

INAUGURAL ADDRESS

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ARISTOTLE ON MOVEMENT, INCOMPLETENESS AND THE NOW

According to Aristotle, the present is an indivisible instant, or now. Aristotle holds that present-tense movement claims are sometimes true, but he argues that nothing *'kineitai'* (moves/is moving) in the now. He characterizes movement as something that is 'incomplete' while it is occurring. My paper is an attempt to understand this combination of views. I draw a contrast between Aristotle's position and an alternative view (defended by certain modern philosophers, but also by Plotinus), on which a present-tense movement claim is made true by the existence of something that is wholly present in the now. And I give some reasons for preferring Aristotle's position.

I

Introduction. According to Aristotle, the present now is an indivisible instant (see *Physics* IV.10 and VI.3). An extended period of time can only be present in a derivative sense, in virtue of having within it the now that is strictly speaking present. Aristotle is committed to allowing that present-tense movement claims are sometimes true, but he argues, in *Physics* VI.3, that 'nothing *kineitai* (moves/is moving) in the now'. My paper is an attempt to understand this combination of views. How can Aristotle account for the truth of present-tense movement claims, if he holds that the present is an instant, or now, and that nothing *kineitai* (moves/is moving) in the now? What is the relation between the truth of a present-tense movement claim (such as 'X is strolling', 'X is walking to the shops' or 'X is growing') and the occurrence of some particular time-occupying movement, such as X's stroll, X's walk to the shops, or X's growth?¹

¹ In this paper, 'movement' should be understood as including not just spatial movement but processes of change more generally. Aristotle's examples include not just walking but also building, learning and slimming.

I shall argue that Aristotle's account is shaped by his view that movement is, in a certain distinctive sense, incomplete. One reason why movement cannot be in the now is that movement is incomplete while it is going on. He spells out the connection between the incompleteness of movement and movement's not being *in the now* at *Nicomachean Ethics* x.4. What is in the now, he says, is a whole of some kind (*holon ti*), whereas movement, while it is going on, is not in the relevant sense 'a whole' (1174b7–9). In *Metaphysics* ix.6, he draws a contrast between movement (*kinêsis*) and activity (*energeia*). A distinguishing mark of movement, as opposed to activity, is the fact that movement is incomplete while it is going on: 'Every movement is incomplete: slimming, walking, learning, building. These are movements, and they are certainly incomplete.' Aristotle says that this incompleteness of movement is reflected in the fact that, for movement verbs, 'X has *phi*-ed' and 'X is *phi*-ing' are not true together: 'It is not at the same time that one is walking and has walked, nor is building a house and has built a house, ... nor is being moved and has been moved, but these are different' (1048b30–33).²

On the view I shall attribute to Aristotle, a present-tense movement claim is made true by the fact that movement occurs over a period of time that includes the present now. The now itself does not count as a time in which such movement is present; nor is the now a time in which the moving thing is moving.³ As we shall see, Aristotle holds that any time in which X is moving must be a time in which X makes progress in its movement, and he argues that nothing can make any progress in the now. The relation between movement and progress also sheds light on Aristotle's remarks about the incompleteness of movement. For Aristotle, if X is moving, X must have *made and not yet stopped making* progress in some movement. This implies that if X is moving, X's movement is now incomplete: progress is being

² Admittedly, it is not obvious how to interpret this claim in such a way that it comes out true. For instance, it might seem clear that someone can at the same time both have walked (a certain distance) and still be walking. This is a puzzle to which I return below (in §11, and again in §VI). It raises a question about the scope of Aristotle's incompleteness claim: is this claim meant to apply to all movements, or only to those movements that are directed towards some specific end (for instance, housebuilding, walking to the shops)? I shall argue that, for Aristotle, there is a sense in which *all* movement is incomplete while it is occurring.

³ In this paper, I use 'a time' in such a way that both periods of time and nows (or instants) count as times. Aristotle himself lacks a generic word of this kind that applies both to periods of time and to instants. In his usage, a now/instant does not count as a '*chronos*'.

made that has not yet been made. And it also implies, I shall argue, that if *X* is moving, *X* will move further in the immediate future.

My main goal in this paper is to explain this account and to offer some justification for attributing it to Aristotle. But I shall also try to show that this account provides an interesting, and in some ways attractive, alternative to a certain modern view about the relation between moving and the present: a view on which the fact that *X* is currently moving is grounded in the fact that there is something (*X*'s *moving*) that is *completely present* now. In §II, I start out by considering some objections to Aristotle's account (objections first raised by Plotinus) and show how they might lead one to adopt this modern view. In the following sections, I spell out Aristotle's account and explain how he might respond to these objections.

II

Moving and Presence: Plotinus, Hornsby and Stout. Plotinus disputes Aristotle's claim that movement (*kinêsis*) is distinctively incomplete. Moving, he argues, is *as such* complete while it is going on. If there is something that is necessarily incomplete while the movement is occurring, it is not the movement or moving, but rather some further act, other than the moving, that the agent aims to accomplish by moving. When one has such an aim, what one ends up completing is not the moving (for that was already complete activity), but rather the intended further act (*Ennead* VI.I.16, 7–9). For example, 'walking was walking from the beginning, but if one had to complete a lap, and had not yet arrived at the point of having completed it, what was lacking would not belong to the walking or movement, but to walking a certain distance; but it [the walking] was already walking and movement, whatever its extent' (VI.I.16, 9–13). Thus Plotinus argues that although one needs a stretch of time in order to move a certain distance, movement as such does not require a stretch of time; movement, like the activity Aristotle describes as 'complete', can be 'in timelessness' (which I take to amount to the same as 'in the now') (VI.I.16, 15–17).

There is, I think, a more and a less radical way to develop Plotinus's criticism. The less radical way would be to object that Aristotle has misclassified certain items: *walking* and *moving* should not count as examples of the kind of movement that is, as such, incomplete. Aristotle's own test, in *Metaphysics* IX.6, might seem to imply that

moving does not count as a *kinêsis*. According to this test, in the case of movement verbs, it is not true at the same time that one is *phi*-ing and has *phi*-ed. But, as Plotinus points out, it plainly *is* true that ‘the man who is moving has already moved, and the man who is cutting has already cut’ (*Ennead* VI.I.16, 13–14), at least on one very natural way of understanding the present and the perfect here.⁴ By itself, this need not imply a wholesale rejection of Aristotle’s account of *kinêsis*. Plotinus could simply be insisting that only a subclass of movements (movements directed towards a specific end) count as ‘incomplete’, and hence as ‘movements’ (*kinêseis*) in the sense Aristotle describes.

But it is very easy to make the step from this limited objection to a more radical critique of Aristotle (as I think Plotinus himself does). Plotinus wants to claim that even end-directed movement (for example, a walk to the shops) is constituted by a kind of activity that is complete at the now. When I am walking to the shops, *my walking* is complete at any moment. I carry on walking because I have not yet completed what I am, in this instance, aiming at in walking: I have not yet completed a walk to the shops. To describe what I am doing as ‘walking to the shops’ is to describe my walking in terms of some end I have not yet achieved. This description gives the impression that my activity itself is incomplete. Plotinus’s point is that this impression is misleading: what is incomplete here is not my walking (whether described just as ‘walking’ or as ‘walking to the shops’), but rather some further act I aim to accomplish by walking.

