

As such, the claim that memory is of what is past is neither obvious nor easy to understand. However, having thusly distinguished the object of memory from that of sensation gives us some indication of the challenge that lies in store for us when we will come to confront Aristotle’s second question: “what is its cause?” Though it is relatively obvious that the cause of sensation is the active presence of an external particular object, the cause of a memory might only be alluded to by way of what it is not: we do not remember by virtue of having an external object present to us. Then what kind of object or cause is there that makes remembering possible? So far, Aristotle has only made it possible for us to define it negatively.

Aristotle’s next move is somewhat surprising. He leaves aside how memory is distinguished from hopes or opinions about the future, and he goes on to distinguish memory not only from sensation, but also from actively contemplating or knowing something. This is surprising because objects of contemplation – if these are universals that are in the soul⁵⁹⁷ – would not seem to have any specific temporal designation at all. However, even if active thinking does not depend on anything being present to us externally, Aristotle indicates here in *DM* 1 that we recognize a difference between the time “when (*hote*)” one “happens to be (*tugchanai*)” contemplating or thinking and the time when one is remembering such an activity:

⁵⁹⁷ Recall the passage from *DA* II.5 417b22-28, quoted in the last chapter.

That which is present, when it is present, such as this white thing here when one is seeing it, no one would claim to remember, nor that which one contemplates (*to theōroumenon*), when (*hote*) one happens to be (*tugchanai*) contemplating (*theōrōn*) and thinking (*ennoōn*). But one claims only to perceive the former, and to know (*epistesthai*) the latter.⁵⁹⁸

It might seem that the claim that “no one would claim to remember that which is present when it is present”⁵⁹⁹ is meant to apply to thinking as well as to sensation. Given what I have been arguing about the meaning of the “present” this seems unlikely. Or is this definition of the present that I have been working with – that it always refers to the presence of an external particular object – too narrow? Perhaps the meaning of the “present” is not limited to the presence of an external sensible, but is broader in such a way that it can apply equally whatever time one happens to be thinking a thought.

Let us look closely at what Aristotle goes on to say about how perception and thinking are distinguished from remembering. Aristotle explains that one remembers when one has knowledge or perception “without these activities (*aneu tōn energeiōn*).”⁶⁰⁰ How should we understand *aneu tōn energeiōn*? It is not simply that the soul was active (*energeiōn*) when it was thinking or perceiving, and is no longer active in any way when it is remembering. Memory too, is an activity (*energeia*) of soul⁶⁰¹, and Aristotle does

⁵⁹⁸ “τὸ δὲ παρὸν ὅτε πάρεστιν, οἷον τοδὶ τὸ λευκὸν ὅτε ὄρα, οὐδεὶς ἂν φαίη μνημονεύειν, οὐδὲ τὸ θεωρούμενον, ὅτε θεωρῶν τυγχάνει καὶ ἐννοῶν· ἀλλὰ τὸ μὲν αἰσθάνεσθαι φησι, τὸ δ’ ἐπίστασθαι μόνον” (*DM* 1 449b15-18).

⁵⁹⁹ “τὸ δὲ παρὸν ὅτε πάρεστιν.... οὐδεὶς ἂν φαίη μνημονεύειν” *DM* 1 449b15.

⁶⁰⁰ “Whenever one has knowledge or perception without these activities, he thus remembers.” *DM* 1 449b19-20.

⁶⁰¹ Ross makes use of the word “present” when explaining how memory is an *energeia*, but clearly does not mean it in a temporal sense (for he contrasts it with the past): “There really is perception or knowledge *of something present* whenever we remember; an *energeia* is realised but to be memory it depends upon whether or not this *energeia* is referred to something else existing in the past” (1906: 245, italics added). This leaves me wondering what he means by “present” here? Present internally?

refer to it using this term a few lines down: *hotan energei kata to mnēmoneuein*.⁶⁰² Thus, remembering is an activity that must somehow be distinct from both sensation and thinking. If we can say that the difference between remembering and sensing is that, when we remember, the activity on the side of the external sensible object is no longer present, can we say the same for thinking? Is there an object of thought that is present when we are thinking but absent when we are remembering the thought? How, if the thought is in both cases something internal to the subject, and its presence or absence to our awareness is “up to us”? While the difference between “when” we are sensing and “when” we are remembering can be understood by the object no longer being present, it is difficult to see how thinking and remembering could be likewise distinguished by means of the presence or absence of the object.

How, then, are we able to distinguish between the time “when” one happens to be thinking and “when” one is remembering a thought? Can it truly be understood along the same lines that we distinguish the time when we are sensing and when we are remembering? Aristotle does not indicate that there is any important difference between them at this point in the argument. Rather, he treats them together, stating quite definitively, “Always (*aei*), whenever one is actively remembering (*hotan energei kata to mnēmoneuein*), one thusly says in one’s soul (*en tē psukhē legei*) that one heard, or perceived or thought this before (*proteron*).⁶⁰³

⁶⁰² *DM* 1 449b23.

⁶⁰³ “ἀεὶ γὰρ ὅταν ἐνεργῇ κατὰ τὸ μνημονεύειν, οὕτως ἐν τῇ ψυχῇ λέγει ὅτι πρότερον τοῦτο ἤκουσεν ἢ ἥσθετο ἢ ἐνόησεν” (*DM* 1 449b23-24).

Even if this does not tell us how remembering a thought is different from remembering a sensation, it does tell us that, in both cases, the time is distinguished by the soul itself, based on an awareness of a temporal order in its own activities. Whatever distinguishes the activity of memory from both sensation and thinking, it is something that the soul declares in relation to its activities. Though we may not yet be able to answer Aristotle's first question – what is memory – he has told us two things regarding what it is “of.” First, it is of something that has happened or is past (*to genomenon*). Second, memory is not simply of whatever has happened and as such belongs to the past, but is of some one of our past activities, and this can be either an activity of thinking or of sensing. It is not that we remember “the past” directly as a part of time that is past. Rather, we remember having engaged in a certain activity “before.”

From here, the argument seems to head in several directions all at once, but I think that we can discern some structure within it if we keep in mind the three questions that Aristotle originally asked at the beginning of *DM* 1. Aristotle has already started to address the first question – “what is memory” – by way of considering its object, as is his customary method. This led us to the distinction of the object of memory from that of expectation/hope and sensation, insofar as their objects pertain to different parts of time. Aristotle furthermore showed that memory is intimately connected to both active sensation *and thought* in that memory is a sensation or thought that one is aware of having had before. So what does all this tell us about the object of memory? Since the object of memory is a prior activity of soul – whether this be a sensation or a thought – it is not something existing apart from the soul at all. We cannot explain how the object of memory itself belongs to the past except by turning to the soul itself, because, as Aristotle tells us in the *Physics*, whatever has happened *is* no

longer.⁶⁰⁴ In the context of Aristotle's psychology this means that it can no longer affect us as an object outside of us. So, in order to understand the object of memory, we must look to the soul itself, to the part or faculty of soul to which memory belongs. Aristotle's first question thus leads us to his third question.

To summarize, at this point in the argument, the answer to the first question remains incomplete, and the second question – what is its cause – is sidelined, and our attention has been directed to the third question: to which part of the soul does it belong. Ultimately, all three questions remain bound up in each other, and Aristotle's responses to them cannot be perfectly demarcated into discrete sections of text. Nonetheless, for the sake of the clarity of my own argument, I divide them into sections of this thesis. First, I will treat the question 'to which part of soul does memory belong,' and then I will treat the aporia of 'how it is possible to remember what is not present,' which I take to be akin to asking 'what is the cause of memory.' Ultimately, however, it will be impossible to avoid the overlapping of these themes, and in the end we will see how the answers to all three questions are intertwined.

Parts of soul: Imagination and the primary sense faculty (449b24-450a25)

So far Aristotle has established that memory is a temporal distinction articulated by the soul in its awareness of the time of its own activities, and that the activities we remember may be either prior sensations or prior thoughts. At this point, it is not at all clear to which part of the soul memory belongs. Aristotle will begin to address this ambivalence in lines 449b24-450a25. He will eventually claim that memory belongs to the part of the soul to which imagination (*phantasia*) belongs,⁶⁰⁵ and that the awareness of time associated with

⁶⁰⁴ *Phy.* IV.10 217b35.

⁶⁰⁵ *DM* I 450a23.

memory is a function of the common sense faculty.⁶⁰⁶ In what follows, we will see that these two aspects of memory – its relationship to imagination, and the awareness of time – come together to show how memory is an activity of soul distinguishable from perception and thought, and how it is situated in relation to the perceptive and intellectual faculties as distinct parts of soul.

Assigning memory to a specific part of soul proves to be challenging, and the answers that Aristotle provides accentuate this challenge almost more than they resolve them. For instance, saying that memory belongs to the same part of the soul as that to which imagination belongs is itself ambivalent, since, based on Aristotle's account of the imagination in *DA* III, it seems that imagination neither belongs strictly to the sensitive part of soul, nor to the thinking part of the soul, but functions as some sort of transition between them.⁶⁰⁷ Secondly, the claim that we recognize (*gnōrizein*) time by means of the primary or common sense faculty is not quite as definitive as it might seem, as a closer look at Aristotle's wording there will reveal. Furthermore, it is difficult to understand why Aristotle seems to include time among the other common sensibles so nonchalantly here, when he does not mention time in any other list of them. There are also reasons to doubt that time can be perceived in the same way as common sensibles like magnitude and motion: grasping time poses its own unique set of challenges, for the reasons we have already seen in the *Physics*.

⁶⁰⁶ *DM* I 450a11-12.

⁶⁰⁷ "Imagination is different from both perception and thought" (*DA* III.3427b15); "Yet, the imaginative faculty (*to phantastikon*), which in its being is different from all the rest, whether it is the same or different from any of them is a great aporia, if one is going to set down the parts of the soul as separate" (*DA* III.9 432b1-3). Furthermore, Aristotle will later indicate that imagination can be either rational (*logistike*) or sensitive (*aisthetike*) (*DA* III.10 433b30).

Let us first look at how the imagination emerges in this discussion. First, the imagination is alluded to when Aristotle says that “memory is neither sensation nor judgment (*hupolēpsis*), but is a habit (*hexis*) or affection (*pathos*) of these whenever time happens (*hotan genētai chronos*).”⁶⁰⁸ Aristotle’s choice of the word “*hupolēpsis*” for the kind of thinking in question here is not arbitrary. Rather, I think this is a deliberate echo of the language he uses in *DA* III.3, when he is describing how there is no imagination without sensation, and no judgment (*hupolēpsis*) without imagination.⁶⁰⁹ It is exactly the imagination’s function of bridging the divide between sensation and intellect that Aristotle is describing in the passage from *DA* III.3. The way that sensation functions as a necessary condition of imagination is said to be parallel to the way that imagination is a necessary condition for judgment: *ouk aneu*. This is also how Aristotle will go on to describe how memory pertains to thought a little further down in *DM* 1: we can remember a thought insofar as the thought is not without an image.⁶¹⁰ However, while Aristotle is about to show us just how closely connected are memory and imagination, we can see that memory is already distinguished from imagination by being qualified by a temporal determination: “whenever time happens (*hotan genētai chronos*).” This qualification is never made of imagination itself (even though, the fact that imagination does not necessarily involve a “present” sensible object does serve to distinguish imagination from sensation in *DA* III.3, much like how memory is distinguished from sensation in *DM* 1).

⁶⁰⁸ *DM* 1 449b24-26.

⁶⁰⁹ *DA* III.3 427b16-17.

⁶¹⁰ “νοεῖν οὐκ ἔστιν ἄνευ φαντάσματος” (*DM* 1 450a1); “καὶ ἔστι μνημονευτὰ καθ’ αὐτὰ μὲν ὅσα ἐστὶ φανταστά, κατὰ συμβεβηκὸς δὲ ὅσα μὴ ἄνευ φαντασίας” (*DM* 1 450a24-25).

Still, the qualification *hotan genētai chronos* is itself quite vague, and so it is hard to know what to do with it. Similarly, a few lines down Aristotle will remark that, “all memory is with time (*meta chronou*).”⁶¹¹ These more general statements about memory’s relationship to time – saying that memory is an affection or habit of sensing or judging “whenever time happens” or that it is “with time” – might not seem to be very illuminating. For, neither sensation, nor expectation, nor judgment are “without time,” nor do they occur when time “does not happen.” Why, then, is it *memory* that is said to be “with time”?

As we saw in *DS* 7, there is a sense in which perception too is “with time” insofar as there are no parts of time that escape one’s notice during continuous awareness.⁶¹² The way in which our perceptual awareness might be said to be “with time” is in being carried on in tandem with time or being equal to time as it continues. By contrast, the sense in which memory is “with time” is not that of being simultaneously continuous with time. Perhaps, then, memory is “with time” in the sense of time as exceeding the departure of the prior cause of the activity⁶¹³ (for instance, the present external sensible object), just as time exceeds and embraces all change.⁶¹⁴ Though this is an admittedly speculative suggestion, it seems in line with Aristotle’s thought, given the broad view of his account of time that we have established so far in this investigation.

Keeping in mind this broad view as we proceed, we can notice that Aristotle gives us an indication of why time is such an important condition for memory in particular, when he

⁶¹¹ *DM* 1 449b28.

⁶¹² *DS* 7 448a25-30.

⁶¹³ Cf *Phy.* IV.13 222b16-27.

