

Physics I.7

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This then is what we ourselves say, beginning with a discussion of coming to be in its entirety. It is natural first to speak of the common features and on this basis to examine what is distinctive about particular cases. (189b30–2)

Aristotle's seminal discussion of coming to be and related topics can be divided into several sections. Since the chapter is relatively long, I shall not consider all parts in equal depth but focus on those that introduce and develop his account of what underlies.

I. Initial Comment: What we Say about Coming to Be: 189b32–190a13

We say that one thing comes to be from another and that something comes to be from something different, when speaking of simples or compounds. What I mean is this ... (189b32–3)

Aristotle gives several examples to indicate what he means, focusing on the case of a human who is not educated and becomes educated.

- (a) A human comes to be educated.
- (b) Something non-educated comes to be educated.
- (c) A human that is non-educated comes to be a human that is educated.

Aristotle takes these three expressions ('a human', 'non-educated' and 'educated') to be about simples, while the 'A human that is educated'

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and 'A human that is non-educated' are about complexes. He compares these with another expression used to describe the same case:

- (d) From something non-educated, something educated comes to be, which can be employed instead of (b). He notes, however, that we cannot replace (a) with
- (e) From a human, something educated comes to be (190a5–8).

In considering these examples, Aristotle notes:

Of the things that come to be, in cases we describe as involving simples, in one case something comes to be by remaining, in the other by not remaining. (190a9–10)

His remark can be spelled out as follows: in (a) a human remains from the outset and is still a human when he (or she) becomes educated, but in (b) and (d) neither being educated nor being non-educated remain through the change. Nor, he adds, is the situation altered with regard to being educated and being non-educated when these terms are compounded, as in (c). In none of these examples does being educated or being non-educated remain through the change.

Aristotle's initial discussion introduces the following point: in the cases of coming to be which he has discussed, one type of simple remains (*hypomenei*) through the change (as a human does in (a)) while other simples (such as being educated and being non-educated) do not. Further, the compound (a human that is educated/non-educated) does not remain through the change. On the basis of these remarks, he formulates a more general thesis.

II. First Thesis: A Two-Headed Claim

In the light of these distinctions, one can grasp in all cases of things that come to be, if one looks closely at the phenomena in the manner in which we speak of them, that [I] something must always underlie (viz.: that which is in the process of coming to be) and [II] that this [that which is in the process of coming to be], even if it is one in number, is not one in form (by 'in form' I mean 'in account'). (190a13–16)¹

¹ In this translation 'something' is the subject of 'underlies' with 'that which is in the process of coming to be' in apposition. An alternative (consistent with the general interpretation suggested) would be to take the latter as the subject of 'underlies' with something as the object (cf. 190a34). So understood, the clause would mean: that [I] that which is in the process of coming to be always

Aristotle's first thesis has two parts:

- [I] in all cases where things come to be, there is (in each case) something that underlies; and
- [II] that which is coming to be, even if one in number, is more than one in form.

Aristotle notes that in his example a human remains (*hypomenei*), while being non-educated and the compound (a human who is not educated) do not: 190a18. The human in question remains through the process of coming to be: first he (or she) is non-educated and then he (or she) is educated. Aristotle claims that one can see this structure in all cases of coming to be. There is always something that remains throughout the coming to be, which at the outset has one feature (such as being non-musical) and comes to have another feature (such as being musical).

There are several points to note about his thesis:

- (i) Aristotle is specifying the relevant use of the term 'to underlie' (*hypokeisthai*: 190a15) on the basis of his description of cases in which something is said to remain (*hypomenei*). He makes this clear by invoking the idea of its remaining in the next sentence (190a17–18). He is not proposing, as an independent thesis, that what underlies in fact remains (or survives) through the coming to be. Instead, he introduces his conception of what it is for something to underlie (in the manner relevant to [I]) on the basis of the idea of something remaining throughout the coming to be. In his view, that which is one in number [II] remains throughout the coming to be. [I] and [II], so understood, capture his understanding of what it is to underlie as given by the examples used in 189b32ff. We are not offered, in the present context, a general idea of what it is to underlie independent of these examples. [I] and [II] tie the relevant use of the term 'to underlie' (and so of the associated terms 'underlying' and 'the underlier') to what remains, one in number, throughout the coming to be.² Aristotle is not, it seems, relying on the more theoretically rich conception of the underlier (*to hypokeimenon*) he develops elsewhere (such as in *Metaph.* Z 3.1028b35ff., where he identifies it with 'what everything else is said of and is not said of anything else').

underlies something and [II] that this (that which is in the process of coming to be), even if one in number, is not one in form.

² While Aristotle has talked of 'what underlies' in previous chapters (e.g.: 187a13), the present passage constitutes his attempt to specify more precisely what this term signifies in the context of coming to be.

- (ii) Aristotle is making a claim about what we will see in all cases of coming to be, if we look at them in the way we (or, perhaps, some favoured group of us) talk about the examples just discussed. By means of these, we are introduced to the thought that there is in each process of coming to be some one thing that underlies, remaining throughout the process. While that which underlies may differ from case to case, there is a unified type of thing to which each individual underlier belongs (Aristotle's discussion might be taken as an account of what the general term 'the underlier' signifies: the type of thing that underlies). He claims that there is, in every case of coming to be, an instance of this type. The latter claim belongs to the second stage of scientific investigation (as described in *APo* II.10). In the first stage, one specifies what type is meant by the term 'the underlier', in the second one grasps that there is such a type. Only then can one proceed to a third stage of enquiry in which one searches for the underlier's basic nature or essence. To establish that there is indeed such a type, Aristotle needs to show that there is a properly unified type of thing – the underlier – present in all cases of coming to be. There is, after all, the possibility that this type, like pride (to use his example in *APo* 97b13–21), might dissolve into several quite distinct types of phenomena under more careful investigation. Or perhaps the differing cases are related focally or by analogy.³ At the third stage of enquiry, a more revealing, and more fundamental, account of the relevant type ('the underlier') – perhaps in terms of matter or potentiality – will be required.

Aristotle's methodology is cautious. He does not commit himself to any of the following general claims:

- (a) The fact that we (or some favoured group of us) speak in a given way shows (or even gives us good evidence) that something is the case; or
- (b) The fact that we (or some favoured group of us) speak in a given way is best explained by something being the case; or
- (c) The fact that we (or some favoured group of us) speak in a given way makes it true that something is the case.

³ In *Metaph.* Z 13, Aristotle distinguishes two cases: in one a particular subject underlies its properties, in the other matter underlies actuality (1038b4–6). For a similar distinction between cases of what underlies, see *Metaph.* H 7.1049a24ff. It lies outside the scope of this chapter to consider how these differing cases are related.

Nor does he claim (at least at this point) that *all* the relevant linguistic data are consistent with his claim. His contention is simply this: if we look at all cases of coming to be in the way suggested in 190a9–10, we will grasp what is the case. The specific linguistic evidence he assembles suggests a way of looking at the phenomenon that reveals (if we look carefully) what is the case: something underlies the change. What makes the latter claim true is not how we speak but rather what we will see if we look at the phenomena in the manner suggested. The linguistic evidence provides nothing more than a useful clue which enables us to see, after further scrutiny of the relevant cases, what is involved in any case of coming to be.