Each of these criticisms has a counterpart in modern discussions. First, several modern interpreters have claimed, as Plotinus does, that Aristotle’s test in *Metaphysics* IX.6 classifies only a certain subset of movements as *kinêseis*: those movements that are progressions towards some specific goal (end-directed or ‘telic’ movements, as I shall call them, as opposed to ‘atelic’ movements that have no specific goal). Some of these interpreters think Aristotle has made a

⁴ The Greek perfect can be used to mark either aspect or past tense. ‘The man who is moving has already moved’ is clearly true if the perfect ‘has moved’ is understood as a past tense: a man who is currently moving must have already *done some moving* in the past. Aristotle himself recognizes this point in *Physics* VI, when he says, ‘it is necessary that the changing thing has changed’ (237a17). Arguably, in Aristotle’s *Metaphysics* IX.6 test, he is instead using the perfect to indicate aspect. On this understanding, to say that ‘X has *phi*-ed’ is to say that X’s *phi*-ing is currently complete. Aristotle’s claim, in *Metaphysics* IX.6, is that X cannot be moving when X’s moving is complete. I take it that this is just what Plotinus means to deny. For Plotinus, X’s moving is complete at any moment at which X is moving.

mistake;⁵ others attempt to defend him by arguing that he only ever intended to claim that telic movements are *kinêseis*.⁶

Second, certain modern philosophers have argued (like Plotinus) that moving as such is complete at the now. Claims such as ‘X is strolling’ or ‘X is running’, if now true, must be true in virtue of something that is *completely present* now, and hence must be true in virtue of some item that is distinct from the durative event that is X’s stroll. The philosopher who spells this out most clearly is Jennifer Hornsby. She argues that if we are to provide a satisfactory analysis of movement-claims with imperfective aspect (for instance, ‘Sebastian was strolling at 2 a.m.’), we need an ontology that includes not just particular substances and events (such as Sebastian and Sebastian’s stroll) but also activity (such as Sebastian’s strolling). According to Hornsby, *Sebastian’s strolling activity* constitutes *Sebastian’s stroll* in something like the way in which matter constitutes a concrete particular. Sebastian’s strolling is an activity that pervades the interval of time in which Sebastian is strolling and that (unlike Sebastian’s stroll) is wholly present at any moment in that interval: ‘Sebastian’s strolling, in so far as it is present at any moment at which Sebastian is strolling, could be said to be wholly present then. By contrast, the whole of some particular that is a stroll could not be present at just a moment’ (Hornsby 2012, p. 237; see also Hornsby 2013, pp. 4–5). Thus, for Hornsby, the sentence ‘Sebastian was strolling at 2 a.m.’, if true, is true in virtue of something (Sebastian’s strolling) that was completely present at 2 a.m. Other philosophers have argued that X’s *strolling* (unlike X’s stroll) is a ‘particular process’, understood as a continuant-like entity that exists as a whole at any moment when it is happening. For example, Rowland Stout claims that ‘at every moment during which a process is happening, the process as a whole is present’ (Stout 1997, p. 26).⁷ Although Stout’s account is very different from Hornsby’s, for my purposes the two views share a crucial commitment. Both claim that ‘X is strolling/moving’, if true now, is true in virtue of something that is now wholly present.

⁵ Thus Ackrill (1965, pp. 131, 135) complains that Aristotle’s test seems not to classify walking (but only walking-to-F) as *kinêsis*.

⁶ For example, Kosman (2013, p. 43) argues that we should supply ‘from A to B’ in Aristotle’s example of walking at 1048b31, and comments that strolling is ‘a humble but authentic instance of activity’ (in the sense in which activity is contrasted with movement).

⁷ In a later paper (Stout, 2016, p. 48), he revises this way of speaking, but not the underlying view. He argues that, since a particular process doesn’t have temporal parts at all, talk of its being ‘present as a whole’ is misleading. What is present at any moment when the movement is occurring ‘is simply the continuant [that is, the particular process], pure and simple’.

This modern view (in either version) suggests a certain way of responding to Aristotle's remarks about the incompleteness of movement. Suppose we take these remarks about incompleteness to apply only to *telic* movement. A distinctive feature of telic movement is that it gives rise to the so-called 'imperfective paradox': it can be true that X was walking to the shops, even though it never was or will be true that X walked to the shops. That is, the truth of 'X was/is walking to the shops' does not depend on the occurrence at some time of an event that is X's walk to the shops (that is, a walk of X's that culminates in X's being at the shops).⁸ It might seem, then, that we can explain the sense in which *telic* movement is incomplete while it is occurring by providing an answer to the imperfective paradox. The modern accounts mentioned above suggest an easy way to do this. According to these accounts, when '*phi-ing*' is a movement verb (whether telic or atelic), 'X is *phi-ing*', if true, is true in virtue of something that is completely present at the now, not in virtue of some durative event. It is unpuzzling that 'X was walking to the shops' can be true even though X never completed a walk to the shops, and the reason why this is unpuzzling is that 'X was walking to the shops' is true, not in virtue of an event that culminated in X's being at the shops, but rather in virtue of something other than this event, something that (unlike this event) was completely present at any moment at which X was walking to the shops (for Hornsby, X's walking-to-the-shops activity; for Stout, the continuant-like process of X's walking to the shops).

From the point of view of these modern discussions, Aristotle looks confused. He seems to be focusing on a particular subset of movements, telic movements. He correctly notices that while a telic movement is occurring, there must be something not yet finished: while X is building a house, X has not yet built that house; while X is walking to the shops, X has not yet walked to the shops. But, it might seem, he then mistakenly generalizes this so as to draw a conclusion about the incompleteness of all movement. And in so doing, these modern philosophers might argue, he also misses the very fact one needs to take into account if one is to explain the sense in which telic movement is incomplete while it is going on: the fact that, for both telic and atelic movement verbs, 'X is *phi-ing*' (present tense)

⁸ By contrast, the imperfective paradox does not arise for atelic movement. If 'X is strolling' is true, then at some time there must occur an event that is X's stroll.

is true in virtue something (*X*'s *phi-ing*) that is completely present now. This modern view opens up the possibility of giving a deflationary account of the supposed incompleteness of movement: this 'incompleteness' just amounts to the fact that *telic* movements are described in terms of some outcome that may never be achieved. The moving is complete at the now, but the moving is aimed at something else, a result or event, that is not complete while the moving is still going on.

In fact, I think it is clear that Aristotle's remarks about the incompleteness of movement are intended to apply to *moving as such*, not merely to *telic* moving. Though he often treats *telic* movement as in some sense paradigmatic,⁹ in *Physics* VI, NE x.4 and *Metaphysics* IX.6, he is making claims about movement quite generally, not merely about *telic* movement. In *Physics* VI.3, he says simply that nothing moves/is moving (*kineitai*) in the now. In NE x.4, his examples of movements include flying, walking and leaping (1174a31). In *Metaphysics* IX.6, he also uses walking (along with being moved) as an example of the kind of movement that is incomplete.

I cannot provide a full defence of Aristotle's account here. Instead, my aim is more limited. I shall try to show that Aristotle provides a possible, and in certain respects attractive, alternative to the modern/Plotinian view. My reconstruction of Aristotle's account will attempt to explain how he can make sense of present-tense movement claims and how he can justify the view that *moving as such*—not merely *telic* moving—is distinctively incomplete.