⁶¹⁴ *Phy.* IV.12 221a29.

makes use of key language from the *Physics*, saying: “it is not possible to remember the now in the now.”⁶¹⁵ This could of course just be viewed as a reiteration of his earlier statement that “no one would claim to remember what is present when it is present.”⁶¹⁶ But, given our understanding of the *Physics*, we know that the now is not the same as the present.⁶¹⁷ Is it possible, then, that in his account of memory Aristotle is devising a response to the paradoxes of sameness and difference of the now articulated in *Phy.* IV.10-11?⁶¹⁸ In order for there to be a before and after of time, the now cannot always be the same; in order to remember the now, time must happen, such that the “now” that we remember is no longer now. If it is not possible to remember the now in the now, but memory is indeed something that is possible, then when we remember we must distinguish nows. The distinction of memory from sensation that we have been tracing is beginning to show how we determine, or mark a limit in (*horiizein*) time as we pass from the awareness of what is present in indivisible time, to an awareness of having felt or thought something before.⁶¹⁹ The distinction of memory from sensation shows us that, in addition to our ability to simultaneously grasp different qualities belonging to a sensible object, it is also possible to distinguish different times belonging to our activities, such that we can identify a particular activity as having happened before.

So far in the *DM* we have seen that “the before” is a distinction said “in one’s soul” with respect to one’s own activities of awareness (either perceiving or thinking). It thus

⁶¹⁵ “τοῦ δὲ νῦν ἐν τῷ νῦν οὐκ ἔστι μνήμη” (*DM* 1 449b26).

⁶¹⁶ *DM* 1 449b16.

⁶¹⁷ The present is continuous and indivisible relative to several things perceived, while the now determines and numbers time and motion.

⁶¹⁸ *Phy.* IV.10 218a23-30; 11 219b11ff.

⁶¹⁹ cf *Phy.* IV.11 218b31-32; 219a22-23.

seems plausible to me that when “one says in one’s soul that one heard, or perceived or thought this before,”⁶²⁰ this is the same as what Aristotle describes as the “soul saying the nows are two” in the *Physics*.⁶²¹ Recall also that in the *Physics* ‘saying the nows are two’ was said to happen “whenever we take hold of the perception (*aisthēsin labōmen*) of the before and after in motion.”⁶²² I am thus suggesting that this “taking hold of a perception” described in the *Physics* is compatible with his account of memory, where we take hold of a prior activity of sensing (or perhaps also thinking).

But in order to test the validity of these suggestions we will have to continue to look closely at what Aristotle says about our awareness of time in the DM. We have already seen that there is some kind of “awareness” of time at the level of perception in our discussion of *DS* 7, insofar as no time escapes our notice while we are perceiving anything.⁶²³ The main question I seek to answer here is what memory brings to this awareness of time. Since we still do not know exactly which part of soul memory belongs to, I will use the expression “awareness of time” as a general term that commits us to neither the idea that time is grasped by perception alone nor that it requires thought. Aristotle speaks of this “awareness” here in *DM* 1 alternately as *aisthēsis* and *gnōsis*. This ambivalence is exemplary of the overall ambivalence over how memory belongs to sensation and how it belongs to thinking. This ambivalence also persists in *DM* 2, where Aristotle will resume a discussion of how we

⁶²⁰ *DM* 1 449b23-24.

⁶²¹ *Phy.* IV.11 219a28.

⁶²² *Phy.* IV.11 219a24-25.

⁶²³ *DS* 7 448a25-b4.

become acquainted with (*gnōrizein*) time in the context of his discussion of *anamnēsis*, an ostensibly intellectual faculty, but seemingly this discussion pertains to memory as well.

On the one hand, it might seem that Aristotle speaks in the *DM* of there being *perception* of time that is distinct from memory. For he indicates that animals who perceive time are the ones that remember,⁶²⁴ and says that we become acquainted with time by means of the common sense.⁶²⁵ Some scholars have argued that this is because memory presupposes the perception of time as its precondition. For instance, King argues that a length of time can be perceived without the use of memory, insofar as “a series of perceptions of *something changing* can be taken together.”⁶²⁶ For King, the perception of time is the dividing of a perception of a change by nows that act as boundaries or limits. Thus according to him, the perception of time (which he understands to be the dividing of present change by nows) does not require the retrieval of a *past* perception. Rather, memory requires that we must *already* have some sense of the “before” in time, and that this is a pre-requisite for our ability to “say in the soul that we saw this *before*” when we retrieve a past perception as memory. Morel argues similarly that the perception of time provides us with a sense of the before and after of time, and that “remembering” is to perceive that something is “in” this continuum of time.⁶²⁷

⁶²⁴ *DM* 1 449b29-30; 450a19

⁶²⁵ *DM* 1 450a9-11.

⁶²⁶ King 2009: 65, italics mine.

⁶²⁷ “La mémoire suppose l’appréhension d’une relation d’antériorité/postériorité” (Morel 2006:72); “la mémoire suppose donc le temps comme une condition nécessaire” (Ibid, 73); “Il faut du rest que le temps soit encore présent et constitue un unique *continuum* pour que nous puissions dire qu’un événement est passé, par rapport à un présent qui se situe dans une temporalité commune avec cet événement” (ibid 73); “la mémoire, ainsi comprise, n’est pas la perception effective du temps lui-même, mais la perception de ce qui est dans le temps (Morel 2006: 73-74)

By contrast, I have been saying that it is in fact *in the act of remembering* that we become able to say the nows are two.⁶²⁸ If this is so, then we can not divide a perception with “nows” prior to remembering, because it is in fact through remembering that we have this ability to conceive of the “nows” as two: we “now” are remembering an activity that we are aware of as belonging to another, past, “now.” There is not sufficient evidence in Aristotle’s texts that sensation alone (that is, without memory) apprehends its objects in a temporal series: rather, Aristotle stresses the temporal continuity and indivisibility of the act of perceiving.⁶²⁹ According to my reading, the “perception of time” as something divided into parts (past as distinguished from the present) is either the same thing as or necessarily involves the act of remembering.

That the perception of time precedes memory might be suggested in the *DM* insofar as Aristotle says that the animals that perceive time are the ones than can remember. So if we take this to mean that in order to remember, we need to have a sense of time, then we would

⁶²⁸My account thus is more compatible with that of Bloch: “If one wants to talk about ‘sensing time at all (that is, with the use of the proper senses), it must be something that occurs in all five senses, and it seems difficult to imagine what factors of accidental sensation that would produce the collected sensation of time, except as connected to the common sensibles. The audience will then have known that sensing time happens in the ‘common sense’, and at the same time that memory does so too” (Bloch 2007: 60-61).

⁶²⁹For instance, King seems to misinterpret Aristotle’s claim from *DS* 7. King reads “τὸ δ’ ἅμα λέγω ἐν ἐνὶ καὶ ἀτόμῳ χρόνῳ πρὸς ἄλληλα” (*DS* 7 448b19-20), as “a series of perceptions can be taken together.” The passage is quite clear in saying that *pros allēla* does not refer to a temporal multiplicity, but rather a multiplicity or characteristics that are apprehended simultaneously. A different view is put forward by Frede (1992), who distinguishes sensation from imagination by denying that a series of perceptions can be taken together at the level of sensation: “strictly speaking the eyes or ears perceive only one object at a time; thus animals without *phantasia* would only get a sequence of incoherent imprints” (285). Frede restricts the scope of perception to a single discrete object, such that it is not possible to perceive something like a landscape, or even a whole building, but instead she attributes this kind of broad view to the synthesis of the imagination. Like King, Frede fails to recognize that the unity of the perceptive act centers on the the time of perceiving. The numerical unity of the act of perceiving is given by its simultaneity, and from this basis we can distinguish it into different objects (incidental sensibles) by an act of division. Recall that Aristotle says that number is the negation of continuity and not vice versa (*DA* III.1 425a19-20).

be inclined to agree with King and Morel. But we should look carefully at the passages where Aristotle makes this argument, in order to determine if in fact he is trying to indicate such an ordering of dependence among distinct powers, or if he is rather just trying to say that these powers are inseparable from one another.

The first place where Aristotle refers to the perception of time is directly following the lines we last looked at, where Aristotle is discussing how memory is “with time.” He follows this up by saying, “The sorts of beings (*hosa*) that perceive time, these alone of the animals remember, and they do so with that by which they perceive.”⁶³⁰ This alone does not indicate that the perception of time precedes memory, but rather shows them to be manifest identically in animals, and to belong to the same faculty. The fact that this is said to be a perceptive faculty is the only thing that might lead one to think that the perception of time is different from memory, since it has not yet been firmly established whether or not memory too belongs to this part of soul.

Aristotle again refers to the *co-existence* of the powers of memory and of the perception of time in the context of arguing that we cannot think without an image, and that all memory, even if its object is a *noēton*, is not without an image (*phantasma*). Thus, memory can only be said to belong to the dianoetic faculty *incidentally* (we remember the image, but the image can be understood as an image that has intelligible content), but it belongs to the primary sense faculty according to itself (*kath hautō*). This again explains why humans are not the only animals that are capable of memory, but animals that lack *doxa* and *phronesis* can nevertheless remember. But, on the other hand, not all animals can remember, “because (*dia*)

⁶³⁰ DM 1 449b29-30.

they do not all have the sense of time.”⁶³¹ “For always, whenever, in actively remembering (*energē tē mnēmē*), [one says] that he has seen, or has heard, or has felt this, he perceives besides (*prosaisthanetai*) that [this was] before; and the before and after are in time.”⁶³²

I don’t think that there is good reason to take these passages as saying that the perception of time *precedes* the activity of remembering. Rather, the function of these references to the perception of time seem to be intent upon proving that memory is *inseparable* from the ability to perceive time. Still, the fact that they occur together in animals does not mean that they are the same thing. And the fact that there was mention of the perception of time in *DS* 7 without reference to memory would seem to indicate that there is some kind of awareness of time that precedes or might be able to exist without memory.

Let us look more closely at Morel’s interpretation. Morel suggests that we have a pre-understanding of there being a “continuum of time” prior to remembering a particular event as past. This might be defended based on the passage on the perceptibility of time in *DS* 7, which links our awareness of the continuity of time with the continuity of our awareness of ourselves and of our perceiving. However, what is not clear in Morel’s interpretation is how we have this sense of the continuum of time, and how this involves an apprehension of the before and after without memory. In fact, from Morel’s descriptions, it might seem that the “sense of time” is something broader than memory. “Or la mémoire, loin d’être une perception du temps comme tel sous ses trois aspects, est perception du passé, et non pas du présent et du futur.”⁶³³ If the “sense of time” requires a grasp of the future as

⁶³¹ *DM* 1 450a18-19.

⁶³² *DM* 1 450a19-22.

⁶³³ Morel (2006: 73).

distinct from present and past, then to what extent can it be said to belong to animals who lack *doxa* and *phronesis*? Admittedly, Aristotle does, in *DA* III.10, speak of the perception of time as precisely requiring a noetic grasp of the future.⁶³⁴ This indicates a sort of fluidity to Aristotle's use of the expression "perception of time", such that he can in the *DM* attribute it to animals incapable of thinking, and in the *DA* say that perception of time is responsible for the conflict between what is immediately desired and what is desired with a view to the future. But in neither case does it follow that the perception of time is prior to the activities in question, as if this is some kind of congenital awareness of an abstract temporal continuum which is then filled with memories, or desires.

The point of showing that memory and the perception of time are co-existent powers in *DM* 1 is that the awareness of the difference between past and present is not separable from being aware of one's activities as being past. Just as the awareness of time at the level of sensation was said to be coextensive with the awareness of ourselves and of our own activities of perceiving in *DS* 7, here in *DM* 1 Aristotle shows that the awareness of time as distinguished into before and after accompanies our grasp of our own activity as past. Furthermore, as we shall see, the kind of perception of time that involves a view to the future is inseparable from taking hold of and determining the possibilities of future actions. Thus when Aristotle speaks of the "perception" or "cognition" of time this should be thought of more generally as an "awareness of time" that unfolds according to the activities of the living being in time, and is not separable from these activities. This time of which we are aware

⁶³⁴ "ἐπεὶ δ' ὁρέξεις γίνονται ἐναντία ἀλλήλαις, τοῦτο δὲ συμβαίνει ὅταν ὁ λόγος καὶ αἱ ἐπιθυμίαι ἐναντία ὧσι, γίνεται δ' ἐν τοῖς χρόνου αἰσθησιν ἔχουσιν (ὁ μὲν γὰρ νοῦς διὰ τὸ μέλλον ἀνθέλκειν κελεύει, ἡ δ' ἐπιθυμία διὰ τὸ ἤδη· φαίνεται γὰρ τὸ ἤδη ἡδὺ καὶ ἀπλῶς ἡδὺ καὶ ἀγαθὸν ἀπλῶς, διὰ τὸ μὴ ὁρᾶν τὸ μέλλον)" (*DA* III.10 433b5-10).

differs from one species to the next depending on the level of their capacities. The awareness of time is not a distinct activity of its own that can be confined to a particular part of the soul (perceptive or intellectual).

Understanding this we can better understand why Aristotle says, “memory belongs to the same part of the soul as that to which imagination belongs.”⁶³⁵ Memory, like the imagination, is part of a transition from sensation to thinking. While for some animals, consciousness culminates in imagination or memory, for man, imagination forms the basis for thinking. Likewise, the awareness of time develops as we pass from sensation to thought, but at no level of awareness does time completely escape our notice. Let us look more closely at Aristotle’s account of the role of the image in our acquaintance with time.

First, Aristotle makes the general claim that it is not possible to think without an image. This is the literal translation of *noein ouk estin aneu phantasmatos*.⁶³⁶ Even if this is the most literal way to read this sentence, rather than show how “it is not possible to think without an image,” Aristotle in fact goes on to show how it *is* possible to think by way of an image, but is careful to show that this does not mean thinking is simply the same as imagining. When we think with an image, we are doing something different than merely beholding an image as though it were a concrete reality informing us by how it appears to be.