In fact, as Aristotle is quick to point out, the linguistic data are more complicated than so far indicated. Further work is needed to confirm his initial thesis and to show that it applies to all cases of coming to be.

III. A Complexity in the Linguistic Data: A Refinement of (d) and (e) and a Possible Problem: 190a21–31

Aristotle notes a complexity in the way we speak:

The expression ‘this comes to be from that’ (as opposed to the expression ‘this comes to be that’) is more used in the case of what does not remain, as when we say that what is educated comes to be from what is uneducated but do not say that it [i.e. the educated] comes to be from human. Nonetheless we do also sometimes speak in a similar way [i.e. using the ‘this comes to be from that . . .’ way] about what remains, saying that from bronze a statue comes to be, not the bronze comes to be a statue. However, we do speak both ways in the case of something opposed that does not remain: we say both that this comes to be from that and this comes to be that.⁴ (190a21–8)

⁴ There are several points of detail to note about my translation/interpretation of these lines: (a) ‘is more used’ (190a22) is taken to mean that the expression ‘this (the musical) comes to be from that (the unmusical)’ is used more widely (and more appropriately) than ‘this (the unmusical) comes to be that (the musical)’ in cases where the referent of ‘this’ (in the second sentence: the unmusical) does not remain through the change than in cases where it does. (b) The lines 190a21–3 are not taken as meaning that the locution ‘This comes to be that’ is never used (appropriately) in the case of what does not remain. Indeed, in 189b35 it appears that it is (as in 190a27). The claim can only be that although ‘this comes to be that’ can be (and is) used in any case of what does not remain, we do nonetheless have a (reasonable) preference (in this case) for the locution ‘This comes to be from that’. (I am inclined to take ‘we’ to refer, following a suggestion of Michael Frede’s, to what well-trained philosophers would say.) (c) ‘We speak in a similar way also in some cases about what remains’ (190a24–5) is taken to mean: we use the expression ‘This comes to be from that’ in some such cases rather than the locution ‘This comes to be that’. This leaves open the question of the permissibility of the latter locution in these cases. (d) The absence of an article in 190a25 before ‘bronze’ in contrast to the presence of an

These remarks require scrutiny. With reference to what does not remain (such as the unmusical specified above), Aristotle claims that we more often say (and hence prefer to say)

(d) 'From this, that comes to be'

than

(e) 'This comes to be that'

although (as he notes in 190a26–8) both locutions are permissible. While neither says anything false or nonsensical, we prefer to say (d) than (e).

There is a similar pattern in some cases of what remains: we prefer to say (or say more often):

(d:i) 'From this, that comes to be' rather than

(e:i) 'This comes to be that'.

For example, we prefer to say 'From bronze (S^1), the statue (S^2) comes to be', not 'The bronze (S^1) comes to be a statue (S^2)'.

Aristotle is not, it seems, saying that (e:i) is straightforwardly impermissible; only that we prefer (and may reasonably prefer) to use (d:i).⁵ (e:i), for all that has been said so far, might turn out to be permissible. Nor, so understood, is he saying that (e:i) is straightforwardly permissible as some have suggested translating this sentence (with considerable ingenuity) as follows: 'we say that the statue comes to be from bronze, not *only* that the bronze comes to be a statue' (introducing 'only' into their paraphrase of the text to maintain philosophical plausibility).⁶ Questions of the permissibility of (e:i), and of the ontological structure it suggests, are left open at this point.

In sum: Aristotle notes that we use two different locutions in talking about coming to be. One is of the form: 'This comes to be that', the other 'From this that comes to be'. These locutions may be presented schematically, with 'A' representing being educated, 'non-A' being uneducated, 'S' a human, 'S¹' bronze and 'S²' a statue. By '*' I shall signify something which (according to Aristotle) is not our preferred locution:

article before 'bronze' in 190a26 is not taken to point to different subjects: bronze (e.g. as a stuff) in a25, this piece of bronze in 190a26 (as Harvey Lederman (2014) has suggested). The absence of the first article is understood as stylistic, not as pointing to a change in referent.

⁵ Jones 1974.

⁶ Code 1976a. His suggestion is adopted by Bostock 2006a: 4 n. 6.

[A] '*x comes to be y...*'

*(i) A, non-A

*(ii) non-A, A

*(iii) S^1 , S^2

(iv) S that is non-A, S that is A

(v) S, A

[B] '*From x, y comes to be...*'

(i) A, non-A

(ii) non-A, A

(iii) S^1 , S^2

(iv) S that is non-A, S that is A

*(v) S, A

While the [A] locution is permissible (although not preferred) in cases (i) and (ii), Aristotle (in this passage) does not rule on its permissibility in (iii). If it turns out to be permissible, the [A] and [B] locutions will differ (with regard to permissibility) only with respect to case (v). If so, the [A] locution will apply to all cases of coming to be, even if the [B] locution is preferable in cases (i), (ii) and (iii).

Aristotle focuses on the complexity of the linguistic data but does not provide an explanation of the differences noted. One suggestion would be that the [B] locution points to the origin or starting point of the process of coming to be. If so, the infelicity of [B] (v) will arise because the human (S) is not the starting point of the change from which being musical (A) comes to be. In locution [A], by contrast, the basic idea is of one thing remaining as the underlier with different forms at different times. If so, [A] (iii) will be infelicitous (to the extent that it is) simply because it does not explicitly refer to a subject (S) which underlies the change (contrast [A] (iv) and (v)) or contain an obvious space for an underlying subject of predication (contrast [A] (i) and (ii)). It is certainly true that [A] (iii) does not appear, at first sight, to be of the form introduced at the beginning of the discussion. There is no subject (whether explicitly present or presupposed) which remains and is initially S^1 and subsequently S^2 . But what follows from this observation? Perhaps some, but not all, cases of coming to be follow the pattern suggested by locution [A]? Or maybe there are distinct types of coming to be, some correctly described by locution [A], others by locution [B].

Aristotle leaves this issue open. Perhaps [A] (iii) describes a situation in which there is one underlying thing that has to be referred to if we are to capture what is going on. If so, the phrase 'the bronze becomes the statue' will (if correctly understood) be permissible, even if it is not what we prefer to say. Perhaps every case of coming to be not only involves the ontological structure initially suggested by locution [A] (as captured in the original double-headed thesis) but can also permissibly be described using the [A]

location. Or does our preference against [A] (iii) actually show that the [A] location is impermissible in these cases?⁷

Aristotle's reply is to claim that, notwithstanding the complexity of the linguistic evidence, the ontological model suggested by locution [A] applies to all cases of coming to be. If this is correct, preference for locution [B] in case (iii) is not a good guide to what is really going on.