My strategy will be as follows. In §III, I argue that, for Aristotle, any time in which *X* is moving must be a time in which *X* makes some progress in its movement. If *X* is *currently moving*, this is in virtue of the fact that *X* is moving continuously for a period of time (a period in which *X* makes some progress in its movement) and the present now is within that period. In §IV, I argue that Aristotle is committed to the view that any stretch of movement in virtue of which it is true that *X* is *currently moving* will have a proper part that would by itself be sufficient for making it true that *X* is currently moving. In that sense, there is no *minimal* stretch of movement in virtue of which *X* is currently moving. In §V, I ask what is

⁹ His account of movement in *Physics* III.1–2 is arguably an account of *telic* movement, and he often says that every moving thing moves 'from something to something' (*ek tinos eis ti*) (for example, in the *Physics* at 219a10–11 and 239a23–4).

meant by ‘within’ in ‘X is moving for a period and the now is within that period’. I argue that if X is currently moving, then X has made and not yet stopped making progress in some movement. I discuss two different ways to spell out what it is to *have made and not yet have stopped making* such progress. On either view, it turns out that if X is currently moving, there is a movement of X’s that is now incomplete.

III

‘Nothing *kineitai* in the Now’: *Moving and a Period*. In *Physics* vi.3, Aristotle argues that ‘nothing *kineitai* (moves/is moving) in the now’. Ancient Greek does not mark the distinction we mark in English between the present continuous (‘is moving’) and the simple present (‘moves’), and moreover, the preposition I’ve translated as ‘in’ could also be translated as ‘at’. Thus Aristotle’s claim here is ambiguous between the claim that ‘nothing is moving at the now’ and the claim that ‘nothing accomplishes a movement in the now’. The first of these claims would be more radical than the second: one might hold that nothing accomplishes a movement (for example, travels a certain distance) in the now without holding that nothing is ever moving at the now. However, Aristotle himself gives no indication that he only means to defend this claim if it is understood in one of these two senses. Indeed, he does not spell out this distinction between two ways of understanding ‘nothing moves/is moving in the now’. For this reason, I think we should take him to be committed to both of these claims. He holds that, strictly speaking, if X *moves or is moving* at/in *t*, then *t* must be a period of time, not a now.

Of course, this still leaves a question as to how one should interpret this claim. I shall argue that any interpretation must meet the following constraints. On the one hand, Aristotle must allow that a now can be within a period of time when movement is going on, so we cannot interpret his claim that ‘nothing is moving in the now’ in such a strict way that it rules out this possibility. On the other hand, Aristotle cannot merely mean to claim that moving necessarily goes on for longer than an instant, and hence that X is now moving *if and only if* X is moving for a period that includes now. As we shall see, that claim would not distinguish *moving* from a kind of activity that, for Aristotle, stands in contrast to moving: a kind of activity that is

complete at any instant when it is occurring but that necessarily goes on for longer than an instant.

Aristotle uses ‘now’ in two ways: sometimes to refer to the present instant (the instant that divides the past from the future) and sometimes to refer to instants more generally (‘nows’) without implying that they are present. In the case of the *present* now, there is special reason to think that *it* can fall within a period of time when movement is going on. This follows from Aristotle’s assumption that there can be true present-tense movement claims.¹⁰ For Aristotle, any period of time that is present counts as present in virtue of the fact that it contains the present now (see *Physics* VI.3, 233b33–234a24). If *X is moving* (present tense), then there must be a present period of time for which *X* is continuously moving, and hence the present now must fall within such a period of time. In fact, for other reasons, Aristotle is committed to the view that *any* now (whether present or otherwise) not merely *can* but *actually does* fall within a period of time when movement is going on. After all, he holds that there are certain movements—the movements of the heavenly spheres—that are always occurring. Any now will fall within a period when such movements are going on.

This might suggest that that we should adopt a very weak interpretation of ‘nothing is moving (*kineitai*) in the now’, on which Aristotle is merely claiming that nothing can be moving *just for* a now, and hence that any movement must go on for a period of time. That is a claim that Aristotle would certainly endorse. However, there are three reasons for taking Aristotle to be claiming something more than this, when he says that ‘nothing *kineitai* in the now’.

First, the arguments of VI.3 imply not merely that if *X* is moving, *X* must be moving for a period of time; they imply that when *X* is moving for a period, no now in that period is a now *in* which it is

¹⁰ This assumption would later be challenged by Diodorus, who argued that ‘*X* is moving’ (present tense) is never true (see Sextus Empiricus, *Against the Professors* 10.97–102). But Diodorus’s view was based on a fundamentally un-Aristotelian account of motion: a kind of staccato analysis of motion, on which it can be true that certain things ‘have moved’ even though it is never true that they are in motion. Aristotle, by contrast, maintains that a subject can only *have moved* if it previously *was moving* (see, for example, 237a18–19). This seems to imply that if ‘*X* has moved’ is true at some time, there must have been some earlier time when it was true that ‘*X* is moving’ (present tense).

moving.¹¹ This isn't something Aristotle would need to defend in order to make the weaker claim that any movement must go on for a period of time.

Second, Aristotle is committed to the view that a continuous thing (such as a line, a period of time, or a stretch of activity or movement) cannot be composed of indivisibles (for example, of points or nows or instantaneous movement-slices) (see *Physics* VI.1). With regards to movement, this implies that what occurs in a period has a certain kind of explanatory priority. Aristotle holds, not only that *X* must be moving for a period if *X* is moving at all, but also that the fact that *X* is moving for a period cannot be reduced to a conjunctive fact about what holds of *X* at a series of nows.¹²

Third, as I have already indicated, Aristotle's claim that nothing is moving in the now is closely connected to his claim that there is something distinctively incomplete about movement. When he makes this claim about the incompleteness of movement, he contrasts movement with (complete) activity (*energeia*). I take it, then, that the kind of activity that is contrasted with movement is activity that can be complete in the now. Aristotle treats *being happy* as an activity, or *energeia* (*Metaphysics* IX.6, 1048b25–6), and hence as something that is complete in the now, and yet he argues that one cannot be happy for just an instant, or indeed, for just a short period of time (*NE* I.7, 1098a18–20): if *X* is currently happy, then *X* must be happy for a period of time that includes the present now. Thus when Aristotle denies that *X* can be *moving* in the now, he cannot simply mean that if *X* is currently moving, this must be because *X* is moving for a period of time that includes the present now. That

¹¹ This is especially clear in the argument at 234a34–b5.

¹² This explains Aristotle's answer to Zeno's paradox of the flying arrow. He says that Zeno is wrong to infer that movement is impossible, from the fact that nothing is moving in a now. According to Aristotle, a period of time is not composed of nows, so something can be moving in a period even if it is not moving in any now within that period (*Physics* VI.8, 239b5–9). A philosopher who had a different view of movement might agree with Zeno's assumption that a period of time is composed of nows, and instead respond to Zeno by proposing an account on which moving simply amounts to being in a series of incompatible states at earlier and later nows. I take it that Aristotle does not respond in this way because he himself would regard this as a debunking account: an account on which moving is not so much explained, as explained away. In any case, if he were to adopt such an account of movement, this would undermine his attempt, in *Physics* IV.10–14, to define time in terms of its relation to movement. If moving were simply defined as being in incompatible states at earlier and later nows, his definition of time would be obviously circular.

would not distinguish movement's relation to the now from happiness's relation to the now.