Rather, Aristotle specifies that it is possible to “put an image before one’s eyes” and not take what one is thinking to be literally identical with what one is imagining. When one is thinking of something that has no quantity, one makes use of an image of something that has

⁶³⁵ *DM* 1 450a23-24

⁶³⁶ *DM* 1 450a1.

quantity, but does not thereby think it *as a quantity*.⁶³⁷ Or, if we are thinking of something that is of such a nature as to have a quantity, but only indefinitely, we still put before our eyes a definite quantity, but think it only as “quantity.”⁶³⁸ In these examples Aristotle is claiming that images lend themselves to our understanding of immaterial things – things which either have no quantity at all, or have an indefinite quantity, meaning that is not that of “body” (which is always limited) – without reducing our intellectual grasp of such things to the sensual grasp of the image. Furthermore, even though he opened with an example of using physical magnitudes to represent abstract mathematical universals, Aristotle does not indicate that our imagery is specifically related to magnitudes, for he goes on to speak generally about how it is impossible to think anything without the continuous (*aneu tou sunechous*).⁶³⁹ As we know from the *Categories*, the continuous quantities include, but are not restricted to magnitude, as they include time and place as well.⁶⁴⁰

The placement of this passage here in this treatise on memory is somewhat perplexing, since Aristotle seems to be making a very general claim about epistemology that has no special bearing on memory. Though Aristotle does make similar claims at several points in the *DA*, here in the *DM* he goes into more detail on this point than he does anywhere else in his psychology.⁶⁴¹ Could it be that it has some special bearing on how we grasp time?

⁶³⁷ “καὶ ὁ νοῶν ὡσαύτως, καὶ μὴ ποσὸν νοῆ, τίθεται πρὸ ὁμμάτων ποσόν, νοεῖ δ' οὐχ ἡ ποσόν” (*DM* 1 450a4).

⁶³⁸ “ἂν δ' ἡ φύσις ἡ τῶν ποσῶν, ἀόριστον δέ, τίθεται μὲν ποσὸν ὠρισμένον, νοεῖ δ' ἡ ποσὸν μόνον” (*DM* 1 450a5-6).

⁶³⁹ *DM* 1 450a8

⁶⁴⁰ *Cat.* 6 5a29-30.

⁶⁴¹ Though the idea that “the soul never thinks without an image” is mentioned in *DA* III.7 431a17, and the idea that “we must have a phantasma to think” is mentioned at *DA* III.8 432a8-9, this point is not elaborated on in either of these places. Possibly, the argument for the difference between imagination and opinion (*doxa*) (*DA*

Indeed, Aristotle does both raise and then dismiss the question of what is the *reason* for this, deferring the answer to another inquiry.⁶⁴² Likely, a full explanation of this phenomenon exceeds the bounds of the current investigation. But the fact that Aristotle goes on to specify that it is not possible to think what is not in time without time (before retreating from explaining why this is so), and then immediately takes on the question of the relationship between how we perceive magnitude, motion and time, seems to indicate that the role of quantitative images in our thinking is especially pertinent to the investigation of time and memory.

Perhaps, as Sorabji and Ross suggest, Aristotle's mention of how it is impossible to think what is not in time without time here is meant to illustrate how we can't think of the heavenly bodies without time even though they are not in time.⁶⁴³ If so, Aristotle could be saying that to think of the heavenly bodies, over and above merely sensing or imagining them, is to know that they are eternal. But we do not achieve this insight by eternally observing them and witnessing that their motion never ends. We only become acquainted with such eternal substances by means of sensation, and we only are able to contemplate them by means of images. But this does not mean that our only knowledge of them is reducible to what we observe or imagine about them.

III.3 428b1-9) could be read as a related point, but is nowhere near as explicit about the broad consequences this has for the relationship of thinking to images in general.

⁶⁴² *DM* 1 450a6-9.

⁶⁴³ "Aristotle is forced to talk of *chronos* because he wishes to illustrate the objects of thought which cannot be apprehended without an image in the mind, not only by the concepts of mathematics...but by the eternal substances which, though appearing in time, are not conditioned by it" (Ross: 1906: 253). Similarly, Sorabji claims that "not in time" means "not encompassed by time," and examples of things not in time include the heavenly bodies, the incommensurability of the diagonal and side (Sorabji 2004: 74).

Even so, it is not immediately clear what, if anything, this has to do with our perception of magnitude, motion and time. And yet Aristotle follows this passage by saying “it is necessary to become acquainted with magnitude and motion with that by which we become acquainted with time.”⁶⁴⁴ He goes on to say that it is by the common or first sense that we become acquainted with all three of them. If Aristotle’s earlier claim about time has no bearing on these claims, it is at the very least a strange coincidence that they are found juxtaposed here.

On the one hand, the claim that magnitude and motion are apprehended with the same capacity as time is unsurprising given what we have seen from *Physics* IV. There certainly is an important connection indicated there between our grasp of magnitude, motion and time. However, as I have argued, magnitude and motion proved to be only imperfect analogies for time, and we found that if we try to think time according to these models, it appears not to exist.⁶⁴⁵ The challenge of grasping time as something apart from the soul was that, unlike magnitude, the parts of time do not remain what they are, and, unlike motion, there is no moving body underlying and providing continuity to time’s before and after. So both the continuity and difference of time was said to belong to the now. But the now, as I have argued, only exists as an expression of soul. Based on this, it is difficult to see how time can be perceived in the same manner as magnitude and motion, which both exist separately and independently of the soul. The other difficulty is to understand why Aristotle seems inclined

⁶⁴⁴ *DM* 1 450a9-10.

⁶⁴⁵ As I argued in chapter 2 of this thesis, the criteria that “all or some of its parts must exist” (*Phy.* IV.10 218a4-7) apply to magnitude and motion (respectively).

to include time as among the common sensibles here, when he does not do so elsewhere.⁶⁴⁶

The fact that time was not included in these earlier lists seemed to support the idea that time is not something that can be directly perceived.⁶⁴⁷

Navigating this bit of text is quite hazardous, but a closer look at Aristotle's explanation will be fruitful. Editors and interpreters disagree about where to place the crucial phrase "and the image is an affection of the common sense."⁶⁴⁸ Perhaps its specific location is not as important as the fact that it is there at all. On the one hand, saying that the image (*phantasma*) is an affection (*pathos*) of the common sense can draw our attention to the way that the image becomes the material for thinking: that the passive aspect of the activity is the externally received impression that one goes on to use for the sake of thinking about something that has no sensuous nature of its own. In the light of this understanding, it seems possible that images of magnitude and motion are used in order to think about time, while remaining cognizant that the sensuous dimensions of the image do not belong properly to what we are thinking about (which is exactly what Aristotle does in *Phy* IV. 10-14). This reading of this phrase would make its most logical placement after "memory of intelligible things is not possible without an image."⁶⁴⁹ But we have also seen that the common sense is not just a receptacle for impressions, but rather is also used by Aristotle to explain the general activity of awareness at the center of all sensitive experience, by which we discern the

⁶⁴⁶ The places where Aristotle provides lists of the common sensibles are *DA* II.6 418a19; *DA* III.1 425a17; *DS* I 437a9.

⁶⁴⁷ Recall that in *DA* II.6 (418a9-10) Aristotle specifies that the common sensibles are perceived directly (*kath' hauta*), as opposed to incidentally (*kata sumbebēkos*).

⁶⁴⁸ *DM* I 450a10-11. For instance, Sorabji (2004:74) argues that it should be kept in its original location, whereas Sachs (2004: 169) moves it to what he takes to be a more logical position, following the phrase "memory of intelligible things is not without an image."

⁶⁴⁹ *DM* I 450a13. This is Sachs' reading.

difference between various qualities, and by which we “perceive that we perceive.”

Furthermore, we saw that the description of the perception of time from *DS* 7 comes up in the context of describing this very activity of the center of awareness from which no time escapes our notice when we discern differences in qualities. This aspect of the common sense is best brought out by keeping the phrase in its original location, before “it is clear that awareness of these is provided by the first sense.”⁶⁵⁰

In other words, I do not think that we have to choose one or the other reading here. Rather, it is precisely the ambivalence belonging to each the sense of time, memory and the imagination, that is captured by reading it both ways. On the one hand, there is a complete activity of remembering, or imagining, which is the highest activity of awareness possible for some animals, but occasionally is experienced as the final form of awareness by humans too.⁶⁵¹ There is an awareness of time possible here, but it is not the only or highest awareness of time possible for intelligent beings. For the human, imagination and memory serve not only as ends in themselves, but also as material for experience, habit, and eventually, practical and theoretical understanding. The sense of time that accompanies such activities deepens in scope and complexity accordingly.

We thus have established some kind of answer to the question with which we were tasked in this section. The part of soul to which memory belongs is the same as that of the imagination. On the one hand, the imagination belongs to the sensitive part of the soul, insofar as sensuous images still involve the body, but on the other hand, the imagination has

⁶⁵⁰ *DM* 1 450a11-12.

⁶⁵¹ Perhaps, over the course of their development, or in cases of drunkenness or sleep (which Aristotle often cites).

an important function in providing the material for thinking. Indeed, thinking is impossible without it. By identifying memory with the imagination as a “part of soul” I think Aristotle is showing us that memory shares this ambivalence with the imagination.

The cause of memory as absent

Given how closely related are memory and the imagination, in the next section Aristotle will show exactly how they are distinguishable from one another. Aristotle presents the fundamental aporia that defines memory: “How, when a *pathos* is present (*parontos*), but the thing (*pragmatos*) is absent (*apontos*), is it possible to remember what is not present (*to mē paron*)?”⁶⁵² We have seen that Aristotle originally defined memory in distinction from sensation, where the object is always present. From there he went on to show that we are aware of our past activity by means of an image, which is an affection (*pathos*) in the sensitive part of the soul. But if it is to be possible to be aware of something that is past, we will have to explain the paradox that this image or affection is in some manner of speaking “present” but the memory is in fact of something past.

The answer to this aporia will show how memory differs from imagination. However, like memory, imagination is characterized (in some cases at least) by the fact that it is an awareness of something that is not externally present.⁶⁵³ Though Aristotle does indicate in his account of imagination that being unable to distinguish between a present sensation and an

⁶⁵² *DM* 1 450a26-27.

⁶⁵³ “It is clear from the following that imagination is not sensation. For sensation is either a capacity or an activity, such as sight or seeing, but imagination happens when neither of these are present, such as in dreams” *DA* III.3 428a6-8. For a view that argues that imagination does concern itself with present sensations (insofar as it is responsible for synthesizing various objects together), see Frede (1992).

image is a sign of intellectual poverty,⁶⁵⁴ nowhere in Aristotle's account of imagination does he specify that imagination must involve tracing back the origin of this image to something that we perceived or thought in the past.

Aristotle first suggests that, in the soul, the present affection should be thought of as a sort of picture (*zōgraphēma*), the *hexis* of which we call memory.⁶⁵⁵ Note the vitalistic word choice Aristotle makes both with reference to the object and subject of memory: *zōgraphēma* means literally a "life drawing", and *hexis* has the connotation of "actively holding" onto something. This phrasing implicitly contrasts with the passivity implied in speaking of the image as a "*pathos*." However, this active connotation is lost sight of when Aristotle next speaks of the *pathos* as the impression (*tupon*) of a motion that affects the senses, and goes on to give some physical reasons for why the old and the young have more difficulty remembering than those in the prime of life, due to the rigidity or fluidity of their bodily constitution.⁶⁵⁶

This emphasis on the passive side of imagination does not account for any activity on the part of the ensouled: it seems that we merely receive the impression (*tupon*) (so long as our bodies are not too hard or soft), and have no role in maintaining it or retrieving it. This passive account of imagination also conceals what might distinguish the remembered impression from that which made the impression on us in the first place (the present sensible). Thus speaking of the image as an impression incites us to explain how the *pathos* might be

⁶⁵⁴ "Because images remain in us and are similar to sensations, animals often act according to them, some, like the beasts, because they have no mind, and some, such as humans, because the mind is clouded by passion, disease, or sleep" (*DA* III.3 429a5-7).

⁶⁵⁵ *DM* 1 450a30.

⁶⁵⁶ *DM* 1 450b1-11.

distinguished from the original experience we had in sensing it. If the impression somehow remains in our soul, as the final impact of a motion that remains as though at rest there, how can we also be aware that the external particular cause of the impression is no longer there? How are we not simply perceiving it as something still remaining out there, likewise to our awareness, continuing to be responsible for our continued or renewed awareness of it? How can the impression be grasped as something absent (*apontos*) or not present (*to mē paron*)?

Aristotle entertains the paradox that the *pathos* must either be the same as the sensation, or somehow different, in order for us to be aware of it as something absent from our current perceiving. Either way, the idea that the object of memory is a *pathos* or *tupos* fails to tell us how we can be aware of having a memory, rather than just be sensing something else, or the same thing again or continuously. The idea that a memory is of something absent that *was* present (before, in the past) is inexplicable from this point of view. It would seem that either we are sensing something inherently different from the original (and thus, not the original understood as something that has been sensed before) or we are sensing something the same as the original (and liable to be confused with active perception of it as something present).