IV. Aristotle's Reply: Different Cases but the Same Structure: 190a32–b11

Aristotle begins his reply by separating two cases:

In all cases other than <the coming to be of substance>, it is evident that there must be something underlying, that which comes to be. For when a thing comes to be of such and such quantity or quality or in a given relation, at a given time or place, something is always present underlying (since substance alone is not said of another underlying thing, while everything else is said of substance). But that even substances, and whatever things simply are, come to be from something underlying will be evident to one who looks closely. For always there is something which underlies, from which the thing generated comes to be: as in the case of plants and animals coming to be from a seed. (190a33–b5)

In the first set of cases (which involve quantity, quality or relation) it is clear that, as suggested by locution [A], something underlies, namely that which is coming to be something else. Aristotle claims that the ontological model suggested by locution [A] captures cases where substances come to be. Here too there is always something that underlies. What are his grounds for this claim?

Aristotle comments: 'always there is something which underlies from which the thing generated comes to be: as in the case of plants and animals coming to be from a seed' (190b3–5). This remark may seem surprising. It appears to re-define 'something which underlies' in terms of the origin of change: the seed from which the plant comes to be. If this is correct, Aristotle is now abandoning the definitional connection between what underlies and what remains throughout the change (which he introduced in his initial discussion of the cases covered by the [A] locution). The seed does not, after all, remain throughout the coming to be of the plant or

⁷ Does Aristotle take all pieces of linguistic usage to reveal the ontology involved? Perhaps, in his view, only some do. If so, he would need to determine – in the light of his favoured ontology – which linguistic usages offer a correct picture of reality.

animal. There is no actual seed present at the end of the process (e.g. in the fully grown plant).

However, it is not necessary to understand Aristotle's remark in this way. There is an alternative. In saying 'something which underlies from which the thing generated comes to be: as in the case of plants and animals coming to be from a seed' he may intend to claim only that there is some one thing that underlies the entire process from which the thing generated comes to be and that this is true in the case of plants and animals coming to be from seeds. At the initial point in the relevant process (the stage at which the coming to be starts), that which underlies is a seed but it need not remain so at all stages in the process. What remains through the whole process was initially a seed but need not be a seed at every subsequent stage. In terms Aristotle uses elsewhere:

that which underlies is the same throughout [e.g. the change between opposites] although it is not the same in being. (*GC* I.3.319b3–4)

In Aristotle's example of a plant, that which underlies may be the same (in number) throughout the whole process of its coming to be, even though it is first a seed, next a sapling, etc. That which underlies, while remaining the same entity, will change in certain respects as the process develops. In any particular case, there will be a particular underlier of this general type: one thing which underlies change and remains the same, even though at differing times it may be different things: first an embryo, next a child, then an adult etc. All such particular underliers will be instances of one general type of thing: the underlier, with its own distinctive general nature. (I shall use such phrases as 'the underlier', whatever its nature may turn out to be, to refer to the type of thing of which all particular underliers are instances.) Aristotle uses similar terminology elsewhere in describing the present moment (the now): it too remains the same as time passes between 1.01 a.m. and 1.04 a.m., even though it differs in being (being first 1.01 a.m., then 1.02 a.m., then 1.03 a.m. etc.: *Phys.* 219b12–13, 27–8). At one time the present moment is 1.01, at the next 1.02. If the present moment is understood as an individual which is first 1.01 and then 1.02, it will closely resemble the particular underlier which is first a seed and then a sapling.⁸

⁸ Some may prefer to see the present moment not as an enduring particular but as a type of entity of which 1.01 and 1.02 are instances. The relevant analogy, together with the more general issues it raises, requires further study. For some preliminary discussion, see Charles 2003. For a helpful discussion of Aristotle's relevant locutions, see Lederman 2014.

In the case of the coming to be of a particular oak tree, the underlier (so understood) will be the same in number throughout the whole process although it changes as the process develops. In Aristotle's terminology, that which underlies may differ 'in being' at different times (first being a seed, then being a sapling) while remaining the same: it is that thing (however its nature is finally to be understood at stage three) which is various things at various times.⁹

There are, it seems, two ways to understand the phrase 'always there is something which underlies from which the thing generated comes to be: as in the case of plants and animals coming to be from a seed' (190b3–5). In the first, 'that which underlies' refers to the origin of the coming to be, in the second to what remains throughout the process. Which is preferable?

(i) The second way maintains the original account of that which underlies introduced in 190a15. There Aristotle simply stated that what underlies remains, not taking this as a further step in an argument but rather (or so I suggested) as something implicit in the examples cited. (Indeed, if one subtracts the idea of what remains, the underlier, understood simply as the point of origin, could equally well be the initial complex: the unmusical human in the case he discusses in which the unmusical human becomes musical.) What is added at this point, according to the second interpretation, is a way to generalise his original idea by specifying the underlier not as a specific substance (such as a human) but (in the way just explicated) as that which underlies the process of coming to be. Aristotle has not, as yet, said anything about the nature of the entity in question or the way in which it constrains the process of coming to be. Instead, he appears to rely on the intuitive plausibility of the thought that there is one thing present throughout the transitions mentioned (such as those of the animal or plant from the seed, the statue from the clay, and the house from the bricks and stones). He has not yet suggested what will play the role of the sortal concept in these examples (a role comparable with that of human in his original case). That task belongs to a later stage of enquiry.¹⁰

⁹ Compare the following case: a person on his (or her) way to becoming fifty may remain the same person throughout even though she (or he) was initially a foetus, then a child, then an adolescent . . . While what underlies the process of becoming fifty remains from the outset when it was a foetus, it does not remain as a foetus throughout!

¹⁰ Aristotle has more to say about that which underlies. He does not rest content with specifying the underlier simply as that which underlies the change. Instead he introduces richer, more theoretically

(ii) Aristotle is, in this passage, concerned to show that the original ontological model revealed by locution [A] (and captured by the second interpretation) applies to all the relevant cases. To do so, he needs to establish that there is always one (simple) subject which remains throughout the process of coming to be. However, if he now falls back on a different, and less demanding, definition of what underlies (as merely the origin of the coming to be), he will not have succeeded in his project. Indeed, he will have given it up. By contrast, on the second interpretation, he has generalised his original idea, relying on the more abstract idea of there always being an underlier present in any change (however the nature of the relevant type is to be understood at stage three of the investigation).

(iii) Aristotle's next remarks suggest that he is seeking to apply his original model to the cases at hand:

Some of the things that come to be in the unqualified way come to be some by change of shape (as a statue), others by addition (as things that grow bigger), others by subtraction ... others by composition ... others by alteration (as things changed in accordance with their matter). It is evident that all things that come to be in this way come to be from what underlies. (190b5–8)

These comments are not, it seems, designed merely to support the truism that there is, in all these cases of coming to be, an origin from which the change starts. Instead they suggest that there is some one thing (that which underlies) present from the beginning which survives throughout the change in some modified way (either by being added to/changed in shape/growing etc.). It appears that the thing in question remains from the beginning, albeit changed, for example, in shape, quality, size or material features. What remains need not (indeed, will not) be a seed: it may come to lose the shape, size and many of the qualities of the seed.¹¹ It is enough that that which underlies (which is at various times a seed, a sapling etc.) remains the same. So understood, the examples cited in 190b5–8 play an essential part in supporting Aristotle's original claim that, if we look carefully, we will see that there is one thing which underlies – even in the problematic cases of the coming to be of substances: 190b1–3. Indeed, seeing what happens in this way is part of what is involved in looking carefully at the cases mentioned.

laden, concepts (e.g. of matter and of what is potentially a human) to spell out the basic nature of what underlies.