For Aristotle, the relation between movement and the now is quite different from the relation between happiness and the now. 'X is currently moving' is true in virtue of the fact that there is something temporally extended (a movement or stretch of movement) that is now incomplete. On Aristotle's view, the fact that *X is moving for a period that includes the now* does not imply that *X is moving in the now*. By contrast, 'X is currently happy', though it implies that X is happy for a period that includes the present now, is nevertheless true in virtue of the fact that there is something (a kind of activity) that is complete at any now within that period. This activity is present in the now just because it is present over a period that includes the now, but it is nevertheless present in the now.¹³

What, then, does Aristotle mean when he claims that nothing is moving in the now? He is, I think, committed to the following three claims. First, if X is moving (present tense), this must be in virtue of movement that goes on for a period that includes the present now. Second, the fact that movement goes on for a period cannot itself be reduced to a conjunctive fact about what holds at a series of nows (for instance, to the fact the moving thing instantaneously occupies a series of positions, first P_1 , then P_2 , then P_3 , and so on). And third, the *movement* (or *moving*)¹⁴ in virtue of which X counts as 'moving for

¹³ Steward (2018, p. 114) argues that love is a state that obtains at any instant of a period in which it obtains, and that essentially obtains over a period ('so that metaphysically speaking, we must explain its obtaining at a given instant in terms of its obtaining over a period which includes that instant, rather than the other way around'). On my account, this is very similar to Aristotle's view of the relation between *being happy* and an instant. But the contrast Aristotle draws between *being happy* and *moving* suggests that he is committed to denying that *moving* is related to an instant in this way. For a similar reason, I think Aristotle would reject the account of *moving* that has been developed by Crowther. Crowther, like Hornsby, draws an analogy between moving and space-occupying stuff. He emphasizes that something can only be moving if it is moving for a period, and that it is not possible for moving to be present 'merely at a durationless instant', but he also claims that if some process (such as moving) exists over a period of time, it is 'occurrently renewed or recreated at each' instant within that period of time, and hence must exist at each such instant (Crowther 2018, pp. 78–80). This again suggests an account of *moving* that is similar to Aristotle's account of *being happy*: an account on which X *does* count as moving in a now, though X can only be moving in a now if it is moving in a period that includes that now.

¹⁴ Once we recognize that this moving/movement is not present in a now, I think it doesn't much matter whether we call it 'moving' or 'movement'.

a period of time' is not something that is present in a now or instant within that period.¹⁵

This still leaves us with the question of why Aristotle holds this view about movement and its relation to the now. The arguments he gives in *Physics* VI.3 seem to rely on the assumption that if *X* is moving in *t*, then *X* must make some progress along its path in *t*. For example, in the case of locomotion, the assumption is that if *X* is moving in *t*, then *X* must cover some distance in *t*. Aristotle argues that nothing is able to cover any distance (or make progress) in a now, and hence (given the above assumption) that if *X* is moving in *t*, *t* must be a period of time.¹⁶

This assumption is clearest in his first argument (*Physics* VI.3, 234a24–31). Aristotle claims that if *moving in the now* were possible, then there could be quicker or slower movement in the now. But, he argues, it is not possible for there to be quicker or slower movement in the now, so in fact nothing can be moving in the now. The argument that it is not possible for there to be quicker or slower movement in the now depends on the assumption that if something were to move in the now it would have to progress some distance in the now. Aristotle argues as follows. Suppose that there were two things that moved at different speeds in the same now. Suppose the slower-moving thing travels a certain distance in the now; the faster-moving thing would then travel over the same distance in a time less than the now. But then the now would be divided (that is, there would be a time shorter than the now). And that is impossible, since the now is indivisible (as Aristotle has argued earlier in VI.3).¹⁷

This suggests his view is not merely that *X* counts as *moving* in virtue of the fact that there is a period of time in which *X* is

¹⁵ Thus, Aristotle can still allow for the truth of claims such as 'X is now moving' or 'X was moving at such and such a now', so long as these are not understood in such a way that they imply that X is/was moving *in virtue of something present in (or at) a now*. See below, p. 20, on the claim 'Sebastian was strolling at 2 a.m.'

¹⁶ Aristotle also argues that nothing is resting in a now, but he takes this simply to follow from his claim that nothing is moving in a now. Since rest is the privation of movement, *resting in t* would only be possible if *moving in t* were possible (234a31–4).

¹⁷ Aristotle's other argument (234a34–b5) is that if it were possible for something to be moving in the now, then this would imply the absurd conclusion that at the now that divides a period of X's motion from a period of X's rest, X would be both moving and at rest. I suspect that this argument too depends on the assumption that for X to be moving in the now, X would have to progress some distance in the now. But establishing this would require a fuller discussion than I can provide here.

continuously moving, but in addition that any time *in* which *X* is moving must be a time in which *X* makes progress in its movement. Why might he think that *moving in a time* depends, in this way, on *making progress during that time*? He does not spell this out, so we have to speculate. The crucial point, I suggest, is that a time can only count as *a time in which X is moving* if what occurs in that time makes a certain kind of contribution to *X*'s movement. The relevant kind of contribution must involve making progress in the movement, because movements are essentially directed and, on Aristotle's view, progress is what makes such directionality possible. At least in *Physics* VI, Aristotle holds that any time in which a moving thing makes a certain amount of progress in a movement must have proper parts in which the moving thing makes less progress. Moreover, he holds that both time and movement are infinitely divisible. If *X* is moving continuously throughout time *t*, then *X* makes a certain amount of progress in *t*, makes less progress in a proper part of *t*, makes even less progress in a proper part of the proper part, and so on (see *Physics* VI.4, 235a20–2; VI.6, 237a25–8). This, I suggest, provides a basis for the directionality of movement. Moving essentially involves making lesser and greater amounts of progress along some trajectory, and this is something that can only happen in a divisible period of time.

Aristotle's view, then, is that what occurs during a sub-period of a period in which I am continuously walking contributes to the progress of my walk, in a way that what occurs in a now within that period cannot do. I count as walking in any proper part of a period of time in which I am continuously walking, because in any such proper part I make some progress in my walk.¹⁸ If I am out on a walk but stop to have a conversation, I don't count as walking during the period in which I have stopped, because I don't make any progress in my walk during that time. Similarly, I don't count as walking in any *now* during my walk because I don't make any progress in an indivisible now.¹⁹

¹⁸ Aristotle holds that any part of a period must itself be a period. Since a period cannot be composed of indivisible nows, an indivisible now does not count as a part of a period (*Physics* IV.10, 218a6–8). Similarly, for Aristotle, an instantaneous movement-slice is not a part of a movement.

¹⁹ What I say here is not yet enough to explain the sense in which movement is incomplete while it is occurring. That is a task I take up in §v.

IV

There Is No Primary Time in Which X Is/Was Moving. I have argued that, for Aristotle, the *movement/moving*, in virtue of which it is true that *X* is/was moving, is something that occurs over a period of time and is not present in any now within that period. In this section, I turn to Aristotle's remarks in *Physics* VI.5–8 about (what he calls) 'the primary [time] in which' *P*.²⁰ I argue that these remarks tell us something more about the way in which the truth of '*X* is/was moving' is related to what happens in a period of time. Aristotle is committed to the view that there is (in a sense to be explained) no minimal period of time such that *X* is/was moving in virtue of what occurs in that period.