We should already have reason to doubt that this account of imagination simply in terms of a remaining *pathos* will be an adequate description of the active center of awareness that we have seen characterizes the common sense. For we have seen that awareness of sensibles involves a simultaneous grasp of their numerical identity and active distinguishing of the various ways it can be said to be (differences “in being” (*to einai*)) when we are sensing. What is common in every act of sensation is this ability to simultaneously grasp sameness and difference, in such a way that the act cannot be equated with the passive aspect

of being moved by something. For a motion, the difference between moving and having been moved constitutes a contradiction: moving excludes whatever is completed or perfected in having been moved. If each attribute were only a motion affecting a different part of the body and there were no common awareness uniting this receptivity, there would be no being capable of distinguishing differences such as white and black, white and sweet, good and bad, or before and after.⁶⁵⁷

When Aristotle offers his ultimate solution to this aporia, we can see how this account of the common structure of every act of awareness also applies to how we remember. After entertaining the idea that the memory functions as an impression, he resumes the notion that remembering is something like seeing a painted or drawn image of some living thing (*zōon*):

Just as a drawing on a panel is both an animal/picture (*zōon*) and a likeness (*eikōn*), and one and the same thing is both of these, although what it is to be (*to einai*) for both is not the same, and it is possible to behold it both as a picture/animal, and as a likeness, so too one ought to take the image (*phantasma*) in us as being something in its own right (*kath'auto*), and an image of something else.⁶⁵⁸

Perhaps this image can be taken quite literally. The drawing has the same form as what it depicts, but a different matter: we recognize, on the one hand, that we are looking at pigments on a board, and on the other hand, that we are looking at an animal made of flesh and fur. It might be possible to read the same form/matter distinction into the way one distinguishes the image in the soul from the original perception of it. For, though Aristotle does not specify

⁶⁵⁷ Cf. *DA* III.2 426b30ff.

⁶⁵⁸ “οἷον γὰρ τὸ ἐν τῷ πίνακι γεγραμμένον καὶ ζῶον ἐστὶ καὶ εἰκὼν, καὶ τὸ αὐτὸ καὶ ἐν τοῦτ' ἐστὶν ἄμφω, τὸ μέντοι εἶναι οὐ ταὐτὸν ἀμφοῖν, καὶ ἔστι θεωρεῖν καὶ ὡς ζῶον καὶ ὡς εἰκόνα, οὕτω καὶ τὸ ἐν ἡμῖν φάντασμα δεῖ ὑπολαβεῖν καὶ αὐτό τι καθ' αὐτό εἶναι θεώρημα καὶ ἄλλου φάντασμα” (*DM* 1 450b20-26). Note that unlike the example of the impression, where the soul was represented by the unformed material that receives the form, the material “panel” of the above description is not the image for the soul. Rather, in the above metaphor the soul should be understood as observing the image painted on the panel.

what the material basis for imagination is, he is quite clear that it does not happen without the (ensouled) body. Thus, the image must have its own material basis that is different from that causing the original perception. But this alone tells us nothing about how we are aware that the memory is of some perception (or thought) that one had *before*. Indeed, if it is possible to imagine things that one has never experienced, then even if this materialist answer could explain how we differentiate an image from a sense experience, it does not tell us how we specify that we are having a memory of something before.

I think there are two ways of answering this dilemma. The first is that for animals who lack any cognitive faculties beyond memory, the only division of time of which they are aware is that between past and future. Lacking higher intellectual faculties, they do not engage in the kind of imaginative play that Aristotle says is “up to us.”⁶⁵⁹ If such an animal is aware that it is experiencing an image that is not present, the only alternative source for this image is that it is something that was experienced as a sensation in the past. By contrast, human beings have to distinguish the memory from all kinds of thoughts and fantasies, so it becomes more complicated to assign the origin of memory correctly to the past. However, we are also equipped to discern these differences by means of our higher cognitive abilities, and our richer understanding of time.

Indeed, Aristotle indicates as much when he goes on to speak of how it is possible to be mistaken about whether or not we are having a memory.⁶⁶⁰ Aristotle showed in *DA* III.3 that it is important to distinguish imagination from both sensation and intelligence in order to

⁶⁵⁹ “[Imagination] is a pathos that is up to us, whenever we wish” (*DA* III.3 427b18-19). Note that when Aristotle elaborates on this he uses the example of using a mnemonic place system, indicating that the kind of imagining that is “up to us” is something that is the exclusive purview of human beings (just like recollection).

⁶⁶⁰ *DM* I 451a3-7.

make room for the possibility of error, and that some intellectual ability is required in order to distinguish true and false within the image. Similarly, here in *DM* 1 Aristotle shows that in cases where there is any doubt about whether the image belongs to something experienced in the past one will be able “to reflect (*ennoēsai*) and recollect (*anamnēsthēnai*) that we have heard or seen this before.”⁶⁶¹ This language is quite telling: in cases of doubt over whether or not this is a memory, the intellect (*ennoēsai*), or at least certain capabilities only belonging to humans (*anamnēsthēnai*), must be called upon to judge.

In the end we have seen just how deeply runs the ambivalence of the question “to which part of soul does memory belong.” On the one hand it belongs properly to the perceptive part of the soul. We have seen that it is possible for the soul to discern the difference between the before and after of time in the same manner that it discerns simultaneous differences belonging to present perceptions: by apprehending the image as that which is numerically one but different in being. But we also saw that cases where this would not suffice – where there might be many other possible origins of this image – are the cases where the soul has higher abilities, which also enable it to determine if the image is of something sensed or thought before, or not. Humans do not experience memory the same way as other animals. Our memories are both open to more confusion, and we have a greater ability to correct such confusion. Having sufficiently shown the extent to which memory is and is not confined to the perceptive part of the soul, we are now amply prepared to move on to consider recollection (*anamnēsis*), which belongs only to man, and involves more than just the abilities of the sensitive soul.

⁶⁶¹ *DM* 1 451a6-7.

DM 2: Recollection (anamnēsis) distinguished from memory (mnēmē):

So far I have argued that memory is involved in our capacity to say the nows are two. Memory involves either being aware of an image that is not due to something present, and therefore is due to an activity that is past, or distinguishing the image from a wider variety of possibilities, and determining that it has its origin in the past. Based on this, I have made sense of the fact that Aristotle insists that memory is the function of the sensitive capacity of the soul, and not the intellective capacity, because the ability to distinguish the temporal difference belonging to the remembered activity (that it was something felt or thought before) is consistent with the way that we are said to discern differences belonging to proper and common sensibles as well: the image apprehended as both itself and a likeness of something else is one in number but different in being. What memory contributes to the account of sensation that we have already seen in the *DS* and *DA* is that in remembering the soul is discerning a difference belonging something that is not present to it externally: specifically, the awareness that something was once present but is no longer present to the senses. This shows an awareness of time connected to the soul's awareness of the status of its own images: as being both a currently remembered image and a likeness of something that was present before.

We can see that this explication of memory elucidates what Aristotle says about the determining power of the now in the *Physics*: “We say (*phamen*) then that time has happened whenever we take hold of (*labōmen*) the perception (*aisthēsis*) of the before and after in motion.”⁶⁶² What we are taking hold of in a memory is not a present external sensible, but we are rather taking hold of our own, prior perception. As such, memory provides the beginning

⁶⁶² *Phy.* IV.11 219a22-25.

of a transition toward thinking. By not depending on the presence of something external, it approximates the more autonomous character attributed to thinking in *DA* II.5. Just as thinking was said to have its object in the soul and thus be “up to us, whenever we wish,” Aristotle says in *DA* III.3 that *phantasia* is “a *pathos* that is up to us whenever we want.”⁶⁶³ However, memory remains distinct from thinking, and is thus aligned with sensation, insofar as the object of memory (the *pathos*) is not universal, but particular: a particular external sensible that we experienced before.

In *DM* 2 Aristotle considers recollection (*anamnesis*), saying that we must first take what has been said in the exploration (of memory, in chapter 1) as being true.⁶⁶⁴ We have already seen that there is an ambivalence about memory: that it properly belongs to sensation, but that it might also incidentally belong to what is thought and thus to the faculty of thinking. This is because memory is the soul’s grasp of its own activity (*tōn energeiōn*) that happened before. Insofar as this refers to the activity of sensation, it depends on something that has been perceived before, and we are then remembering our activity of having perceived something external and particular. But if it is also possible, incidentally, to remember something thought before, we would in this case be remembering an act of thinking that did not depend on the presence of a particular external cause. The act of remembering a thought must then be rooted in a different sense of the “before” from the one provided by the earlier presence of an external particular sensible and its current (external) absence.

⁶⁶³ *DA* III.3 427b17-20.

⁶⁶⁴ *DM* 2 451a19-20. It is also possible that Aristotle means that we need to take to be true some other “exploratory” works, as Sachs (2004: 173) and Sorabji (2004: 88) claim. But this seems odd to me, given that Aristotle goes on to show that recollection is distinguished from learning by virtue of what he has just said about memory.

Aristotle's main concern in *DM 2* is not to show how memory and recollection differ. Rather, he is building on his account of memory when he enters into a discussion of the more complex operations of recollection in *DM 2*, speaking of the culmination of recollection as "remembering" throughout this chapter. The distinction Aristotle is more concerned to make here is that between recollection and learning or discovering something for the first time (or learning it again when we have failed to internalize it) through either a sensitive experience or through the guidance of a teacher (probably in order to distinguish his position from the one presented in Plato's dialogues).⁶⁶⁵ However, since we are concerned with the development of the awareness of time from the properly sensitive grasp of time, toward the intellectual ability to number time, the way that there is a transition between memory and recollection is important to our present study. Accordingly, I will draw attention to the differences between memory and recollection indicated by the text as we proceed, even though differentiating them is not Aristotle's main concern in *DM 2*.

As I have already mentioned, Aristotle will ultimately distinguish recollection from memory based on the fact that they do not always appear together in living beings: there are animals that remember, but none other than man recollect.⁶⁶⁶ He will furthermore say that recollecting is a sort of reasoning/deduction (*tis sullogismos*), specifically the ability to deliberate (*to bouleutikon*).⁶⁶⁷ This shows that recollecting involves an intellective ability that is not universally required for all instances of remembering. However, this does not mean that recollection has no connection to our sensitive experience, or that it takes hold of the

⁶⁶⁵ See for instance Sorabji's analysis of this (Sorabji 2004: 35-40).

⁶⁶⁶ *DM 2* 453a5-10.

⁶⁶⁷ *DM 2* 453a11-14.

universals of thought in such a way that it cuts ties with sensitive experience altogether.

Rather, as Aristotle reminded us in *DM* 1, it is not possible even to think without an image.⁶⁶⁸

We will see that this is significant for our grasp of time, insofar as Aristotle will speak of how we cognize time in relation to images of magnitude.

There are two central characteristics of recollection that Aristotle will outline in *DM* 2. The first is that it involves a succession (*ephexēs*) of images or thoughts, passed through as motions (*kinēsis*) from one to the next. The second is that moving through this sequence is something initiated by the soul itself: in recollecting, one is not merely the passive recipient of a series of motions, but rather, one actively seeks out something one wishes to remember. In order to do this, one must take hold of the origin (*arche*) of the motion or series of motions that will bring about the awareness of the memory sought.

Based on this, it seems that recollection differs from memory both by the fact that Aristotle speaks of the path of recollection in terms of motion (*kinēsis*), rather than simply a remaining affection (*pathē*),⁶⁶⁹ and that this passage involves a *successive* ordering that leads to the revelation of memory. This means that recollection involves one or more steps in the process towards remembering. Whereas Aristotle described remembering as the act of the soul saying that it sensed (or thought) something before, he describes recollecting as the act of initiating a series of motions in the soul leading to the memory sought. That Aristotle did not speak of the origin (*arche*) of remembering in *DM* 1 indicates that it is possible to remember

⁶⁶⁸ *DM* 1 450a1

⁶⁶⁹ Sorabji insists that there is no meaningful difference here. “The change in question is an image...The word *kinēsis* is ambiguous as between the process of change and the product of change” (Sorabji 2004: 93). It would be very strange if Aristotle were to here confuse the notion of *kinēsis* that he consistently maintains: that for a motion, unlike an activity, there is a fundamental difference between process and product.

spontaneously; it is possible to be aware of something that was before, without actively seeking the awareness of it as an intended end. In this way, animals are capable of the simple act of remembering without having the ability to deliberate.

Accordingly, whereas remembering involved an awareness of the difference between two nows – the one at which we are remembering, and the one which we are remembering, which is said to be “before” insofar as it is not present – it might be possible to recollect several nows in succession. However, while this might be possible given Aristotle’s account of the successive contents of recollection, Aristotle does not speak of these paths as strictly historical: as pertaining to different remembered nows or as motions that are likenesses of motions perceived in the past. Rather, when he explains that, “recollections happen when motion naturally (*pephuken*) comes about this with that (*hede meta tēnde*),”⁶⁷⁰ he specifies that there are two ways in which something can be grasped by “naturally” moving from another: either by necessity (*ex anagkēs*) or by habit (*ethei*).⁶⁷¹

Aristotle says very little about the necessary connection, beyond saying that things that have an order (*taxin*), like mathematics, are remembered well, as opposed to these that are poorly ordered, which are remembered with difficulty.⁶⁷² However, insofar as mathematics are included among the things we are capable of recollecting, it is clear that we are capable of recollecting something that is not itself in time⁶⁷³ (even if we would have had

⁶⁷⁰ *DM* 2 451b12-13. I hesitate to translate *meta* as “after” (and suggest “with”) because it is not clear here that Aristotle intends to restrict the ordering of these motion to those in a temporal or local sequence.

⁶⁷¹ *DM* 2 451b13ff.

⁶⁷² *DM* 2 452a4.

⁶⁷³ Cf. *Phy.* IV.12

to have a prior experience of learning the language of mathematics in order to later recall a specific proof).