¹¹ The phrase 'the seed', so understood, is used to give a contingent way to fix the reference of the term 'the underlier', not to define what it is to be an underlier.

(iv) If Aristotle were to surrender his original thesis that what underlies remains throughout the coming to be, he would have no grounds for his next major claim: that every object that comes to be is complex (190b11–12). If he merely claims that each case of coming to be has a starting point, he cannot rule out the possibility that what results from such a process is a simple (non-complex) object: that is, one that has arisen from a starting point which no longer survives in the finished product. However, the idea of a continuant surviving from the beginning to the end of the coming to be appears essential for his next claim. (See section V below.)

On these grounds, it seems best to understand Aristotle's talk of 'that which underlies' (in 190b3) as referring to one thing which remains throughout the whole process. However, so understood, his argument raises several questions.

(1) Has he really shown that, in *every* case of coming to be, there is one thing which underlies that coming to be? He has certainly set out (in 190b1–9) a way of thinking about the cases he mentions which addresses the specific problem shown by the apparent infelicity of [A] (iii). However, he has not established that this way of thinking captures *all* cases in which substances come to be. Perhaps his concluding statement: 'all things that come to be *in this way* do so by ...' (190b9–10) is intended to suggest that while his model applies to the cases just discussed, he has not shown that it holds universally. Or perhaps he is confident (but – if so – with what justification?) that the model just sketched can be generalised to cover all cases of coming to be, even if he has not shown that it does.

(2) Aristotle's description of his examples is compressed – indeed, telegraphic. While the seed may grow into a plant, in what way does one thing remain underlying the whole process? As Aristotle himself remarks (in *Metaph.* H 7), the seed 'has to be placed in something else and change ...' (1049a14–15). However, if the seed does not remain as a seed in the plant, in what way does that which underlies remain as one thing throughout the process of coming to be? How should we understand the key idea of the one thing that underlies?¹²

¹² Nor does Aristotle return in this chapter finally to rule on the apparent infelicity of [A] (iii). There are two possible suggestions, consistent with what has been said (so far): (a) this phrase is permissible provided that 'the seed' is understood to refer to the seed as that which at a given time is the underlier; (b) the phrase is impermissible as the seed, understood as the seed itself, does not become the oak tree. Perhaps, in the light of his discussion in 190b1–12, both answers can be seen as correct. If so, the infelicity of saying (without qualification) 'the seed becomes the oak' is that it does not clearly distinguish (a) from (b). Aristotle, however, chooses to focus on the ontological

It may be helpful, in considering both (1) and (2), to note that elsewhere, in theoretically more developed contexts, Aristotle uses phrases such as 'that which is potentially a . . . house' to characterise what is present throughout the process of the coming to be of a house (1049a8–11). That which is potentially a house is present when nothing needs to be added or changed for the process of house-building to get under way. This characterisation is consistent with the initial object being re-moulded (and changed) in the process of house-building, provided that there remains (at each step of the process) some one thing which is potentially a house. The seed will be potentially an oak if it is in a state in which, through the operation of the relevant internal causal principle (1049a15–16), it will become an oak. No further change in the seed (or, in the human case, the embryo) is required for this causal principle to begin its work. While what is potentially an oak was initially a seed, as growth continues it will be (as time goes by) a stripling, a half-grown tree etc. Indeed, as we shall soon see, what is potentially an oak may remain after the process of coming to be is completed (in the grown tree which fully realises the potential to be an oak).

Aristotle exhibits great resourcefulness in developing and defending his idea of what underlies in a variety of contexts. Nowhere is this clearer than in his discussion of elemental transformation in *De generatione et corruptione* I. There, it seems (or so I have argued elsewhere)¹³ that what underlies any particular elemental transformation will always be something with the potential to become another element in the relevant cycle (although the thing in question will differ from change to change). There need not be one type of material substratum (such as water or fire) to which all such underliers belong. Instead, the relevant type can be defined as that which has the potential to undergo elemental change.¹⁴ Aristotle's claim (so understood) is that, in each transformation, there is always one particular instance of this general type which remains the same throughout the change.

structure at work in this case and does not return explicitly to reconsider the linguistic difficulty (if such it is) he has isolated in [A] (iii).

¹³ Charles 2003. In *GC* Aristotle frequently uses the phrase 'that which underlies' to refer to the type of object whose instances underlie particular changes, not to the individual instances of that type which underlie particular changes.

¹⁴ But why think in terms of the same type of object at all? Does Aristotle need more than the relevant property 'having the potential to undergo elemental change' which is true of earth, fire etc.? Although this important issue (raised by Lewis 2008) requires further investigation, Aristotle seems reluctant to think of properties as ontologically basic, preferring to present them as belonging to a type of object which remains through the change. Indeed, he needs continuants of this type if he wishes to reject the idea that properties can (somehow) 'jump' from one object to another.

In *Phys.* I.7 Aristotle does not commit himself to the sophisticated positions he adopts elsewhere about the nature of that which underlies. His remarks leave open a range of possibilities as to how that should be understood. He does not even commit himself to the idea of the same ‘matter’ surviving through the process of coming to be. The underlier (whose existence the present discussion is designed to establish) is introduced in a more abstract way. While his project, as it subsequently develops, is to specify more fully what it is to be an underlier (in terms, for example, of matter or of what is potentially F), in *Phys.* I.7 he keeps his options open. The precise specification of the nature of the underlier will be established at a later stage in his enquiry. At present, Aristotle is merely pointing to the importance of that which underlies, leaving for further discussion the investigation of the basic nature of the type of entity involved. This may be why in *Phys.* I.7 he speaks of ‘the underlying nature’ (191a8) and ‘the underlier’ (191a19–20), while elsewhere – in more theoretically developed contexts – he talks of ‘matter’.¹⁵

But why is Aristotle confident that there must always be something that underlies any process of coming to be? Does he merely rely on some inductive support for this claim based on the cases discussed? Or is he depending on a further more general argument? The present passage does not make this clear.

Aristotle’s approach has considerable intuitive appeal if one thinks of the changes involved as ongoing processes. In the process of coming to be, it is natural to think that there has to be something present (at the first stage) in what is coming to be something that guides (or plays some role in guiding) the whole process, up to and including the final transformation into the finished product. If there were not, there would be nothing – in the object being changed – to constrain the development of the process or account for its final destination. What is present at the first stage must, if it is to continue to guide the process, be present (in some way) at each subsequent stage of the process (up to and including the final one). Otherwise there would be nothing remaining capable of constraining the process in the required way. Anything could be replaced by anything (provided perhaps that mass is conserved). There need be nothing present in the antecedent stages which constrains, by surviving in the appropriate way, what happens

¹⁵ When the term ‘countable matter’ is used in 190b25 Aristotle is generalising (*holos*) over the examples he has given of what underlies, not using matter as a theoretical term. The use of ‘matter’ in 190b9–10 in talking of things being ‘changed in accordance with their matter’ looks to be a parenthetical, ordinary language, use of the term, not a theoretically loaded one. I discuss its use in 191b10 below.

next. If this is unacceptable, there has to be something that remains at each stage (including the final one) to ensure that what eventually comes to be is an F. Without this the process might fail at the last hurdle! If we talk in terms of potentiality, there has to be something with the relevant (passive) potential to be an F present throughout the process.