In *Physics* VI.5–8, Aristotle asks, for certain types of statement, *P*, whether there is a 'primary [time] in which' *P*. He claims that there is a primary time in which a subject *X* has finished changing, and that this primary time is an indivisible instant (a now) (235b30–236a7). For a range of other cases of *P*, he goes on to argue that there is no primary time in which *P*. For instance, there is no primary time in which a subject *X* has embarked on a change (236a13–27); there is no primary time in which *X* is/was coming to a stand (238b23–239a10); there is no primary time in which *X* rests (239a10–22); and—importantly for our purposes—there is no primary time in which *X* is/was changing or moving (236a35–6, 238b36–239a2).²¹

I shall not attempt here to provide a full reconstruction of Aristotle's notion of primary time. Instead, my aim will be more limited: to explain what Aristotle means when he denies that there is a primary time in which *P*, for the specific cases of *P* he considers in *Physics* VI. I shall argue that, for Aristotle, a time *t* qualifies as the *primary time in which P* only if it meets both of the following two conditions:

²⁰ The Greek phrase does not include the noun 'time'. What Aristotle has in mind is best expressed in English by 'the primary time in which *P*' (where 'time' is understood in such a way that it applies to both periods and instants).

²¹ In these chapters, Aristotle uses both '*metaballein*' (and cognates) and '*kineisthai*' (and cognates). My 'changing' and 'moving' here reflect this, but the difference is not important for my argument. For Aristotle, every movement (*kinēsis*) is a change (*metabolē*), but there are some changes (namely, perishing and coming to be) that don't count as movements (*Physics* V.1, 225a34–b3).

- (i) t is a time in which P , and
- (ii) there is no proper part of t, t^* , that is such that: t^* is also a time in which P , and what occurs in t^* would by itself be sufficient for making it true that P .²²

The cases in which Aristotle claims there is *no primary time in which P* are (I argue) cases in which the *second* of these conditions fails; that is, they are cases in which there is a time in which P , but any such time has a proper part that (a) is also a time in which P , and (b) is such that what happens in that proper part would by itself be sufficient for making it true that P . Intuitively, the idea is that in these cases, any *time in which P is a longer time than is needed* for grounding the truth of P , and hence does not count as *the primary time* in which P . This, I suggest, is what Aristotle means when he claims that, in these cases, there is no primary time in which P .

This interpretation, I shall argue, allows us to explain the following three features of Aristotle's account: first, his explicit remark about what he means by 'primary' in this context (235b33–4); second, his claim that there is no primary time in which X is/was moving; and third, his repeated use in these chapters of a certain, otherwise puzzling, argumentative strategy.

Aristotle explains his use of 'primary' here as follows: 'I call "primary" that which is such and such not in virtue of something other than it being such and such' (235b33–4). Aristotle's subsequent discussion shows that he intends this as (at least) a necessary condition: something only counts as 'primary' if it is 'such and such not in virtue of something other than it being such and such'. How, then,

²² My claim is that these are necessary conditions for being the primary time in which P . But are they also jointly sufficient conditions? I don't think Aristotle says enough to allow us to answer this question. If they *are* jointly sufficient, then there will often turn out to be more than one primary time in which P . For example, if in the past I have made several journeys between Oxford and London, then there will be several primary times in which *I travelled between Oxford and London*. Moreover, if these conditions are jointly sufficient, then any now that is a time in which P will be a primary time in which P (since a now has no proper parts, and so trivially satisfies the second condition). Aristotle's one example of a case in which there is *a primary time in which P* is a case in which that time is a now. He argues that there is a primary time in which *X has completed a change*, and that this time is the now at which X has first arrived at the end-point of the change. However, it is not clear whether he would want to say that in *all* cases in which a now is a time in which P , that now is *a/the* primary time in which P . In note 24, I suggest a reason why Aristotle might have denied that a now in which X is happy counts as *a/the* primary time in which X is happy.

should we fill in the ‘such and such’ here, in the case of primary time? A natural suggestion is that the primary time in which *P* is a *time in which P* not in virtue of the fact that something other than it is a *time in which P*. By contrast, a time in which *P* that is not the primary time in which *P* is a *time in which P* in virtue of the fact that something other than it is a *time in which P*. But what is it for one time to be a *time in which P* in virtue of the fact that some other time is a *time in which P*? Aristotle’s examples of cases in which there is no primary time in which *P* are all cases in which (on his view) anything that counts as a time in which *P* must also be a time in which something happens that is sufficient to make it true that *P*. My suggestion is that, at least for these kinds of cases, a *time in which P* that fails to be the primary time in which *P* is a *time in which something happens that is sufficient to make it true that P* in virtue of the fact that something else (some proper part of it) is a *time in which something happens that is sufficient to make it true that P*. Aristotle assumes that if there is a proper part of *t* that is also a time in which *P*, and if what happens in that proper part would by itself be sufficient for making it true that *P*, then *t* counts as a time in which *P* in virtue of the fact something other than *t* (namely, *that proper part of t*) is a time in which *P*.²³ Thus, in such a case, *t* is not the primary time in which *P*.²⁴

For example, suppose I travelled from Oxford to London yesterday, and my journey lasted from 10 a.m. to 11 a.m. Yesterday morning counts as a *time* in which I travelled from Oxford to London, but it is not the *primary time* in which I travelled. What happened in the period between 10 a.m. and 11 a.m. would by itself be sufficient to make it true that I travelled from Oxford to London. In that sense, yesterday morning is a time in which *something occurred that is sufficient to make it true that I travelled from Oxford to*

²³ In explaining what it is to be a non-primary time in which *P*, Aristotle says ‘for example, [we say] a thing changes in some year because it changes in some day’ (236b21–2).

²⁴ I am not claiming that this is the only way to spell out what it is for *t* to be a *time in which P* in virtue of the fact that some other time, *t**, is a *time in which P*. My claim is just that this captures what Aristotle has in mind in these chapters and for these particular examples of *P*. Arguably, Aristotle’s view of happiness implies that a now in which *X* is happy is a *time in which X is happy* in virtue of the fact that some more extended period that includes that now is a *time in which X is happy*. Aristotle never considers this example in his discussion of primary time. Had he done so, this might have prompted him to provide some more general explanation of what it is for *t* to be a *time in which P* in virtue of the fact that some other time, *t**, is a *time in which P*.

London because something other than yesterday morning (a proper part of yesterday morning: the period between 10 a.m. and 11 a.m.) is a time in which *something occurred that is sufficient to make it true that I travelled from Oxford to London*. By contrast, the period from 10 a.m. to 11 a.m. does satisfy the two necessary conditions for being the primary time in which I travelled from Oxford to London. The period from 10 a.m. to 11 a.m. is a time in which I travelled from Oxford to London, and there is no proper part of that period that is such that what occurred in that proper part would itself be sufficient to make it true that I travelled from Oxford to London; what happened in a proper part of this period would only make it true that I travelled *part of the way* from Oxford to London.

An alternative way to interpret Aristotle's remark about the meaning of 'primary' would be to take him to be making a claim about the primary time *of a change or event*, *E*, rather than the primary time *in which P* (where '*P*' is something propositional). Morison (2013, pp. 160–4) proposes an alternative interpretation of this sort. On his interpretation, the primary time of a change or event *E* is the *most precise* time of *E*: the time that includes the whole of *E* but has no proper parts that themselves include the whole of *E*. A time of *E* that is *not* the primary time will include the whole of *E* but also have proper parts that include the whole of *E*. The idea is that such a time counts as *a time of E* just because it contains some other time that is a more precise time of *E*. Thus, in our example above, this interpretation implies that yesterday morning is not the primary time of my journey to London (it is a time of my journey because it contains another time that is a more precise time of my journey), but the period between 10 a.m. and 11 a.m. *is* the primary time of my journey (it is the most precise time of my journey, since it contains the whole of my journey and has no proper parts that contain the whole of my journey). Morison's interpretation, unlike mine, provides necessary and sufficient conditions for being the primary time. It also has the advantage of making Aristotle's remarks about primary time nicely parallel to his remarks elsewhere about primary place (*Physics* IV.2, 209a31–209b2).²⁵ However, Morison's interpretation does not

²⁵ On my interpretation, Aristotle's treatment of 'primary time' is rather different from his treatment of 'primary place'. But I would argue that there could be good reason for this: aspectual distinctions are relevant when discussing movements-in-time but are not relevant for discussing objects-in-place.

allow us to make sense of Aristotle's claim that there is no primary time in which *X* is/was moving. If *X* is moving for a limited period, then there *is* a most precise time of *X*'s *moving*: a time that contains all of *X*'s moving and that has no proper part that contains all of *X*'s moving.²⁶ Nor does this interpretation help us to explain the general argumentative strategy I discuss below.