Though engendering a habit requires some past action, the ordering of motions engendered by habit are not simply derivative of a past sensitive experience: of witnessing the same thing over and over again.⁶⁷⁴ Rather, habits can be engendered by repeatedly imagining or thinking about something in a certain way. When Aristotle goes on to speak of the different sorts of connections that allow us to move through the sequence he suggests that they might be “same” (*autai*), “together” (*hama*), or a “part” (*meros*) of what remains to be grasped.⁶⁷⁵ Though the connection of togetherness or simultaneity (*hama*) can refer to a strictly historical or accidental connection, the connections based on sameness or being a part of a whole imply a logical, rather than a historical, relationship ordering the steps taken in recollecting. He will also speak of the way we recall from places (*topoi*): passing through a series of images that we imagine as located together.⁶⁷⁶ Furthermore, Aristotle shows that the origin (*arche*) that we take hold of does not need to have a specifically temporal designation. He claims that “we might begin from the now or from something else (*allou tinos*),”⁶⁷⁷ and generally the middle of the series serves as a good starting point, from which we can move in either direction.⁶⁷⁸ Thus, Aristotle shows that it is possible to take up the search and to pass

⁶⁷⁴ Cf the following comments on the way that repetition features in Aristotle’s account of the imagination. “*Phantasmata* are flexible, and can be enriched by repeated observations, while immediate sense-perceptions cannot” (Frede 1992: 291). “The only good way of warding off the snare of images is to take them all into consideration, to multiply the *phantasmata*” (Bodéüs 1990: 26).

⁶⁷⁵ *DM* 2 451b22-23.

⁶⁷⁶ *DM* 2 452a12.

⁶⁷⁷ *DM* 2 451b19-20.

⁶⁷⁸ *DM* 2 452a16-17.

through images arranged in a wide variety of ways, or recognize the necessary order of things thought, and any of these paths might enable us to move through a recollected sequence. Recollection is not strictly historically determined: it is more than a mere repetition of the past as something that was present to the senses.⁶⁷⁹

Still, we cannot recall anything that we are discovering for the first time, and the memory in which recollection culminates is always something of the sort that we have seen, heard, or somehow experienced before.⁶⁸⁰ This restriction allows Aristotle to maintain the distinction between learning and recollecting, and seems to imply that recollection is indeed rooted in the past, and does not give us access to anything new or not already discovered. Still, this does not mean that we can only recollect things by repeating the series identically as it has already been taught to us, or revealed to us in our sensitive experience. For, what crucially distinguishes recollecting from learning is not the determinate contents or the determinate ordering of the sequence, as if these, once experienced, were set in stone. Rather, the fact that recollection can unfold from habit shows that the soul develops a measure of independence from what has been revealed by the external environment or taught by a teacher. If recollection is to be meaningfully connected to the rational capacities of the soul it cannot simply consist of a faithful obedience to what was presented to us externally in the past.⁶⁸¹

⁶⁷⁹ Though this point does not tap into an overt controversy in the scholarship that I am aware of, I do find that interpreters of *DM* 2 assume that recollection pertains primarily to historical sequences. For instance, Sorabji treats the example of recollecting “what one did last Tuesday” as paradigmatic of what Aristotle is saying one searches for when recollecting (Sorabji 2004: 43)

⁶⁸⁰ *DM* 2 453a12-13.

⁶⁸¹ Cf *EN* I.13 1103a3.

Thus, Aristotle's account does not commit us to the idea that the aim of recollection is to faithfully recall a series of events that have past. Still, recollection does culminate in remembering, and Aristotle uses very similar language when he speaks of them, with an important difference. Speaking of memory, Aristotle says that, "one says in one's soul that one heard or felt or thought this (*touto*) before."⁶⁸² When Aristotle speaks of recollection he says that, "one reasons that he said, or heard, or experienced this sort of thing (*ti toiouton*) before."⁶⁸³ The difference between referring to the object of the activity with the deictic pronoun (*touto*) in relation to memory, and using the much less definite construction (*ti toiouton*) in relation to recollection, indicates that there is room for the object of recollection to be something of the same kind or nature as what was heard or felt or thought before, and need not be an exact literal representation.

Our question as we move forward is: does our awareness of time develop when one exercises recollection, compared to one who only has the ability to remember? We have seen that there are two central characteristics that distinguish recollection from memory: 1) the way that recollection unfolds successively (*ephexēs*), and 2) the fact that we actively initiate the unfolding of this series, by taking hold of the *arche*. Over the next two sections of this chapter, we will look at each of these two themes – succession and taking hold of the *arche* – and see both how they characterize Aristotle's account of our thinking more generally, and how they contribute to our awareness of time.

Succession (ephexēs) and the ability to measure time:

⁶⁸² "Whenever one is engaging in memory, one thusly says in one's soul that one heard, or felt or thought this before" (DM 1 449b22-23).

⁶⁸³ "The one who is recollecting (*ho anamimnēskomenos*) reasons that he said or heard or experience this sort of thing (*ti toiouton*) before" (DM 2 453a 10-12).

We will now consider the significance of Aristotle's claim that recollection is an activity that unfolds successively.⁶⁸⁴ If we remain mindful of what was said about the temporality of sensation in the DS, we can see that sensitive experience does not unfold successively.⁶⁸⁵ Rather, our awareness of time was there shown to be continuous, as our awareness of ourselves and our perceiving is continuous. Sensations are not presented to us successively: the succession of images is only established when we retrospectively take hold of our sensations as images, and develop an intellectual grasp of what distinguishes and orders the images as one after another.

The ability to grasp something successively is the purview of thinking, and not of sensation, which grasps its objects simultaneously (*hama*). Aristotle makes a notable remark to this point in *DA* I.3. There, he criticizes the position put forward in Plato's *Timaeus* that the movement (*phora*) of the heavens can be identified with the motions of the soul.⁶⁸⁶ One of the issues that Aristotle takes with this position is that, while thinking is continuous, it is not continuous in the same way that circular motion is continuous: "*Nous* is one and continuous, as is thinking (*noēsis*): and thinking is of thoughts (*noēmata*). But these are one in succession (*tō ephexēs hen*), as number is, and not as magnitude."⁶⁸⁷ Recall the distinction Aristotle made in the *Categories* between continuous and discrete quantities: on the one hand, time was said to share in the nature of continuous quantities, like magnitude and place, insofar as these all have parts that share common boundaries. But Aristotle also made a second distinction:

⁶⁸⁴ *DM* 2 451b19, 28.

⁶⁸⁵ The successive unfolding of our awareness is shown in the *Physics* to depend on our ability to determine our sensations: "We determine (*horizomen*) by taking (*hupolabein*) them as another and another (*allo kai allo*), and what is between them is different (*kai metaxu ti autōn heteron*)," (*Phy.* IV.11 219a25-27).

⁶⁸⁶ *DA* I.3 407a2-3.

⁶⁸⁷ *DA* I.3 407a7-8.

between quantities that exist as holding a relative position (*ek thesin ekhonton pros allela*) and those that have no position at all. On the basis of this distinction, time was shown to be akin to discrete quantities, like number and logos, which have no position such as to remain and hold onto a position relative to the next part. In his critique of the position put forward in the *Timaeus*, Aristotle shows that this seeming ambivalence about the nature of time is precisely that which belongs to thinking: both are somehow both continuous and successive.

This is not just an offhand remark made about thinking at the beginning of the *DA*, but rather reveals a deep truth about the connection of time to soul. This will become clear when we take a close look at how Aristotle speaks about how we measure time. We will be looking at two passages where Aristotle speaks to this. The first is within the context of his account of recollection in *DM* 2. The second is a passage from *DA* III.6, in the context of discussing the divisibility of the object of thought.⁶⁸⁸

We have already looked at Aristotle's comments on our ability to become acquainted with time (*gnōrizein chronon*) in *DM* 1.⁶⁸⁹ We noted a tension between Aristotle's use of a verb that is etymologically connected with knowing (*gnōrizō*), and his subsequent claim that our acquaintance with time belongs properly to sensation. This tension is one of the many signs of there being a transition from sensing to thinking being made possible in the act of memory, and the awareness of time that accompanies it. In *DM* 2 Aristotle re-opens the subject of our awareness of time, again, speaking of this awareness as *gnōrizein*,⁶⁹⁰ but this

⁶⁸⁸ *DA* III.6 430b7-14.

⁶⁸⁹ *DM* 1 450a10.

⁶⁹⁰ King is sensitive to the cognitive connotation of this verb, but does not make a connection to the use of the same word in *DM* 1, where Aristotle does claim to be talking about perception: "It is wise here to talk of cognition of time, rather than perception. For not only the language indicates the presence of nous. The

time making a distinction: that we can have this awareness of time either indefinitely (*aoristōs*) or by measure (*metrō*).⁶⁹¹ This distinction supports what I have been saying about the awareness of time as being something that develops in the soul according to its activities, and there not being a distinct activity of its own, through which we achieve a complete awareness of time. This distinction is necessary in order to bridge the difference between the continuous awareness of time Aristotle described in *DS* 7, where the contents are grasped simultaneously, and time as the number of motion with respect to before and after, which is the function of *nous*, as Aristotle makes clear in the *Physics*.

Aristotle's claims here invoke several themes we have already seen. First, he refers to there being some faculty by which one discerns (*krinei*) more or less, which we know to be the common sense.⁶⁹² Next he makes an analogy to magnitude, specifically, to how one thinks (*noei*) a magnitude that is large or far away.⁶⁹³ Between these two sentences we see again that there is some tension about whether we are speaking of this measuring as a fundamentally perceptive or intellectual act. Since it is not quite clear one way or the other, it is not altogether surprising that some scholars have read this passage as being a regression to the subject of memory after having moved on to a discussion of recollection for the majority of *DM* 2.⁶⁹⁴ Whether we understand this section as pertaining fundamentally to memory, and

operations involved, relying as they do on a geometric model, encourage one to think that the mental processes involved here are more complicated than those attributed to animals other than humans" (King 2009: 67).

⁶⁹¹ *DM* 1 452b8.

⁶⁹² *DM* 2 452b8, cf. *DA* III.2 427a10-15.

⁶⁹³ *DM* 2 452b9-10.

⁶⁹⁴ "For he has devoted all the second chapter [to the subject of recollection] except for the section on judging temporal distances" (Sorabji 2004: 35). Annas claims that the section on "estimating time lapses" concerns both memory and recollection, and that the points made from 452b26-453a4 concern memory alone (Annas 1992: 298).

thus indicating the measuring of time is a function of the perceptive faculty, or belonging more properly to recollection, depends on how we understand the role being played by the image of magnitude here. Aristotle begins by telling us that how we are acquainted with time is “the most important point” at issue here, and then goes on to only talk about the analogy between this and how we measure magnitude. Does the fact that Aristotle does not mention any significant difference between the way that we measure magnitude and how we measure time indicate that our measuring of magnitude can be understood as a perfect analogy to how we measure time?

We have seen that there are many reasons provided in the *Physics* for why magnitude cannot serve as a perfect analogy for time. The most pertinent among these reasons, for the present purposes, is that the magnitude remains where it is while we divide and count its parts, whereas time does not. However, it is this very difference that makes the analogy between magnitude and time here so surprising. For what Aristotle says is that “one thinks big or far away things not by having one’s thinking stretch out to them, as some say vision works (for the mind would think them similarly if they were not there).”⁶⁹⁵ This is perhaps a surprising claim in relation to magnitude, for a magnitude is something that remains where it is out there, available for the purposes of our measuring it. So to say that this is not in fact how we measure a magnitude, is a striking claim about magnitude. But what does it tell us about time? Time is not something remaining what it is external to us as an object that could possibly be “stretched out to.” How could this be an informative claim about how we measure time?

⁶⁹⁵ *DM* 2 452b9-12.

The value of this analogy is that it shows how the *acts* of measuring time and magnitude are related, even if time and magnitude themselves are significantly different. Aristotle has already shown us how it is possible for us to think of something by means of an image of something else without identifying the object thought with the image in *DM* 1. There, Aristotle spoke of how when we think of something that does not have quantity, we place a quantity as though it were “before our eyes” but we do not think it *as* quantity.⁶⁹⁶ Similarly, when we think of time, we may make use of images of magnitudes, of a continuous length, or of points dividing it, but we do not think of it *as* lines or points. So it is possible to make use of images of magnitude in order to think time without identifying time with all (or perhaps any) aspects of a magnitude.

Furthermore, Aristotle is here telling us something about a similarity between the acts of measuring magnitudes and measuring time. He tells us that in neither case do we physically reach out to the thing “out there” to measure it, but, rather, we do so “by an analogous motion.”⁶⁹⁷ This has led some commentators to assume that Aristotle is here saying that the mind moves along a mental diagram⁶⁹⁸ when measuring a length of time. Though this seems like a natural supposition, it leads us to a problem that is by now quite familiar to us. As Sorabji remarks,

⁶⁹⁶ *DM* 2 450a4.

⁶⁹⁷ *DM* 2 452b12.

⁶⁹⁸ “How can one move from a purely spatial diagram to a conclusion about the absolute length of some time period? Perhaps Aristotle would answer that one does not statically view the imaged diagram, but moves in one’s mind along the lines that compose it at a standard pace determined by human physiology” (Sorabji 2004: 20); “We have seen that representations are changes, albeit ones left behind by actual perception, and it is an allowable extension of the meaning of the term to apply it to a mental diagram: the changes are those one had in mind while drawing a mental diagram (King 2009: 66-67)

When the mental movement...terminates, how can one know what its duration has been? Must one rely on memory? Must one appeal to yet another mental diagram? In either case, the account would be threatened with a regress... But how then does one estimate it [the duration]? Can it be through sense perception?⁶⁹⁹

Sorabji's questions expose the limitations of equating motions in the soul with the activity of thinking. For, as we have seen, the limitations that characterize motion as an incomplete activity, do not characterize the activities of soul. If we equate the act of measuring time with moving along a line we will never be able to explain our grasp of what was, or will be. But the simple solution to this problem is to liberate ourselves from equating either time or the awareness of the soul with a motion.