This line of thought does not depend simply on the need to distinguish between coming to be and replacement – where the former requires something to survive whereas the latter does not. It is based on the idea that, without something that plays the role of the underlier, there will be nothing to constrain the processes we observe (in the way we see that they are constrained). What is problematic about replacement, from this perspective, is not simply that it is different from coming to be (as Aristotle describes it). It is rather that it loses the idea of something present throughout the process (in the patient) playing a role in guiding it towards the final outcome (or, in some cases, the goal). For this, Aristotle may think, there has to be (*inter alia*) one thing which underlies, remaining to constrain the process of coming to be throughout.¹⁶

However, while this line of thought is intuitively appealing, it is not explicitly set out in *Physics* I.7. Is Aristotle presupposing an argument of this type? Or does he prefer, at the present stage of his enquiry, to introduce his basic claim (viz. that there is an underlier) in cases of coming to be without the theoretical support provided by his later account of processes, their subjects and causes? The latter approach might, of course, be appropriate if his goal in the present chapter is only to establish the existence of the underlier, not to provide a full account of its basic nature. (I shall return to this issue below.)

V. 190b10–17: Summary and the Next Move

From what has been said it is clear that everything that comes to be is always a composite: there is something that comes to be and something that comes to be that <thing which comes to be>. There are two types of the latter: either that which underlies or what is opposed <to that which comes to be>. I say that the uneducated is opposed and human underlies; and shapelessness and formlessness and lack of order are opposed and bronze or stone or gold is what underlies. (190b10–17)

¹⁶ There has to be an efficient cause at work also: see *Metaph.* Θ 7.1049a1–12 for a more detailed discussion of this issue. Both efficient cause and matter are required to account for the relevant changes.

In these lines, Aristotle makes a further move. If in all cases of coming to be, there is something that underlies and two opposed features (such as being A, being non-A), what comes to be will always be a compound in the sense that it contains (a) what underlies and (b) something opposed to the initial condition from which the coming to be began.

The 'always' in this claim might be understood in two ways. It might be taken to govern the whole career of the composite object, requiring that what comes into being as a composite entity always remains as a composite. However, Aristotle has so far only shown that it is always the case that what comes to be – at the time it comes to be – is a composite containing (in some way) that which underlies (whatever that may be) and a given 'opposite'. There is no requirement (as yet) that what comes into being as a composite must always be a composite. Perhaps in its subsequent development it could cease to be a composite and become non-composite as the two initial components develop into a simple unity. Nothing so far rules out this possibility.

Aristotle seems committed to a third claim (albeit one expressed with considerable caution):

[III] It is always the case that what comes to be – at the point at which it comes to be – a complex entity containing (in some way) that which underlies and a given 'opposite'.

But is what comes to be essentially complex? Or is it only accidentally complex? Before we consider Aristotle's response to this question, it should be noted that in the present passage, as in earlier ones in this chapter, he speaks of things being opposed (*antikeimena*) rather than being opposites (*enantia*). He seems willing to move from talking of well-defined opposites (such as the hot and the cold) to talking about positive states and their privations. While this change in terminology may be important, I shall leave it aside in order to focus on what underlies. It will, in any event, be raised, even more acutely, by discussions of other passages of *Physics* I.

VI. 190b17–29: The Introduction of Principles: The Final Moves

It is evident that if there are indeed causes and principles of things which are by nature – from which first causes and principles these things are and come to be non-incidentally what it is said to be in describing its nature (*ousia*), then everything comes to be both from what underlies and its shape. For an educated human is, in some way, composed of a human and educated, in that it is decomposable into the accounts of these. It is clear, therefore, that

things that come to be do so from these. What underlies is one in number but two in form. The human, the gold and in general the matter which is countable <is one in number>. It is more a *this such* [i.e. a determinate particular] and the thing that comes to be does not come to be from it incidentally. The privation and the opposition is incidentally. The form is one: for example, the arrangement or being educated or any of the things predicated in this way. (190b23–9)

This dense passage contains a number of important claims (one put forward in the antecedent of a conditional). I shall mention three:

- (a) The principles of change and of being for natural objects are the same (this is introduced in the antecedent of a conditional).
- (b) Natural objects come to be non-incidentally from the principles of change.
- (c) What underlies is one in number and (in some way) a *this such* (a determinate particular).

Aristotle has already presented a number of considerations relevant to (b) and (c). But now he makes a further move, suggesting (albeit without argument and in the antecedent of a conditional) that the principles of coming to be and of being for natural objects are the same (namely, (a)). Why believe this to be the case? And what are its implications? (a) introduces a further claim:

[IV] The principles of coming into being and of being for natural objects are the same.¹⁷

However, Aristotle does not offer any reason at this point to accept [IV] and little guidance as to how to interpret it. Is he once again simply putting forward a hypothesis to be confirmed (or disconfirmed) by subsequent investigation? Either way, [IV] plays a major role in Aristotle's subsequent argument. From [IV], together with the suggestion that the principles of coming into being are that which underlies and the form, Aristotle infers:

[V] The principles of being are that which underlies and the form.¹⁸

¹⁷ Aristotle does not make explicit what 'sameness' requires in this context. Are the principles simply co-extensive or are they more closely connected (see *Metaph.* Γ 2.1003b22–5)? If they are more closely connected, are they numerically identical or (e.g.) inseparable in definition?

¹⁸ On this view, the deprivation (*steresis*) will not be a principle of being or of coming to be. Although Aristotle may incline to this conclusion in 190b25–7, further argument in *Phys.* I.8 is needed to secure this result. In [V] 'principles' refers to what plays a given role (such as being an underlier or being a form), not to the role itself.

But what does [IV] mean? Why should we accept it?

It is tempting to re-construct Aristotle's pattern of thought as follows: the principles of change specify conditions necessary and sufficient for the coming to be of (say) an oak tree. As such, they must include the conditions for what is arrived at (at the end of the process) being an oak (See [III] above). But, if such conditions are necessary and sufficient for the presence of an oak (at the final stage of its coming to be), they will be ones whose continued presence is necessary and sufficient for the continued existence of an oak. Otherwise they would not be principles for the coming to be of an oak. So – one might conclude – the principles in question are (i) that which underlies and (ii) the form. Between them they will account for the coming to be and the continued existence of substances. There is one underlier which remains from the beginning of the coming to be to the end of the existence of the object in question. That which underlies is a particular continuant which persists from the beginning of the process of coming to be until the death of the oak.¹⁹

Perhaps this was how Aristotle was thinking at this point. But if it was, he was contemplating a major step without giving much justification in the immediate context. We can see this by considering two possible objections:

(1) There might be more to being a principle of being for an object than merely playing an important role in the object's coming to be. Perhaps such principles should explain the presence of all an object's necessary properties (and characteristic activities) as well as locating it in an appropriate definitional slot (in terms of its genus/*differentia* etc.). These requirements, suggested in *Posterior Analytics* (and developed elsewhere), constrain what it is to be a principle of being for an object. It is a major claim to suggest that these are the same principles as those that govern the process of becoming the object in question. Simply being necessary and sufficient for the existence of the object will not be enough. The principles of being should capture the essence of the object in question.