Let's now see how my proposed interpretation can account for Aristotle's claim that there is no primary time in which *X* is/was moving. Suppose that yesterday *X* was moving continuously just between 10 a.m. and 11 a.m., and was otherwise at rest. Is there a primary time in which *X* *was moving*? Clearly, a primary time in which *X* *was moving* could not contain times in which *X* was at rest,²⁷ so it could not contain the periods of yesterday that were before 10 a.m. or after 11 a.m. Is the primary time, then, the interval of time bounded by 10 a.m. and 11 a.m.? On my suggested interpretation, the answer is no. Any sub-period of this interval is also a time in which *X* was moving, and what happened in such a sub-period was already sufficient to make it true that *X* was moving. In this sense, some of what happened in the interval of time between 10 a.m. and 11 a.m. is redundant for making it true that *X* was moving. Thus (I suggest) Aristotle would say that the period between 10 a.m. and 11 a.m. is a period in which something occurred that makes it true that *X* was moving because it has proper parts that are periods in which something occurred that makes it true that *X* was moving. This, I claim, is the line of thought that leads Aristotle to deny that there is a primary time in which *X* *is/was moving*.²⁸

More generally, this interpretation allows us to make sense of a certain argumentative strategy Aristotle employs repeatedly in these chapters. He argues that there is no primary time in which *P*, on the

²⁶ Morison has to say (implausibly in my view) that when Aristotle claims that there is no primary time 'in which the moving thing *kineitai*' (238b36–239a1), what he means is that 'there is no primary time in which something embarks on motion' (Morison 2013, p. 184).

²⁷ If it contained times when *X* was at rest, then it would have a proper part that by itself contained what was sufficient to make it true that *X* was moving.

²⁸ Armstrong (2004, pp. 19–20) defines the closely related notion of a 'minimal truthmaker': 'If *T* is a minimal truthmaker for *p*, then you cannot subtract anything from *T* and the remainder still be a truthmaker for *p*.' On the interpretation I am proposing, the reason why there is no primary time of '*X* was moving' is just that there is no minimal truthmaker for '*X* was moving'. In the case of any truthmaker for '*X* was moving', you can subtract some temporal part from that truthmaker and still be left with a truthmaker for '*X* was moving'.

basis of (i) the claim that there is no *now* in which *P*, and (ii) the following claim about divisibility (D): for the *P* in question, if *t* is a time in which *P*, then any sub-period of *t* is also a time in which *P*.²⁹ For the examples of *P* Aristotle considers when employing this strategy, a period of time in which *P* is also a period in which what happens is sufficient to make it true that *P*. Given this, (i) and (ii) together imply that there is no primary time in which *P*. This is because they imply that any *time in which P* must have a proper part (also a time in which *P*) that is such that what happens in that proper part would, by itself, be sufficient for making it true that *P*.

If we adopt this interpretation of Aristotle's remarks about 'primary time', what can we conclude about the present tense of movement claims? Aristotle doesn't himself appeal to his account of primary time to answer our question about what makes it true that *X* is currently moving, but it is easy to see how to do so. In §III, I argued that Aristotle is committed to the view that 'X is moving' (present tense), if true, is true in virtue of what occurs over a period of time that includes the present now. Aristotle's remarks on primary time imply that there is, in the following sense, no *minimal* stretch of movement in virtue of which it is true that *X* is currently moving: for any period of time in which what happens is sufficient to make it true that *X* is currently moving, there will be a proper part of that period in which what happens would by itself be sufficient to make it true that *X* was currently moving. In fact, Aristotle can say something stronger than this. Any stretch of movement in virtue of which it is true that *X is currently moving* will contain some parts that do not overlap at all with the present now (for instance, parts that are wholly in the past). Hence any such stretch of movement will contain temporal parts that are not merely unnecessary for, but in fact

²⁹ At 236a14–27, Aristotle employs this strategy for *P* = 'X has changed' (in the sense of 'has begun to change'). At 236b25–32, he establishes the divisibility claim (D) for *P* = 'X is moving' (though he only later draws the conclusion that there is no primary time of 'X is moving'). At 238b26–239a1, he employs this strategy for *P* = 'X is coming to a stand'. At 239a10–22, he employs this strategy for *P* = 'X is at rest'. As Strobach (1998, p. 70) points out, this strategy can only be used for cases in which the divisibility claim (D) holds. For instance, the strategy would not work for *P* = 'X travelled from Oxford to London'. It is not the case that if *X* travelled from Oxford to London in time period *t*, then *X* travelled from Oxford to London in any sub-period of that time.

irrelevant to making it true that *X* is currently moving.³⁰ Note also that this will be true whether the movement verb in question is telic ('walking to the shops') or atelic ('strolling' or 'moving').

This is relevant to the contrast I drew earlier between Aristotle and Hornsby. Consider again Hornsby's argument that 'Sebastian was strolling at 2 a.m.' holds in virtue of the past existence of something, Sebastian's strolling, that was completely present at 2 a.m. Hornsby points out that there is no particular stroll (that is, no event with a particular duration) such that *its* occurrence is necessary for the truth of the claim 'Sebastian was strolling at 2 a.m.'. She adds: 'At any moment at which Sebastian is (or was) strolling, it can (or could have been) said "Sebastian is strolling now"'. To the truth of this, it is utterly irrelevant at what time Sebastian started to stroll, or at what time he stopped, or how long he strolled for' (Hornsby 2012, p. 236). Aristotle would agree with the claim about irrelevance: the truth of 'Sebastian was strolling at 2 a.m.' does not require Sebastian's stroll to have lasted for any particular length of time. But his conclusion is not that 'Sebastian was strolling at 2 a.m.' is true in virtue of the existence at 2 a.m. of something (Sebastian's strolling) that was completely present at 2 a.m. Rather, 'Sebastian was strolling at 2 a.m.' is true in virtue of the fact that there was a stretch of strolling that occurred over a period (a period that included 2 a.m.) and that was not present in any instant of that period. On Aristotle's view, this can be so even though there is no particular stretch of strolling that is minimally sufficient for making it true that Sebastian was strolling at 2 a.m. For any stretch of strolling that is sufficient to make it true that Sebastian was strolling at 2 a.m., there is a proper part of that stretch that would by itself be sufficient for making it true that Sebastian was strolling at 2 a.m.