In order to understand the alternative, we have to understand how Aristotle thinks we are capable of thinking thoughts in succession. Recall that the defining structure of recollection is that one initiates a series (*ephexēs*) of motions (*kinēseis*) in the soul, to eventually arrive at a memory sought.⁷⁰⁰ The very fact that Aristotle speaks of being cognizant of a succession of motions shows that he does not hold thinking to be subject to the limitation of being itself a finite motion (which would retain no connection to its process after having come to an end, as Sorabji pointed out). But how does this pertain to our ability to measure time?

Throughout our analysis of the *Physics*, I emphasized that the act of numbering time (there attributed to the now) involves both dividing it and numbering the divisions, as opposed to numbering something that is already a discrete plurality. In a passage from *DA* III.6, Aristotle makes a notable remark about the connection between how we divide magnitudes and how we divide time.

⁶⁹⁹ Sorabji 2004: 20-21.

⁷⁰⁰ *DM* 2 451b17-20.

There is nothing that prevents one from thinking of the indivisible whenever he thinks the length (which is undivided in activity), and in undivided time. Time is divisible and indivisible similar to the length. So it is impossible to say what one thinks in each half, since there are no halves when it has not been divided, other than potentially. But by thinking separately during each of the halves, one divides the time along with it, and then it is as if there were separate lengths; but if one thinks in a way that is made up of the two halves, one also thinks in a time that applies to both.⁷⁰¹

When Aristotle speaks of the “length” in this passage, I again think it is important to have in mind the imagined quantities that we “put before our eyes” that Aristotle spoke of in *DM* 1, and the fact that we do not measure a magnitude by stretching out to it in our minds, as Aristotle claimed in *DM* 2. For, the activity of dividing the length cannot be understood as the physical manipulation of a body, which is susceptible to not only potential, but also real physical divisions. The comparison between time and the magnitude that Aristotle is making here would not hold in that case. But insofar as this is an imagined length we can see that time becomes determined in dividing and thinking the parts of the imagined length successively. If we think of each half separately, we divide the time, and if we think of the two divided halves together, the time in which we are thinking covers both halves.

This is further evidence for my claim that time is not divided prior to our awareness, but becomes divided in thinking of the parts of an object successively. It also explains Aristotle’s claim in the *Physics* that time is only ever potentially divided, even though all sensible magnitudes have real, active limits – insofar as all bodies are limited in length, breadth and depth – and are susceptible to active divisions – insofar as bodies can be

⁷⁰¹ “οὐθὲν κωλύει νοεῖν τὸ διαίρετον ἢ ἀδιαίρετον, οἷον ὅταν νοῇ τὸ μῆκος (ἀδιαίρετον γὰρ ἐνεργείᾳ), καὶ ἐν χρόνῳ ἀδιαίρετῳ· ὁμοίως γὰρ ὁ χρόνος διαίρετός καὶ ἀδιαίρετος τῷ μήκει. οὐκ οὖν ἔστιν εἰπεῖν ἐν τῷ ἡμίσει τί ἐνόει ἐκατέρῳ· οὐ γὰρ ἔστιν, ἂν μὴ διαίρεθῇ, ἀλλ’ ἡ δυνάμει. χωρὶς δ’ ἐκάτερον νοῶν τῶν ἡμίσεων διαίρει καὶ τὸν χρόνον ἅμα, τότε δ’ οἰονεῖ μήκη· εἰ δ’ ὥς ἐξ ἀμφοῖν, καὶ ἐν τῷ χρόνῳ τῷ ἐπ’ ἀμφοῖν” (*DA* III.6 430b7-14).

physically divided, broken, or cut into pieces. Aristotle claimed in *DM* 2 that we measure the time just as we measure the magnitude: by way of an internal image. Here Aristotle shows that through the activity of dividing the magnitude into parts that are each thought separately we also divide time. This shows how time is determined according to the activities performed by soul. If there is an awareness of time at the level of sensation, this is an awareness that is continuous and undivided. It is only when Aristotle speaks of thinking that he speaks of time as divided. Time is divided as the object being thought is divided, and then the parts are thought in succession.

We have now explored one aspect of how our grasp of time develops as we pass from memory to recollection. One thing that distinguishes recollection from memory is that recollecting is mediated by a succession of images or thoughts, whereas memory is immediate, or, we might say, simultaneous. But this alone does not distinguish recollection from learning something for the first time, or from learning the same thing again; for, learning also involves passing through a succession of thoughts or images. What fundamentally distinguishes recollection from learning again is that, in recollecting “one is able somehow to be moved on one’s own (*di’ hautou*) to what is with the *arche*. Whenever one is not able to do this, except through another (*alla di’ allou*), he is no longer remembering.”⁷⁰² Thus in order to recollect, one must be able to initiate one’s own motion, and this involves doing something that cannot be simply “given” in one’s past or present experience: taking hold of the *arche*. This comes about when one is seeking (*zētountes*) something,⁷⁰³ when we hunt

⁷⁰² *DM* 2 452a5-7.

⁷⁰³ *DM* 2 451b23

something down (*thēreuomen*).⁷⁰⁴ What compels us to do so? Could it be that we do this with a view to the future?

The question now becomes whether this ability to apprehend time successively will explain how we are able to have an awareness of the future. It is important to understand that awareness of the future is not revealed to us as an additional part of time tacked on after the present of which one was altogether unaware at the level of sensation. The time of sensation is indivisible and continuous: sensation is not a form of awareness where one is cut off from the past or the future. For the animal who lives according to sensation alone time has no parts; it is not that such an animal is surprised when time continues when one “part” of time has finished, rather than coming to an end. At the level of perception one is aware that time continues, but one does not divide the future or the past from the present. The sensitive soul is not aware of how the future can or might be different from the continuously unfolding present. The ability to divide time, first when we distinguish that an activity happened before, and is not present, and next, in our ability to think an object as a succession of parts, make possible our ability to distinguish time into parts that may be different. However, the way we think of parts of a continuous magnitude does not directly reveal how we become aware of the future as a distinct part of time. We may be able to divide the parts of a magnitude infinitely, and go on counting these parts of the same thing again and again. But the future is distinguished from the present and past by being something beyond the present, not the same parts taken again and again.⁷⁰⁵ In the next section I will examine what it looks like if the

⁷⁰⁴ *DM* 2 451b19.

⁷⁰⁵ Cf. *Phy.* IV.12 220b14.

object which we are able to divide and think successively is not something homogeneous like an image of magnitude, but is rather an action (*praxis*) that we are intending to undertake.

Deliberation and awareness of the future:

In order to explore how we become aware of the future, we must consider the significance of Aristotle's claim that recollection is only possible for those who have the capacity to deliberate (*to bouleuesthai*).⁷⁰⁶ Aristotle states this claim near the end of the *DM* without explaining how it is to be understood. (Rather, he goes on to finish the treatise by explaining that recollection unfolds in motions in the body). Still, it is a powerful, if stark, claim, especially if it is understood in terms of what Aristotle has to say about deliberation in the *Nicomachean Ethics* (*EN*) and in the *De Anima*.

In *EN* III.3 Aristotle states that, "we deliberate about things that are up to us (*peri tōn eph' hēmin*) and are matters of action (*praktōn*)."⁷⁰⁷ We have already seen that there is a way that recollection is to some degree up to us: both in how we determine the *arche* of motion from ourselves, and in how the ordering of the recollected sequence can unfold in a variety of ways. The motions unfold as though natural from the habits we instill in ourselves, but these are not determined prior to our activity of habituation. However, it is not so clear if recollection concerns the second thing that Aristotle says we deliberate about above: that it is about matters of practical action (*praktōn*). Thus far in our exploration of recollection, it seems equally possible that we recollect purely for the sake of remembering something, and the remembering could be an end in itself without being put to use towards a further end realized in practical action. We will have to consider whether there is in recollection any

⁷⁰⁶ *DM* 2 453a13-14.

⁷⁰⁷ *EN* III.3 1112a30.

important connection to *praxis*, or whether it is more aligned, or exclusively aligned, with theoretical contemplation.

Aristotle clarifies what it is we deliberate about when he goes on to say, “We deliberate not about ends (*peri tōn telōn*) but about things that are related to ends (*peri tōn pros ta telē*).”⁷⁰⁸ We can see from this that there is a way that the structure of *praxis* is related to that of recollection. We do not deliberate about the end we seek to bring about by action: the doctor does not deliberate about whether or not to cure the patient. This is simply determined as the good end that she seeks to bring about in action. Similarly, the end sought in recollecting is not up to us, but is rather something experienced before. We do not deliberate about what it is we will remember, but rather about the means that will bring the memory about.

There is another connection between *praxis* and recollection: the nature of the origin or source (*arche*) of the motions that bring each about. Concerning action, Aristotle says, “Each person stops searching for how he will act when he traces the source (*arche*) of it back to himself, and to the part of him that leads the way, for this is what chooses.”⁷⁰⁹ Similarly, in the *DM* Aristotle say, “Remembering is the presence within (*eneinai*) of the power to set the motion going, and this in such a way as to be set in motion out of oneself and those motions that one contains, as was said. But it is necessary to get hold of a starting point (*arche*).”⁷¹⁰ The parallel between *praxis* and recollection extends to Aristotle’s articulation of the source of both processes: in both cases it is crucial that the source is internal to subject, and the

⁷⁰⁸ *EN* III.3 1112b12-13.

⁷⁰⁹ *EN* III.3 1113a5-7.

⁷¹⁰ *DM* 2 452a10-12.

means to the end sought must be found to originate within him, in order for the process to unfold from him. We might also recall Aristotle's statement at the beginning of the *De Anima* about the sense in which the soul might be said to move. "Recollection goes from the soul to the motions or stopping places (*monas*) in the sense organs."⁷¹¹ Thus there is a parallel between recollection and *praxis* insofar as both involve initiating motion in the body: in both cases the cause or source of the motion is in the human being who will move him or her self. In neither case is the moving due to being moved by something or someone else. Without this self-origin, there would be no ensuing motion that could be called a recollection or a *praxis*.

Thus we can see that there is some consistency in the ways that deliberation functions in relation to both recollection and in *praxis*. In order to discover how far this parallel extends, we must reckon with some further developments of his account of deliberation, in *EN VI*. There, Aristotle develops the meaning of the idea he stated earlier – that “we deliberate about things that are up to us (*peri tōn eph' hemin*)” – by showing that what is up to us is what admits of variation, and as such pertains to the future.

In *EN VI.1* Aristotle distinguishes the rational soul into two faculties: that of knowing (*epistēmonikon*) and that of calculating (*logistikon*). The first contemplates what cannot be otherwise (*mē endechontai allōs echein*), the second concerns itself with what varies.⁷¹² Aristotle includes deliberation within calculation insofar as “no one deliberates about what cannot be otherwise,”⁷¹³ whereas knowing deals with what is invariable. We deliberate with a view to the open variability of the future, such that it is possible for us to realize actions that

⁷¹¹ “ἢ δ' ἀνάμνησις ἀπ' ἐκείνης ἐπὶ τὰς ἐν τοῖς αἰσθητηρίοις κινήσεις ἢ μονάς” (*DA I.4* 408b18).

⁷¹² *EN VI.1* 1139a8-9.

⁷¹³ *EN VI.1* 1139a13-15.

have their source in us: “Choice is not concerned with what has happened already...neither does one deliberate about what has happened in the past but about what still lies in the future and may happen or not.”⁷¹⁴

To what extent might this pertain to recollection? Since recollection culminates in remembering, the end of recollection is determinate, just as the end of praxis (the good) is determinate. But this does not rule out the variability of the means that we might choose to bring about this end. Recollection is a deliberate seeking of such an end, motivated by the desire to remember something. Recollection depends on our ability to deliberate insofar as the paths to remembering admit of variation, and so are not confined to a repetition of what has happened in the past.

What does this tell us about our ability to grasp time? If recollecting is not simply a reiteration of the past, it might give us insight into the future: of what admits of variation, and is to some extent “up to us” insofar as it is the object of praxis. Recollecting shares something of the structure of *praxis*: tracing the origin of motion back to oneself, initiating bodily motions that have their source in the soul and become manifest in the body. But recollecting has its proper end not in practical action, but in remembering. Remembering is something that we should desire for its own sake.⁷¹⁵ But is it not also possible that we seek out a memory in order initiate action? If so, perhaps recollection is responsible for our awareness of the future.

⁷¹⁴ “Choice is not concerned with anything that has happened already: for example, no one chooses to have sacked Troy; for neither does one deliberate (*bouleutai*) about what has happened in the past, but about what still lies in the future and may happen or not; what has happened cannot be made not to have happened. Hence Agathon is right in saying, ‘This only is denied to God, the power to make what has been done undone’” (*EN* VI.2 1139b6-11).