(2) The factors present throughout the continued existence of an object might be different from those involved in its coming to be. Perhaps some factors maintain an object (or condition) once it has come to be, others account for its initial coming to be. What is gained by 'lumping' these factors together as those which constitute, at different times, that which underlies the object in question? Is there a well-motivated idea of that

¹⁹ For more on this way of thinking, see my discussion of Aristotle's account of the role of matter in *Metaph.* H 7 and 8: Charles 2010: 168ff.

which underlies (a continuant) which applies both to what is present through the coming to be of an object and its continued existence?

It is difficult to address the first concern at this stage in Aristotle's discussion. The problem is not merely the lack of supporting argument. It is more basic. The very notion of a principle of being has not yet been clearly specified. Are such principles simply conditions necessary and sufficient for the existence of the object in question?²⁰ Or should they meet some further additional *Analytically*-style constraints on definition? Is Aristotle independently convinced that the defining principles for the being of a natural object are those that govern its coming to be? Are the principles of coming to be governed by the essence of the resulting object?

While these questions are pressing, they are not resolved within the confines of *Phys.* I.7. As a result, it is not obvious whether, in this context, Aristotle is contemplating a major step (with less than adequate defence) or a smaller one: simply understanding the relevant principles of being as whatever is necessary and sufficient for an object to be – without any reference to further definitional or explanatory roles that such principles might be expected to play. Perhaps his subsequent discussion in *Phys.* II.1 and beyond provides support for this major step. Indeed, perhaps it is only once he has developed his richer conception of matter as what is potentially the object in question (as in *Metaph.* H 7.1049a1ff.) that he can fully defend the major claim mentioned here – without support – in the antecedent of a conditional. (It is, it should be noted, one thing to think that the objects of physical investigation come into being and pass away, another to think that the principles that govern their coming to be also govern their continued existence.)

The second concern is also pressing. Has Aristotle succeeded in supporting his important claim that there is one continuing thing which survives remaining from the beginning of the object's coming to be until the end of its existence? Has he laid a secure foundation for an investigation into the type of entity in question?

One might challenge the latter claim as follows: why assume that what underlies ceases to be present when the object in question ceases to exist?

²⁰ In *Phys.* I.2.184b22ff. Aristotle remarks that those of his predecessors who considered the principles of existing things were, in effect, searching for their origins. However, it is far from clear that Aristotle himself is engaging in exactly the same project, with no further conditions on what it is to be a principle of being. Earlier in *Phys.* I.2.185a12–13 Aristotle does note that he is assuming (as a basic claim) that 'all or some of the things that are by nature are changing'. But it is still a major step to conclude from this that being subject to change is a *principle* of the being of natural entities (even of those that do change).

Why not think of it as remaining through the process of passing out of existence, underlying the transition from (say) being a horse to being a dead-horse? One might suppose that there is something which guides this transition (at least in many cases), accounting for the orderly phases of death, putrefaction and disintegration.²¹ If there is something which underlies the process of coming to be, should there not also be something which underlies that of passing away? But if there is, there will be something that remains from the beginning of the process of coming to be a horse, throughout the period when it is a horse, and continues to exist during the process of its destruction into a dead-horse. Let us call this ‘the sch-underlier’, which governs not only the coming into being and continued existence of the object but also its subsequent destruction. If there is a sch-underlier, it will not be a principle of the being (or even of the potential being) of the object in question. In those cases where an object (like the horse) cannot once again come to be a horse after it has died, what sch-underlies will not be (in its nature) the principle of the being of a horse. It will have to be defined in terms independently of the being of the horse. (A dead horse is not a potential horse, however much it is flogged!) Had Aristotle thought in this way, his whole account of matter would have been radically different. Indeed, he might have succeeded in developing something closer to organic chemistry (as we now understand it). Many will think that – had he done so – he would have chosen a better road! So why in *Phys.* I.7 did he focus on the process of coming to be, when his predecessors had concerned themselves both with it and passing away? Did he have good reason to do so?

If Aristotle makes progress with this issue in this chapter, it will be when he discusses the notion of what underlies in 191a7–12. I shall consider that passage next (out of order) before turning back to his remarks on the number of principles.

VII. More on That Which Underlies: 191a7–12

The underlying nature is knowable by analogy. For as bronze stands to a statue or wood to a bed or the matter – that is, what is shapeless before it takes on shape – stands to what is shaped, so the underlying nature stands to the substance, which is a this such [i.e. an informed object] and what is.

²¹ Consider, for example, the way in which an apple grows from a seed but then ferments, becomes rotten, comes to be full of maggots and finally disintegrates. István Bodnár notes that Philoponus and Simplicius consider somewhat similar examples in their discussion of horse carcasses with reference to *Phys.* I.8.

This then is one principle, although it is not one in the way a this such is one nor does it exist in the way a this such exists . . . (191a7–13)

If ‘the underlying nature’ describes the type of thing that underlies a substance, Aristotle is here attempting further to characterise that which underlies. While previously he had suggested that there is something that remains from the beginning of the process of coming to be into the finished product, he had said little about the type of thing this is. However, even if his present remarks are designed to address this gap, they are cautious and rest on an analogy:

AS what is shapeless before it takes on shape to what is enshaped

SO the underlier is to the composite (an informed determinate object)

Bronze and wood are his examples of what is shapeless (in the relevant sense), statues and beds his examples of informed substances. What is shapeless is what is to be (or could be) enshaped (it awaits shaping) while what is enshaped is the finished product: the bed, the result of what is to be enshaped undergoing the process of shaping. What is to be enshaped (the wood etc.) survives the process of enshaping and persists in the enshaped object. In these cases, what is shapeless plays two roles: it was what was there to be enshaped at the outset of the process and is present, actually enshaped, after the process of shaping has been completed. What is to be enshaped (e.g. the wood) remains from the outset, undergoes the shaping process, and is still present (having undergone the process of shaping) in the enshaped object. Bronze and wood play this role in the formation of statues and beds. The underlier stands to the composite as what is shapeless (and to be enshaped) stands to the enshaped object: it is what persists from the outset, undergoes whatever is involved in the formation of the composite substance and is still present in the composite object (the informed substance). Our understanding of the idea of the underlier present in the informed substance is based on the thought of there being something that remains from the outset through the process of coming to be (the shaping) and survives in the informed (enshaped) substance.