³⁰ For a similar point, see Deigan (2020, esp. pp. 532–3), who argues that there is no 'exact truthmaker' for 'Achilles was moving when the Tortoise won the race'. To be an 'exact truthmaker' for a sentence, a situation must (a) guarantee the sentence's truth, and (b) 'be wholly relevant to the sentence', where this amounts to 'not containing parts which don't contribute to making the sentence true' (p. 516). Deigan argues that a race is won at an instant, but that the truthmaker for 'Achilles was moving' must be something that occupies an interval. Thus the truthmaker for 'Achilles was moving when the Tortoise won the race' will have to be something that occupies an interval that surrounds the instant when the Tortoise won. But any such interval will contain parts in which what happens is irrelevant to the truth of 'Achilles was moving when the Tortoise won the race', so there is no exact truthmaker for this sentence. Obviously, if (as Aristotle thinks) the present is strictly an instant, then a similar argument can show that there is (in Deigan's sense) no 'exact truthmaker' for 'X is moving' (present tense).

V

'Within': *The Now, Incompleteness, and the Period of Moving*. I have argued that, for Aristotle, if it is true that *X is currently moving*, this must be in virtue of the fact that *X is moving* for a period of time and the present now is within that period. In this section, I ask what it is for the now to be 'within' such a period.

Clearly, if *X* is currently moving, the present now cannot be a now at which *X*'s movement is either over or has not yet begun. Aristotle's account implies, further, that the present now cannot be either the first or the final now of the period in which *X* is moving. This is for the simple reason that there *is* no first or final now of the period in which *X* is moving. Periods of movement are 'open', in the sense that any now that limits them must be a now that is not included in the period of movement. The now that marks the beginning of a movement is a now before which there has not yet been any of that movement and beyond which the movement has already started; at this now the movement is not yet occurring.³¹ The now that marks the end of a movement is a now up to which the movement is occurring and beyond which there is no more of that movement; at this now, the movement is no longer occurring.³² Since no two nows are adjacent to one another, there is no first or last now within the period when the moving thing is moving (that is, there is no now that is *adjacent to and immediately after* the now that marks the beginning of the movement, and there is no now that is *adjacent to and immediately before* the now that marks the end of the movement).³³ From this it follows that if *X* is currently moving, then some of *X*'s movement has already occurred in the past and some of *X*'s

³¹ As Aristotle says, 'everything which is moving has moved before' (VI.6, 236b33–4), and 'not only must that which is changing have changed, but that which has changed must also previously have been changing' (VI.6, 237a17–19). This implies that if *X* is moving, then *X* has already done some moving.

³² In *Physics* VIII.8, 263b9–26, Aristotle argues that the now that marks the end of a period in which *X* is *becoming not white* must be a now at which *X* is no longer *becoming* not white, but rather *is already* not white. Cohoe (2018, pp. 57–63) and White (1992, pp. 57–9) both argue that, for Aristotle, the time interval during which something is moving is an open interval. They claim, in particular, that his argument in *Physics* VIII.8, 262a17–263a3, that one movement cannot immediately be followed by another without an intervening period of rest, depends on this assumption.

³³ Indivisible points or instants cannot be either in contact with one another or in succession one to the other (*Physics* VI.1, 231a26–b10). Any two nows are separated by a period of time that can be divided at a further now.

movement *will occur* in the future. To be moving is to have already made, but not yet have stopped making, progress along some path.³⁴

This helps to explain the sense in which, for Aristotle, movement quite generally (not just telic movement) is incomplete while it is going on: to be moving is to be making progress one has not yet made. However, this doesn't yet answer my question about how to understand 'within' in the claim 'If *X is currently moving*, this must be true in virtue of the fact that *X is moving* for a period of time and the present now is within that period'. What I have said so far leaves open two different answers. On one view (let's call it the 'now-spanning view'), *X* counts as moving in virtue of the fact that there is a stretch of *X*'s movement that spans the present now (that is, extends on either side of the now, into the past and the future). On the other view (let's call it the 'open now view'), *X* counts as moving in virtue of the fact that there is a movement of *X*'s that has been occurring in the past and has not yet stopped at the present now. On both views, '*X is moving*' (present tense) implies that *X* will move further in the immediate future. On the first view, but not the second, *X* counts as moving *partly in virtue of the fact that* it will move further in the immediate future. I shall not attempt to adjudicate between these two views here. I doubt whether Aristotle's remarks provide us with a basis for deciding between them. Instead, I end this section by outlining what I take to be the main questions a defence of either view would need to answer.

The main question for the now-spanning view is whether it can make sense of the way in which kinetic agency operates in time. On the now-spanning view, *X* counts as *moving* (present tense) partly in virtue of the fact that *X* will move further in the immediate future. Arguably, a fact that is itself partly grounded in facts about what will happen in the immediate future could not *causally explain* those

³⁴ Someone might object that *X* could be destroyed *while it was moving*, and would not then continue moving after the moment of destruction. Aristotle's reply, I suspect, would be that in such a case, *X* was moving *right up to* the now at which it was first true that *X* had been completely destroyed. This does not imply that there was a last moment of the period of *X*'s moving. Since moments are not adjacent to each other, there would be no moment immediately preceding the moment when *X* had first been completely destroyed. To claim that '*X* was destroyed while it was moving' is to claim that *X* was moving during, and right up to the end of, the period of time when *X* was being destroyed. Similarly, the fact that no movement has a final now does not imply, absurdly, that no movement could ever stop: lacking an *internal* limit is not the same as being *unlimited*. On Aristotle's view, there can be a period in which a movement is *stopping*; any such period is bounded by a now at which the movement *has already stopped*.

very facts. This suggests that the now-spanning view will struggle to account for kinetic agency.³⁵ When *X*'s moving is an exercise of agency (for example, building a house or walking to the shops), the fact that *X* is currently moving makes a difference to what will happen in the immediate future.³⁶ In particular, in such cases it seems right to say that the fact that *X* will move further in the immediate future is causally explained (at least in part) by the fact that *X* is currently moving. The now-spanning view appears to make this kind of present-to-future determination impossible.

The now-spanning view can still allow, in the case of *any particular stretch of X's future movement*, that the fact that *that particular stretch of movement will occur* is causally explained by the fact that *X* is currently moving. This is because, on the now-spanning view, though *X* counts as (currently) moving in virtue of the fact that there is a stretch of *X*'s movement that spans the present now, and hence partly in virtue of the fact that there will be some of *X*'s movement in the future, there is no *particular* stretch of movement that is needed. That, at least, is the view I attributed to Aristotle in §iv. Thus, for any particular stretch of movement, it is not the case that *X* only counts as (currently) moving in virtue of the occurrence of *that particular* stretch of movement. The question that remains for the now-spanning view is whether this concession is enough to provide the basis for a satisfactory account of kinetic agency. Is it enough for such an account to be able to say, of any particular stretch of future movement, that the fact that *X* is currently moving can be part of the causal explanation of the fact that *that stretch of movement will occur*, or does such an account need, in addition, to be able to say that the fact that *X* is currently moving is part of the causal explanation of the more general fact *that X will move further in the future*?

The open now view faces a different question. On the open now view, *X* counts as *moving* (present tense) in virtue of the fact that there is a movement of *X*'s that has been occurring in the past and has not yet stopped at the present now. Is it possible to spell out what it is for *X*'s movement *not yet to have stopped at the now*, without simply invoking what we are trying to explain (the fact that *X* is

³⁵ For a similar worry, see Arntzenius (2000, pp. 192–3).