⁷¹⁵ “There are many things we should be eager to possess even if they brought no pleasure at all, for instance, sight, memory, knowledge, virtue” (*EN* X.3 1174a4-6)

The path from desire to action is not simple, but proceeds by way of deliberation. Desiring something does not mean that this will automatically, or naturally, come to pass. We desire something that is not yet in our possession, and there are many possible obstacles that can prevent us from realizing our desires. One of these obstacles is internal to the soul itself. Desires can be contrary to one another, such as when reason (*logos*) and appetite (*epithumia*) come into conflict. This, Aristotle claims, happens in those living beings who have a sense of time.⁷¹⁶ For, “mind advises us to resist with a view to the future, while appetites arise on account of what is already (*ēdē*). For what is already pleasant appears to be simply pleasant and simply good, because it does not look to the future.”⁷¹⁷

It is only those of us who have the ability to experience a conflict between present and future goods that are capable of having some grasp of the future as some part of time, distinguished from the present and possibly different from it. Just as memory does not presuppose an abstract awareness of the continuum of time in which we must place our memories, neither does deliberation presuppose an abstract awareness of the future. This “sense of time” is furnished in us only through the ability to deliberate about our desires: to divide an action into parts such that the means to the end can be discovered. Our ability to deliberate about our desires depends on our ability to reflect upon multiple images or appearances, assess them by a single measure, and bring about one of them.

For whether one will do this or that, already this is the act of reasoning (*logismou*). And it is necessary to measure by one thing (*heni metrein*). For one pursues the

⁷¹⁶ Appetites and desires may come into conflict for those living things that “have a sense of time (*en tois chronou aisthēsin echousin*)” (*DA* III.10 433b8).

⁷¹⁷ *DA* III.10 433b7-10.

better. Therefore, one is able to produce a unity out of many images (*hōste dunatai hen ek pleionōn phantasmatōn poieiōn*).⁷¹⁸

This measure is not something simply given, like an already present object of sensitive pleasure, but rather is the unity of many images. It involves a considered image of the good that serves as the standard of deliberation in the case of conflicting goods. If our grasp of time is revealed in relation to the way that we grasp an object of either sensation or thought, as I have been arguing, this indicates that the measure of time is indeed a function of our ability to produce a unity out of many images: to assess them according to a single measure.

As we transition from sensation, to memory, to recollection, we see how the parts of time become distinguished in relation to the soul's awareness of its own activities. However, we have also seen that memory and recollection are not sharply distinguished by Aristotle, and that they both are primarily concerned with the awareness of something that has happened before. Furthermore, I have argued that the structure of the *DM* is purposefully ambivalent about where the powers of memory and recollection fall within the division of the soul into sensitive and intellectual parts. It seems that memory is closer to sensation, and recollection is closer to the intellect. However, Aristotle's insistence that it is possible to remember a thought (even if this is an "incidental" function of memory), and his insistence that recollection is inseparable from the body, indicate that there is not a clear-cut demarcation of memory being purely sensitive and recollection being purely intellectual. As such, I think it is best to understand memory and recollection as a microcosm of the transition from a purely sensitive grasp of the world, to an intellectual understanding of it.

⁷¹⁸ "πότερον γὰρ πράξει τόδε ἢ τόδε, λογισμοῦ ἢ δὴ ἐστὶν ἔργον· καὶ ἀνάγκη ἐνὶ μετρεῖν· τὸ μείζον γὰρ διώκει· ὥστε δύναται ἐν ἐκ πλειόνων φαντασμάτων ποιεῖν" (*DA* III.11 434a7-10).

This explains why the most definitive answer Aristotle gives to his question “to which part of soul does memory belong” is to say that it is just like the imaginative part.⁷¹⁹ This is itself an ambivalent answer, as the imagination can be shown to have a dual function. We have already seen that the imagination serves the intellect by providing images – without which one would not be able to think – as well as being itself the highest form of sensitive awareness that some animals – and occasionally, some humans – achieve. In *DA* III.10 Aristotle will describe these two different purposes belonging to the imagination as the distinction between two kinds of imagination: calculative (*logistikē*) and sensitive (*aisthētikē*).⁷²⁰ We should at this point be reminded of a similar division that we just looked at from the *EN*: when he distinguished the rational soul into calculative (*logistikōn*) and scientific (*epistēmōnikōn*) parts.⁷²¹ Looking at the *DA* and the *EN* together we see that the calculative ability is distinguished on one side from sensation, and on the other, from scientific knowledge. Calculation shares with sensation that its objects are capable of variation, but it differs from sensation in that it deals with what is to some extent up to us. Calculation and scientific knowledge are both to some extent up to us, but are distinguished by the variability and invariability of their respective objects. Distinguishing the imagination into parts shows how it overlaps with the sensitive and rational parts of the soul, and by looking specifically at the calculative faculty we see how it also represents a distinction within the rational part itself.

⁷¹⁹ *DM* I 450a23.

⁷²⁰ *DA* III.10 433b30.

⁷²¹ *EN* VI.1 1139a13.

This tells us something about how sensation and thought are not altogether separate abilities of soul, even if it is possible for animals to exist and be functionally aware without the latter. This is surely an important facet of Aristotle's psychology in general, but more pertinent to our intentions here is what it tells us about the development of the awareness of time. The way that the soul's awareness of time develops as one makes the transition from *aisthēsis* to *nous* is not that one gradually accumulates awareness of parts of time, and finally has access to parts of time that would have escaped one's notice at a lower level of understanding. This is why Aristotle is so emphatic in *DS* 7 that "it is possible to perceive it all."⁷²² The awareness of time develops through the ability to make distinctions in time, and to refine the divisions one has made in time when one says "now," or remembers an earlier now, or anticipates a later now.⁷²³ Recollection contributes to one's ability to anticipate a future now by virtue of how it involves grasping its contents not immediately (*hama*), but in succession (*ephexēs*).

I have argued that the object of recollection is not restricted to the past. First, even though recollection culminates in a sort of memory, its object can be some such thing (*ti toioutos*) as one experienced before. Secondly, the very act of distinguishing an object into parts and thinking them successively opens the possibility to think connections that are logical, or necessary, rather than revealed contingently in the order of our experience. And thirdly, if recollection is indeed related to praxis through the ability to deliberate, it has some bearing on our grasp of the future: that which we have not yet experienced. If recollection is

⁷²² *DS* 7 448a26.

⁷²³ Stephen Eberle makes a similar claim to the one I am making here. Speaking broadly of perceiving and thinking, he writes, "chaque actualisation particulière d'une faculté de cognition revendique son propre maintenant" (Eberle 2000: 76-77).

not restricted to contents that are directly identical with something we have experienced, it tells us something critical about our intellectual awareness of time: that is, that a thinking being is capable of having some grasp of time beyond his or her own experience. One of the conundrums of our awareness of time is, how can it be grasped if we can never grasp all of it? There will always be times that are beyond the reach of our direct experience, as finite human individuals. But insofar as we are able to grasp anything beyond our direct experience, so shall we be able to grasp time.

Our grasp of time is something that is both practical and theoretical. We may recollect in order simply to remember a past activity: we might desire to contemplate the goodness of our past actions or the truth of our past thoughts. We may thus seek out memories of these, and hunt them down as sources of pleasure. But these memories should only invoke nostalgia, and not desire or pleasure, if they in no way condition or reveal the possibilities for the future.⁷²⁴ We have also seen how recollection shares in the structure of praxis in that it involves deliberation and causes a series of motions to arise from the soul throughout the body. Remembering is not always desired: in some cases we simply can't get that damned song out of our heads, or fall into a melancholic repetition of past grievances that only lead to dismay. But insofar as recollection is something actively sought, and that this is primarily what motivates it and is the basis from which we take hold of the *arche* that will move us to remember, it seems to share in the nature of deliberative desire that Aristotle outlines in *DA* III.10.

⁷²⁴ "What is pleasant is the activity (*energeia*) of the present, the hope of the future, and the memory of the past: for the most pleasant is what pertains to activity (*kata ten energeian*), and the most loved. For memory of beautiful deeds is pleasant, memory of what is useful is either not at all or less pleasant. Expectation seems to be the reverse" (*EN* IX.7 1168a14-19). Cf *EN* IX.4 where Aristotle discusses how people who have done wrong seek to escape from themselves and from remembering their past actions, just as they anticipate other things of the same kind arising from them in the future (1166b14-16.)

It is now appropriate that we look back at the *Physics*, and re-evaluate the connection of time to motion and of time to soul. Having seen how every function that Aristotle attributes to the now can be shown to be an act of soul in his psychology, it is worth asking why Aristotle did not start his investigation in the *Physics* by claiming that time is “something of soul,” rather than “something of motion”?⁷²⁵ In numbering time, and thus thinking time, are we determined (*horizomen*) by the object we are observing? Is this object something sensed, or something thought? We have seen in the *Physics* that this object is not time itself, but is rather the motions that are in time. Is motion, in the end, what gives us a complete awareness of time simply by being observed? Having undertaken this long analysis of the soul, are we still left asking the same question we asked in *Phy.* IV.14 – to what kind of motion does time pertain? – as if, by observing this motion, we both become aware of time and directly number a present motion with respect to before and after?

Awareness of time beyond one’s own experience: revisiting the sleepers of Sardinia

In *DS* 7 Aristotle claims that it is impossible for time to escape our notice, because it is impossible for us to be unaware that we are sensing and that we exist while we exist. This might appear to conflict with Aristotle’s lengthy discussion at the beginning of *Phy.* IV.11 about how time does in fact escape our notice on occasion. Aristotle undertook this argument to explain how time is connected to motion, based on the fact that we cannot be aware of the former without the latter. Time is related to motion by virtue of the connection of our awareness of motion to our awareness of time. However, we saw that this account of the relationship of time to soul is established only negatively: by two negative proofs. Aristotle showed both that we are not aware of time when we are not aware of motion, and that our lack

⁷²⁵ *Phy.* IV.11 219a10.

of awareness of motion does not necessarily mean that no time has passed (or that no motions have occurred). The example used to make this second proof was taken from a myth about the sleepers of Sardinia who make a mistaken judgment about time: who awake after an incredibly long sleep unaware of the time that has passed and join together the now before and the now after and make them one. While this example depicts an unusual situation where the soul falls into error in its grasp of time, it might seem that the possibility for this error rests on something usual that happens to us every day: the interruption of our consciousness at the end of each day when we sleep. It worth considering why Aristotle does not suggest that the regular practice of sleep causes us to fall into error each time we awake; each morning we do not join the now before (when we fell asleep) and the now after (when we awake) even though in the time between we were not actively sensing any motion. Presumably, normal sleep patterns do not lead us into such an error because we anticipate the duration of our sleep each night, whereas the myth depicts an exceptional case where the continuity of the sleepers' awareness has been interrupted by an unusually long sleep that they had not anticipated. When the sleepers of Sardinia awake, they are not immediately aware of the length of time that has passed while they were unconscious. However, the usual, indeed physically necessary, practice of sleep does not normally result in such confusion. This demonstrates something about the power of continuity of consciousness, which remains continuous despite awareness of such intervals of unconsciousness. When one's consciousness has been interrupted by sleep, one's awareness before is connected with one's awareness after, even when one is cognizant of the interruption. This is because we do not cease to be the being that was aware before and become a new being aware of a new after.⁷²⁶ We continue, "being what we were" (*to ti ēn einai*). An interruption of

⁷²⁶ Cf *Phy.* VII.3 "Just as when someone is set free from being drunk or from sleeping or from being sick, into their opposites, we do not say that someone has become knowing again (even though he was incapable of using

the continuity of one's consciousness does not mean that the being that we were before has come to an end, and that a new being has begun in the after. The sensitive soul does not lose its identity despite the fact that it experiences periods of unconsciousness. In the normal practice of sleep, we anticipate the duration of our unconsciousness, and when we awake we understand that time has passed even though we were not aware of the motions that occurred between nows while these motions were happening.

The remarkable thing about the soul's awareness of time is that the continuity of our consciousness is not destroyed by the interruption of our awareness by times when we are not sensing: while sleeping. On the one hand, the example of the Sleepers of Sardinia seems to indicate a flaw in our ability to grasp time. Indeed, talking about how time escapes our notice, and how we can mistakingly join together nows that are in fact different seems to point to a deficit in our grasp of time. However, what I take Aristotle to be showing by means of the example of the sleepers of Sardinia is not so much the impoverishment of the soul's ability to grasp time, but rather its abiding power to always take time as another and another. Despite this limitation of the powers of our awareness, which calls for periods of rest from the activity of sensation, we do not lose our power to grasp time's continuity in relation to the continuity of our being. If it is possible in the case of an unusually long sleep to fall into error about the passing of time, and join together nows that are in fact other, this is because the soul, so long as it is living, does not lose its ability to determine the now, and the now always belongs to something before and something after. Thus while it is possible to make an error when we determine the now, it is also possible to correct such a mistake. While we may become

his knowledge before), nor in the same way when in the first place one take on the active state; for it is by the soul's own calming down of its native disorder that it becomes something understanding and knowing" (247b14-248a1).

disoriented sometimes when we equate the continuity of our awareness of change with the continuity of time, we may also reorient the continuity of our consciousness to the continuity of time if we subsequently become aware of the changes that have taken place while we were unconscious. Perhaps the sleepers of Sardinia notice that their friends have grown older, or that their own bodies or surroundings have changed, and these apparent changes do not match up with their initial assumption that no time had passed when they were not aware of any of these changes while they were taking place.⁷²⁷ We are conscious of the continuity of time, on the one hand, based on our enduring awareness of motions while they are happening, but on the other hand, we have the capacity to grasp the time that stretches beyond the immediacy of our awareness when we anticipate or retrospectively account for such periods of unawareness. We always take into account the before and after when we take hold of time, and this is not limited to what we are aware of as happening while it is happening. Thus the requirement that Aristotle cites for being, that it is necessary “when something exists that all or some of its parts must exist”, does not apply properly to the time that is grasped by the soul. As I suggested earlier, this standard applies to magnitude and to moving things, but not to time as it is grasped by soul.