Why did Aristotle use this analogy? Since the idea of the underlier is more general than the three cases mentioned (bronze, wood, what is shapeless), he may be trying to characterise what it is to be an underlier in a way which covers a wide variety of cases. Further, since the idea of the underlier is more abstract than the particular material examples (bronze, wood, what is shapeless), he may be attempting to specify what it is to be

an underlier in terms of its general role: as what remains through the process of coming to be and is still present in the composite substance. The underlier (understood as the type of thing that plays this role) cannot be grasped by perception (as wood, bronze and what is shapeless can). It can only be understood by reflection on the idea of there being something which remains in the way just specified. Indeed, the type of object in question may turn out (on further analysis) to be graspable only by analogy (as Aristotle remarks elsewhere of potentiality and actuality: *Metaph.* H 6.1048a30ff.).

What is added by these remarks? Aristotle, as earlier at 190a1–12, seems to introduce the general notion of what underlies in the case of substances by example. To be an underlier is to be what is present in a way similar to that indicated in the examples cited. Instead of offering a theoretical understanding of what it is to be an underlier, he gives a possible route to grasp (come to know) what it is to underlie (as is suggested by the term ‘is knowable’: 191a8). He does not yet provide a general account of what it is for something to remain as an (or one) underlier throughout the process of coming to be and the continued existence of the substance. The present passage simply points to a way in which we can latch on to the nature of the underlier.

Do we learn anything further about that which underlies? Much depends on the range of cases that are regarded as similar. In the cases explicitly mentioned, the wood and the bronze are what underlies. These, no doubt, remain the same through the process of generation of the statue and its continued existence. But why think that there is something similar in the case of the seed, let alone in elemental transformation or the generation of mixtures? One can, of course, fall back on the bare idea of that one thing (or type of thing) which underlies the coming to be and the continued existence of the object in question. But, since we have not been given a general understanding of what type of object this is, we lack a secure grasp of what needs to be present in cases of mixture or elemental transformation. Nor is it established that these cases are similar in relevant respects to the examples involving wood and bronze. Perhaps there is only an underlier of the type required in these specific cases!

Do Aristotle’s remarks help to address our earlier problem of the sch-underlier? While he clearly focuses on the underlier not the sch-underlier – since he is concerned only with the process of coming to be and not with that of destruction – he offers no reason for his choice. The underlier is that which remains through the coming into being and continued existence of the object in question. But why deploy this idea and not that of the

sch-underlier: that which remains throughout its coming to be, continued existence and passing out of being? In the present passage, Aristotle seems unaware of any such alternative, apparently blind to any but his own preferred way of thinking about what underlies.

Aristotle, of course, has the resources elsewhere, some derived from his teleological conception, some from his idea of matter as the potentiality to be an object, to defend his way of understanding the underlier. If, as he seems to think, there are only potentialities for positive states, there will be a potentiality to be a horse present from the outset which remains for just as long as the horse endures but no potentiality to be a dead-horse. This is perhaps why his developed theory concerns underliers not sch-underliers.²² In its final version, the underlier itself ceases to exist when deprived of the form and the potential to become informed.

However, there remains a problem. In *Phys.* I.7, Aristotle appears to offer some general considerations designed to lead us to accept his own rich and elaborate theory of the nature of that which underlies. But if this is his aim, he should not now rely on that theory to support his initial account. Instead, he should show that there is something that exists as the underlier (at stage two of his enquiry) before going on to provide a fuller, stage three, account of its nature (e.g. in terms of matter understood as potentiality for form and his preferred form-directed teleology). If this is his strategy, he has to establish that there is such a thing as the underlier before he can construct his theory of what it is to underlie. Failure to do so will expose him to the charge of constructing a somewhat unmotivated theory of matter on the insecure basis of an undefended initial preference for the underlier over the sch-underlier.

A critic will see Aristotle's teleologically directed theory of matter as an attempt to build an elaborate theoretical edifice on the shaky foundations of the idea of the underlier, when he had no good reason (at this point of the argument) to take that rather than the sch-underlier as his starting point. Some defenders of Aristotle may prefer to see his account of matter (as a whole) as resting on considerations (drawn, for example, from his discussion of the principles of being of substances) that go far beyond those deployed in his account of coming to be in *Phys.* I.7. From their perspective, his discussion of coming to be and continued existence in this chapter

²² In I.9 (192a9ff.) Aristotle considers and rejects a (possibly Platonic) proposal in which there is, it seems, one thing which underlies both coming into being and ceasing to exist. Some of his criticisms depend on his own teleological picture, others on his view of deprivation (*steresis*). For detailed discussion of these arguments, see James Lennox's essay in this volume.

is not the *foundation* for his subsequent theory. Instead, it is his theoretical commitments, subsequently revealed, that led him to focus here on the underlier not the sch-underlier. However, neither defender nor critic can construct a defensible unidirectional argument from a secure foundation laid in *Phys.* I.7 to the richer theory of matter advanced elsewhere.

It is important to note – before continuing – that, while Aristotle sometimes focuses on the underlier as a general principle (perhaps best captured by the idea of that which underlies – whatever its basic nature may be), he is happy throughout (190b24–6, 191a9–11) to drop a level and point to particular items that play this role: human, gold, wood, bronze and countable matter, understood as bits of matter (such as a lump of bronze, this piece of gold). For present purposes, it is sufficient to note that he can, without difficulty, talk of particular instances of what underlies while keeping his gaze firmly on the relevant type. Throughout he uses particular cases to exemplify his general claim about what it is to be an underlier. A similar pattern of thought is clear in his reference to plants and animals emerging from the seed (190b5) and in his later discussion of items involved in particular cases of coming to be (191a4–6). Particular cases (this matter/this seed/this thing being present) are used as examples of his general thesis about what it is to be an underlier.

VIII. Two Further Issues

[N] How many principles are there of coming to be?

This question, one might have thought, would have a straightforward answer in the light of Aristotle's remarks in the earlier parts of the chapter: there are three (two opposites and that which underlies). Indeed he seems to say as much at the very end of the chapter:

But it is clear that there are three principles, in what way there are three, and what kind of principle each is. (191a20–2)

Along the route, he has considered the possibility that there are only two principles (the opposites: 191a15–16) but noted that we should add a further principle (that which underlies) which is not itself an opposite. Since these are, as he remarks, principles of different kinds (191a12–14), regarding that which underlies as a principle does not call into question the status of the opposites as principles. That which underlies, as he notes, must be present because without it opposites cannot act on each other (190b32–3). There has to be something present which was initially cold and becomes hot. Aristotle is, in this way, extending the range of principles

beyond the traditional range of opposites. He does, however, consider a different answer:

But, in another way, it is not necessary <to have three principles>: for one or other of the opposites will be enough to make the change by its absence or presence. (191a5–7)

Perhaps one does not need both opposites. One may be enough – if one considers one of the opposites as the privation of the feature used to define the object in question (191a12–13). One will then have a positive state (e.g. shape) which the underlier comes to have in certain conditions and the privation of that state (when neither the object nor the underlier continue to exist). The positive state, so understood, is (a) is required to make the underlier into a fully determinate object and (b) such that its subsequent loss marks the demise of the object (and, it will later emerge, the underlier) in question. It has to be defined in ways which essentially involve the underlier. The relevant positive state (such as shape) is that which the underlier (a) comes to have at the endpoint of the process of coming to be, (b) continues to have as long as the composite survives and (c) ceases to have when the composite passes out of being (at which point the underlier ceases to exist). Positive states of this kind essentially involve (and cannot be defined without reference to) that which underlies and the changes it undergoes.