³⁶ One could argue that, when *phi*-ing is an exercise of agency, the *phi*-ing should be classified not as movement but as *energeia* (in the sense in which *energeia* is contrasted with movement). But Aristotle's examples make it clear that this is not his view.

currently moving)? It might seem that the fact that there is a movement of *X*'s that has not yet stopped at the now simply amounts to a conjunction of two facts: a fact about what holds over a period (*X was moving throughout a past period bounded by the present now*) and a fact about what holds at the now (*X is now (still) moving*). But if that were right, then the second of these facts would by itself (trivially) be sufficient for making it true that *X* is currently moving. This threatens to undermine Aristotle's argument that nothing can be moving in the now. The open now view needs some account of what it is for *X*'s movement not to have stopped at the now that does not simply stipulate that *X* is moving at the now or that *X* will be moving in the future. One possibility would be to invoke the causal conditions that underlie *X*'s movement: *X*'s movement counts as not having stopped at the now in virtue of the fact that the causal conditions now in operation are such as to determine its continuance into the future. A full defence of the open now view would need to spell out some account of this kind.

VI

Conclusion. On the account I have attributed to Aristotle, 'X is moving', if true, is true in virtue of what happens during a period of time in which *X* makes some progress in its movement. In §v, I asked how the present now must be related to such a period of time if *X* is to count as *currently moving*. I argued that for *X* to be currently moving, *X* must have already made and not yet stopped making progress in some movement, and I looked at two different ways of spelling out what it is for *X* to have *already made and not yet stopped making* such progress: the now-spanning view and the open now view. On either view, the fact that *X* is moving is grounded in a fact about what occurs over a period. And on either view, if *X* is currently moving, then there is some of *X*'s movement that will occur but has not yet occurred.

Even without deciding between these two views, we can see how the proposed account meets some of the challenges we raised for Aristotle. It explains how Aristotle can maintain that some present-tense movement claims are true, though he holds that a time in which a thing is moving must be a time in which it makes progress in its movement, and hence that nothing can be moving in the present now. Moreover, it explains Aristotle's view that *moving* as such (not

just moving towards some definite end) is incomplete—whereas, by contrast, *being happy* is complete at any moment, even though one can only be happy at a moment if one is happy for a period.

It is less obvious whether this account can help to us to defend the test for movement Aristotle adopts in *Metaphysics* IX.6: if ‘*phi-ing*’ is a movement verb, then ‘*X is phi-ing*’ and ‘*X has phi-ed*’ are not true together. One way to defend this test would be to appeal to his argument (in *Physics* VIII.8) that a movement only counts as completed if it is followed by a period of rest, and hence that a subject that moves continuously from *A* to *B* does not, along the way, count as having completed movements to the intermediate points on its path. This implies that when a subject has moved (that is, has completed a movement), it is no longer moving.³⁷ But can Aristotle’s test be defended without relying on this peculiar view from *Physics* VIII.8? I want to suggest that Aristotle’s underlying point (if not the test itself) is independent of this *Physics* VIII.8 claim. As I mentioned above, for the purposes of Aristotle’s test, the perfect needs to be understood as expressing aspect, not as a kind of past tense. ‘*X has phi-ed*’ means that *X*’s *phi-ing* is currently complete. Suppose Aristotle were to allow that, during a period of continuous movement, the moving thing completes sub-movements to each of the infinitely many intermediate points on its path.³⁸ There would still be a sense in which he could maintain that ‘*X has moved*’ (understood as ‘*X*’s moving is currently complete’) and ‘*X is moving*’ are never true at the same time. I have argued that, for Aristotle, if *X* is currently moving, this implies that *X* still has further progress to make in its movement. In that sense, a subject that is moving is not yet in a state in which its moving is complete.³⁹

³⁷ See Makin (2006, pp. 144–50) for a similar solution. The fact that the subject might *in the past* have completed some movement is not relevant, given the way in which the perfect is to be understood here.

³⁸ This seems, in fact, to be his view in *Physics* VI.6.

³⁹ By contrast, Aristotle holds that activities *of the kind he distinguishes from movement* are complete at any moment when they are occurring. An example of such activity is seeing. If someone is currently seeing, her seeing is already complete. Even if she will continue seeing for some time into the future, in doing so she will not be making *further progress* in her seeing.

On the account I have attributed to Aristotle, there are two kinds of incompleteness associated with movement. The first is a generic kind of incompleteness that characterizes *all* movements (telic and atelic). All moving essentially involves *moving further*. If *X* is currently moving, *X* is *making progress it has not yet made*; this implies that there is some of *X*'s movement that will occur but has not yet occurred. The second is a more specific kind of incompleteness that characterizes *telic movement in particular*. To be engaged in telic movement is to be progressing towards *some specific end* that has not yet been reached (and that may never be reached): if *X* is walking to the shops, then *X* has not yet (and may never have) reached the shops.

I have argued that Aristotle recognizes not just the second but also the first of these types of incompleteness. Let me end by saying something about why the first kind of incompleteness might be important to Aristotle. It is sometimes claimed that Aristotle's analysis of movement in the *Physics* is intended to be an analysis just of *telic* movement.⁴⁰ This, after all, is the kind of movement that features most prominently in natural philosophy: simple bodies move to their natural places, saplings grow into mature trees, animals move somewhere new in search of food or safety. The prominence of telic movement in Aristotle's work might lead one to doubt whether he is interested in the first, more generic, kind of incompleteness. True, recognizing this kind of incompleteness allows one to class not just telic but also atelic movements as movements, but would Aristotle really care if his account turned out to imply that a stroll is not, strictly speaking, a movement? In answer, I want to suggest that this first, more generic, kind of incompleteness is of importance to Aristotle, not primarily because it allows for the possibility of atelic movement, but rather because it is helpful for explaining a feature that is peculiar to *telic* movement.

What needs to be explained about telic movement is not merely the fact that *X* can be moving to *P* even though *X* has not, and never will have, moved to *P*; it is also the fact that the truth of '*X* is moving to *P*' has certain particular implications for what will happen in the future. If I am currently moving to *P*, then unless I am interrupted or change my mind, my moving-to-*P* will continue until I reach *P* and

⁴⁰ For a defence of this claim, see Waterlow (1982, ch. 3).

then stop. This point about future implications is, I think, hard to explain on any view on which ‘X is moving’ is true in virtue of the existence of something, X’s *moving*, that is completely present now.⁴¹ On Hornsby’s view, the moving that is completely present is a kind of activity, but why should the complete presence of such activity now imply anything about whether there will be more such activity in the future? On Stout’s view, the moving is a continuant, but again it isn’t obvious why the complete presence of this continuant now should imply anything about its presence in the future.

I have argued that, on Aristotle’s account, if X is moving (present tense), then X will move further in the immediate future. Recognizing this general point about movement puts us in a better position to account for the special way in which *telic* movement points towards a particular future. What is special about telic movement is simply the fact that there are certain constraints on how it can come to an end. ‘X is strolling’ implies that X’s strolling will continue into the future, but does not imply anything further about how this strolling will stop. By contrast, ‘X is walking to the shops’ implies not only that X’s walking to the shops will continue into the future but also that (absent interruption or change of mind) X’s future walking-to-the-shops will continue until X reaches the shops, and then stop. If X is walking to the shops, X’s walking to the shops will stop either when X reaches the shops or when she changes her mind or when something interrupts her progress. My suggestion is that Aristotle’s account, because it recognizes the more generic kind of incompleteness that applies to movement as such, is especially well fitted for making sense of this feature of *telic* movement in particular.⁴²

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⁴¹ Here I am in agreement with Haase (2022), who makes a similar objection to modern views on which moving is wholly present at the now.

⁴² I am grateful to Jeremy Fix, Matthias Haase and Guy Longworth for very helpful comments, and to the Oxymorons work-in-progress group for discussion of an early draft.

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