Thus the connection of time to motion forged by our awareness of both tells us something about what time is and what time is not. On the one hand, time is not without motion due to the simultaneity of the perception of time and of motion. On the other hand, our awareness of the

⁷²⁷ We might draw upon another ancient myth which speaks to this point. In the Epic of Gilgamesh, Gilgamesh was told by the god Ut-napishtim that he could be granted immortality if he could stay awake for six days and seven nights. Gilgamesh promptly falls to sleep. In order to prove to him the length of his sleep, Ut-napishtim gets his wife to bake a loaf of bread each day, and lay it by his head. Upon awaking, the loaves of bread and their progressive states of decay immediately prove to Gilgamesh the duration of his sleep, which is likewise a sign of his mortality (See Dalley 1989: 116-117). The myth depicts the manner in which the mortal soul both encounters its limitations in relation to time, but also has the capacity to become aware of these limitations. The soul’s awareness extends beyond its finite periods of active awareness.

before and after of motion (that gives particular content to our awareness) may or may not be simultaneous with the time in which the motion occurred. This means that the before and after of time unfolds in our awareness both when that awareness is simultaneous with the time in which one discerns and thinks (while the soul is actively sensing some motion), and when it is not simultaneous (when it discerns and thinks through the before and after of motions recognized subsequently, or in the anticipation of future possibilities). Time both always remains the same like we are always the same when we are aware of some change, and it is always another and another because both 1) what we are aware of is changing, and 2) it is possible for time to escape our immediate notice. When time escapes our notice we must recollect the changes we missed in order give continuity to our grasp of time in relation to the continuity of our own existence. Thus, our awareness of time is and is not a private affair. The time of our awareness is continuous because we remain who we are whether or not we are aware of change and time. But if the only thing of which we are aware were the enduring, unchanging nature of our awareness – if the soul thus remained “one and undivided” – we would not be aware of time. The certain time of our active awareness is not the ultimate measure of time, for the temporality of our awareness must also be measured in relation to motions of which we may or may not be directly aware. If we become aware that some time has escaped our notice we can then reintegrate the before and after of our awareness with the before and after of the time exceeding our immediate awareness. Time is that in which motion and rest happens. But there is no time or motion of which we are fundamentally incapable of being aware. As such, our awareness of time extends beyond the simultaneity of our perception of time and motion.

Concluding Remarks:

I have done my best to show how the questions raised and answered as we moved through *Physics* IV.10-14 and through the *PN* and *DA* unfold, starting from an inquiry about time as a condition of motion to reveal a close affinity between time and activity (*energeia*), as exemplified by our own activities of awareness.

The first analogy we have for time is motion. Aristotle's point of departure for his discussion about time in the *Physics* is the intuition that time is some motion or change, but he rightly dismisses the notion that time could be merely among the many motions or changes that happen in our world. Two central characteristics distinguish the nature of time from that of motion. The first is that many motions can occur at the same time: a diversity of motions is not the same as a diversity of times. The second is that time has no speed: it neither speeds up nor slows down, it cannot stop and start.

Yet, while we must distinguish time and motion as such we must still be able to explain how time and motion are nonetheless related, such that there can be motion and change "in time." If time neither speeds up nor slows down, neither stops nor starts, how do we explain the way that time is differentiated at all (which is necessary in order for there to be change in time)? Aristotle's inquiry into how time can be said to have "parts" speaks to this. If time does not change its properties as a motion does (speed), nor is it divided in the way that motions are divided by periods of rest (since it does not come to be or cease to be, stop or start), then how is it that time is not all simultaneous?

Our first clue to how we might explain time's differentiation is that our awareness of time depends on our awareness of motion.⁷²⁸ In other words, it is not simply motion that depends on time in order to be what it is, but, reciprocally, time depends on motion in this respect: in respect to what it takes for us to become aware that time is passing. Thus quite early on in Aristotle's account of time he gives us an indication that the relationship between time and motion is connected to some power distinctive of soul: the power of awareness. The mutual dependence of time and motion is expressed in the context of explaining one's ability to become aware of these: of noticing that time has passed, or of measuring the duration or speed of a specific motion. This is because there is a distinct sense of the before and after that time and motion share. This sense of the before and after cannot be reduced to - or simply extended from - that which belongs to magnitudes holding differentiated positions (for the very least, because local motion is not the only kind of motion/change). Rather Aristotle claims that this sense of the before and after is determined by the kind of being that is capable of perceiving motion and determining its perception of motion as before and after.

In the *Physics*, although Aristotle makes use of verbs in the first person plural to describe the powers of perceiving, differentiating, and counting time, he mainly attempts to account for these powers in terms of the now. The now expresses the simultaneity of diverse motions; the now determines a part of time; the now exceeds and embraces every part of time. Insofar as the now numbers, it is time. I have called this the "reified now" of the *Physics*, divorced from the subject that speaks it. This reified now is the source of deep perplexity if it is assumed to exist apart from soul: it appears to be a bizarre or mystical sort of thing,

⁷²⁸ Phy. IV.11 218b21-219a1.

possessing attributes without having any being of its own: a completely sophistical kind of thing whose nature is determined entirely by how it appears at a given moment.

I have made the case that all these powers that Aristotle attributes to the now in the *Physics* can be shown to be powers that he attributes to the soul in his psychology. This means that the now either is a power of the soul – something that the soul says or does – or it is very closely analogous to the powers of soul. For instance, a feature distinctive of the now of time that is inexplicable by means of an analogy to motion is simultaneity. I showed in my examination of DS 6-7 that the simultaneity of the act of sensation accounts for the way simultaneity was said to belong to the now in the *Physics*. Though my close reading of Aristotle's argument in those chapters may have gotten tedious at points, the insight that it yielded – that the time of sensation was one and undivided relative to several objects – is explosive in its significance. By examining these chapters I showed how simultaneity is compatible with seamless continuity: that simultaneity does not mean a static “point” in time or a cross section which would exclude motion or change, but rather refers to the presence of an object to an observing subject united in an act of sensation, and the ability for this sentient subject to grasp its multifarious object without there being different parts of time for each distinct attribute he or she is observing. Another striking revelation from these chapters was the way that Aristotle justified his claim for the uninterrupted continuity of time, saying that it was assured on the basis of the fact that we are aware of ourselves and of our power of perceiving as being continuous and uninterrupted while it is happening. This indicates the way that the powers of the soul come to take the place originally occupied by motion as the exemplar or analogue of the nature of time. We become aware of time not only insofar as we

are aware of motion, but as we become aware of the activities that distinguish us from the rest of nature as ensouled.

The other main features of time that are not captured by the analogy to motion also proved to be explicable as we come to understand the powers of our souls. The sameness and difference of the now, which appeared to be a mere paradox in the *Physics*, becomes explicable once we make the shift from thinking about the now as analogous to the point, and instead think about the way that the point is “used” by the discerning observer. The point can be used as both one and two insofar as it represents the relationship of a middle to a beginning and to an end. Since time is not an enduring line, remaining in place, this double relationship of the now to a before and after cannot be explained in terms of position. As Aristotle shows us in the *De Anima* III.2, this power to use the one point as two is characteristic of the discernment of the sensitive soul, and is the key to the way that the soul is able to simultaneously grasp the differences inherent to its objects. Again, we see that as light is shed on the nature of the powers of soul, so too does the nature of time come into view with greater clarity.

Next I showed that the differentiation of time into parts takes place cumulatively as the powers of soul become more complex and sophisticated. (One might, for instance, imagine the development and maturing of the consciousness of a human baby, or the way that a sense of time becomes more complex from one species to the next in the animal kingdom.) First, I argued that the present must primarily be understood not as a distinct part of time with its own determinate limits, but as referring to the simultaneous presence of a subject and object in an act of sensation. How time becomes differentiated into parts, then, occurs cumulatively, as the soul becomes able to distinguish the time pertaining to its own activities.

We examined this differentiation as taking place through two main steps. First of all, the past becomes distinguished from the present by negation. Secondly, the differentiation of past-present-future happens in concert with the ability to think thoughts successively.

The awareness of a memory, in its simplest form, is the awareness of a sensation when the object is absent. This “not-present” object gives one an inchoate sense of the before: the awareness that what has endured from a prior sensation is not the relationship between a subject and object, but is rather the subject’s awareness of its own activity even after the object is no longer present. The past becomes an object for us as we become aware of the independence of the power of soul from its given circumstances: that what remains in a memory is nothing outside of us, but an activity of our own.

For some animals this might suffice to give them something that Aristotle would call a “sense of time.” But for animals capable of more complex form of imagination – of conjuring up images never before seen or of making associations not taken directly from experience – there is need for a higher form of reasoning to distinguish what one has experienced as an act of sensation in the past from what one has imagined, or thought of. I argued that Aristotle’s account of recollection introduces the main themes necessary in order to explain the capacity that more intelligent animals have to become aware of the future as an object of reasoning and of action. I show that there are strong parallels between the way that Aristotle describes the power of recollection and what he will go on to say about our capacity to engage in actions that have the future as the object. These parallels indicate the way in which the future becomes differentiated from both the present and the past. Furthermore the fact that this awareness of the future is prefigured in the act of recollection – which is still oriented to the recovery of a past experience – indicates that it is a development that arises as our awareness

of the present and the past becomes more complex, requiring that we have the ability to organize and unify our thoughts and experiences in a successive order.

Finally, I have argued that the way that time is said to contain, exceed, and number all possible motions is also exemplified by the soul in a way that surpasses any models available in motion. Although Aristotle will speak of time, motion and thinking as all being infinite, I argued that there is one way in particular that thinking and time are infinite that motion is not. As Aristotle shows us in *Physics* VIII.8, the only possible infinite motion is motion in a circle. Though circular motion is truly endless, it is so by virtue of being the same again and again. By contrast, thinking and time are not only eternally repeating the same course, but rather have in them the capacity to stretch beyond themselves. Aristotle calls thinking unlimited not because it is the eternal contemplation of what does not change, but because when thinking encounters a difficult object it is able to reach beyond the perplexity such an object might at first present. Similarly, time can be said to exceed and contain all change not because every future possibility has already been realized in it, in some sort of static freeze of eternity, but because every division of time reaches beyond itself, making it possible for events to unfold not only as the same again and again (*palin kai palin*), but as different, another and another (*allo kai allo*). With each generation the cosmos harbors an openness to being changed by intelligent deeds and accidental forces, creating previously unseen possibilities, beautiful and new.

Thus, in the end I have made a case for there being a close commonality between these powers distinctive of soul and these otherwise perplexing features of time, such that as we become aware of the activities of our own souls the nature of time too becomes comprehensible. Still I have remained tentative about proclaiming definitively that “I am the

now” or that time should be understood absolutely as a power of the human soul, whether individual or collective. This is because, despite our ability to number time to infinity in our thinking – and thus take the infinity of time as the object of our thinking – none of us are active in a way that is equal to the infinity of time’s duration. All of our activities are something that we partake in but for a small time. Though there are times when we are living and have lived, we are seeing and have seen, we are thinking and have thought, we also are born and we die, we wake and sleep, our thinking is often interrupted by the business of bodily needs that sustain us. The intervening time in which we are active and living, seeing, or thinking, is relatively small when put into relief with the world that we know exceeds us in its duration. So while the time that exceeds the moments of our active awareness is not something that escapes our notice entirely, and is something of which are aware, we must also distinguish the time of our self-awareness from our awareness of time, in that we acknowledge that we are not always actively living, sensing and thinking.

This is a tension that I leave unresolved as I bring this study to a close. Likewise, I must defer adequate treatment of a related issue that I brought up in the introduction, but can for the time being only indicate as a problem in outline. In the introduction I suggested that if time belongs not simply to motion, but more perfectly to activity, then time itself will belong to the divine activity of thinking thinking of thinking. If the expressions of human (and animal) activity that we have explored here in this thesis are not in the end fully adequate to account for time, for the reason just stated, would not divine activity be equal to time in the exact way that human activity falls short? Note that it is precisely the intermittence of human

thinking, the fact that it is not always active but is only active for a small time, which distinguishes human activity from that of the divine for Aristotle.⁷²⁹

I cannot offer a decisive conclusion to this matter here. However, I will make a suggestion. Perhaps we recognize our own activity when we try to think time. Like the soul, time does not manifest itself to us concretely; it is not immediately accessible as an object to the senses. But when we try to grasp time, to take hold of it as an object of our thinking, we discover a resonance between subject and object: the parts of time that we take hold of are our own activities, and not some object outside of us. Is this not very close to describing the way that divine thought thinks itself? Perhaps our thinking about time can give us insight into the nature of divine thinking; perhaps understanding what Aristotle says about divine thinking can give us insight into the nature of time. In particular, it would be worthwhile to investigate if the conclusions I have drawn in the present study might serve us well in understanding the kind of temporality Aristotle calls *aiōn* in *Metaphysics* XII.6-9 and in *De Caelo* I.9 in relation to divine thinking and to what encompasses the visible heaven respectively. I will leave the investigation of these hypotheses to a future study.

⁷²⁹ Met. XII.9 1075a7-11.

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Abbreviations of Aristotle's texts:

Cat.	Categoriae
Int.	De Interpretatione
APr.	Analytica Priora
APo.	Analytica Posteriora
Top.	Topica
Phy.	Physica
Cael.	De Caelo
GC	De Generatione et Corruptione
DA	De Anima
PN	Parva Naturalia
DS	De Sensu et Sensibilibus
DM	De Memoria et Reminiscentia
DSV	De Somno et Vigilia
HA	Historia Animalium
PA	De Partibus Animalium
MA	De Motu Animalium
Met.	Metaphysica
EN	Ethica Nicomachea
EE	Ethica Eudemia
Poet.	Poetica

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