As Aristotle's account develops, he introduces talk of form (and nature) to fill the logical space marked out by the 'shape' (or the relevant 'positive state') of the underlier. Given the connections between the positive state and the underlier, it is no surprise to find that physical form (as the further specification of the positive state) is essentially connected with matter and change, compared with snubness (a matter-involving form) and contrasted with mathematical form, which essentially involves neither matter (understood as an underlier) nor change (*Phys.* 192b1–2, 194a12ff.). However, although Aristotle's remarks in 191a5–7 may point in this direction, he has to take several important steps to arrive at his fully developed position. It is a non-trivial task for him (and for us) to spell out the required argument and resulting position.²³

[Q] That which underlies: determinate object

²³ For further discussion of physical form as essentially matter-involving, see Charles 2008 and Peramatzis 2011. Snubness, we argue, should be seen as a material-way-of-being-concave (a distinctively matter-involving type of concavity) not as a combination of geometrical concavity (a matter-free geometrical property) and matter. These issues remain controversial.

That which underlies is described as countable and in some way like a determinate particular because what comes to be (the resulting determinate particular) comes to be from it (190b24–5). However, it need not be one in number in the way a determinate particular is (191b12–13). Elsewhere he talks of ‘this wood’ (presumably: this piece of wood: *Metaph.* Θ 7.1049a24), apparently distinguishing it from a determinate particular (a ‘*this such*’: 1049a27–8) that is (in some way) predicated of matter (1049a35ff.). However, whatever Aristotle’s final view may be, it is not set out in *Phys.* I.7, where he is content to point to an issue to which he will return. He does not yet have a sufficiently robust conception of a determinate particular to engage with the difficult question: in what way (if any) is this piece of wood not a (fully) determinate particular? Given his lack of specificity on this issue in *Phys.* I.7, it will not be clear whether the form or that which underlies is the substance (*ousia*) (191a19–20). Indeed, if ‘substance’ indicates the nature of the object in question (as in 190b18), this issue recalls Aristotle’s famous question in *Metaph.* Z 3: ‘is the substance the essence . . . or that which underlies?’ (1029a34ff.). He will need more resources – precisely those provided in *Metaph.* Z 4–17 and beyond – to make significant headway with it. Once again, his present discussion points forward to the need for further work before his account is completed.

However, Aristotle’s caution has a further consequence, directly relevant to our understanding of *Phys.* I.7. As noted above, when he considered the possibility that the principles of change and of being of natural objects are the same (in the antecedent of a conditional in 190b17ff.), he did not specify what is required to be a principle of being. If one takes the nature of the entity (its *ousia*) to be its principle of being, Aristotle’s question at 191a19–20 indicates that he is not yet committed to that which underlies being a principle of being for an object. (Indeed, he may have been well advised to introduce his claim in the antecedent of a conditional!) Perhaps that which underlies is a principle of being (as well as of becoming) but not the nature (or essence) of the object in question. There are several possibilities left open at this point:

- (a) That which underlies is a principle of becoming which survives in the finished object as its nature (*ousia*) and a principle of its being;
- (b) That which underlies is a principle of becoming which survives in the finished object as a principle of its being but not as its nature (*ousia*);

- (c) That which underlies is a principle of becoming which survives in the finished object but is not either a principle of its being or its nature (*ousia*).

In *Phys.* I.7 the notions of ‘principle of being’ and ‘nature’ (*ousia*) are not sufficiently determinate to establish which of these options is to be preferred.

IX. Some General Remarks and Questions

Aristotle, I have argued, makes three significant moves in *Phys.* I.7:

- [A] He introduces and partially elucidates the idea of that which underlies, understood as something which remains through the coming to be of certain objects.
- [B] He argues that there is something which underlies in this way all cases of the coming to be (theses [I] and [II] above).
- [C] He introduces the idea that what underlies is not only a principle of the coming to be of objects but also of their continued existence (theses [III], [IV] and [V] above): there is one continuing thing which remains from the beginning of the process of generation of an object to its final destruction.

He uses theses [I], [II] and [III], together with the linking claim in [IV] to arrive at a conception of the principles of being for the objects in question. While part of his aim in *Phys.* I.7 is to show how the claims made in I.5 and I.6 are true and coherent, he proceeds by developing a new line of thought which begins from a more careful account of coming to be than was given in the previous chapters and ends with a thesis concerning the principles of being.²⁴ While this line of thought contains several gaps and problems, it constitutes a new (and improved) route to grasp the principles of being.

Aristotle’s introduction of that which underlies (as understood in theses [I]–[V]) is designed to locate something which he will later specify more fully using his ideas of matter (which as a general theoretical concept seems

²⁴ Sean Kelsey (2008) has correctly emphasised (i) the importance of seeing *Phys.* I.7 in the context of the partially aporetic preceding chapters and (ii) Aristotle’s caution in introducing the notion of matter in this chapter. However, while Aristotle is concerned in this chapter to show how his earlier claims are correct, he does so (if I am correct) by spelling out a line of thought which indicates what the underlier is, how it is (or might be taken as) a principle of being and how it is connected with the other relevant principles (such as opposites or form and privation).

absent from the present chapter) and of potentiality. In doing so, he will deploy the richer conceptual resources needed to characterise, in a theoretically satisfying way, the type of entity he has marked out using his idea of that which underlies.

However, the theoretical innocence of *Phys.* I.7, which reflects the cautious, stage-by-stage fashion in which Aristotle constructs his position, has its own dangers. Several of his key ideas about that which underlies, although of considerable intuitive appeal, are not, or so I have suggested, articulated or defended with the detail required to make them fully convincing. There are, as already noted, major gaps in his presentation. For some, these show significant weaknesses in the foundations of Aristotle's further, more elaborate, theories of matter and potentiality.²⁵ Others, perhaps more charitably, will suggest that these gaps indicate only that the present chapter is intended merely to introduce a way of thinking that is to be justified fundamentally by the overall cogency and explanatory power of the resulting theory. From their perspective, several basic contentions in *Phys.* I.7 rest on claims which are established only in that theory. The chapter, so understood, is not Aristotle's attempt to argue for his overall theory of matter on the basis of generally accepted, theoretically innocent, premises. Instead, it should be seen as part of an early stage of his enquiry, designed to encourage us to think in one specific way about the issues at hand.

While it is no small matter to adjudicate between these two conflicting interpretations of Aristotle's project, such a task lies beyond the confines of a study of *Phys.* I.7 to do so. Much remains to be understood about Aristotle's method, aims and underlying epistemology in this book.

²⁵ For some *Phys.* I.7 provides the epistemological foundation for Aristotle's subsequent claims about matter; for others, it constitutes merely one helpful way to argue for those claims on the basis of general ('logical') grounds (which provide only defeasible support for claims made in the completed 'physical' theory). While the differences between these two viewpoints are important for an understanding of Aristotle's epistemology, they cannot be pursued here.