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## Aristotle's Parmenidean Dilemma

**Abstract:** Aristotle's treatment, in *Physics* 1.8, of a dilemma purporting to show that change is impossible, aims in the first instance to defend not the existence of change, but the explicability of change, a presupposition of his natural science. The opponent fails to recognize that causal explanation is sensitive to the differences between merely coinciding beings. This formal principle of explanation is implicit in Aristotle's theory that change involves a third, 'underlying' principle, in addition to the two opposites, form and privation, and it allows him to avoid the two horns of the dilemma. Aristotle's treatment of the dilemma does not address the issues of persistence through change or generation *ex nihilo*, as is often thought.

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### 1 Introduction

According to Aristotle, one of the driving forces behind the historical development of natural philosophy was the so-called Parmenidean dilemma,<sup>1</sup> an argument purporting to show that change is impossible. Aristotle places his most thorough treatment of the dilemma prominently in the first book of his *Physics*, an inquiry into the number and nature of principles of natural beings. In particular, Aristotle claims that the account of these causes and principles just given in chapter 7 – an account that employs not only form and privation, themselves opposite principles, but also an “underlying nature” – is the only one that can resolve the dilemma. But what exactly is the force of the dilemma, as Aristotle presents it in *Physics* 1.8? And what lesson are we to take from his treatment of it?

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<sup>1</sup> Merely by calling the dilemma ‘Parmenidean’, I do not mean to imply that, as Aristotle presents it, it can be straightforwardly attributed to Parmenides or to any other thinker. I believe that Aristotle is using the dilemma primarily for his own purposes, though it does capture genuinely Eleatic concerns, as suggested by the description of it as “the *aporia* of the early thinkers” (τῶν ἀρχαίων ἀπορία) (191a23f.) and the characterization of those led off track by it as “the first to investigate philosophically about truth and the nature of things” (24f.).

The dispute is usually taken to center around what might be called the ‘ontology’ of change: without the right entity or the right ontology, change is impossible, and so Aristotle’s treatment shows that we need such an entity or ontology. For example, the dilemma is taken to underline the need for a pre-existent or persistent entity, perhaps a substance, to serve as the subject of change, or for an ontology sufficiently sophisticated to allow for such an entity (for example, an ontology that distinguishes kinds or categories of being). However, these theses about the ontology or workings of change, even if Aristotelian, are in fact insufficient to resolve the dilemma. And at least as far as the ontology of change is concerned, resolving the dilemma does not require more than what has been put forward in 1.7 (and may require considerably less).

These interpretations, I will argue, overlook the issue that is at the front line of Aristotle’s treatment: the structure of causal explanation. Aristotle exposes the Parmenidean’s failure to grasp the principle that explanation is sensitive to the differences between merely coinciding beings. This *formal* principle is analogous to what we might today call the intensionality of causal-explanatory contexts. Without it, a defender of change is forced to adopt one of the dilemma’s two horns, i.e. to explain change by reference to opposite principles, such as density and rarity or Aristotle’s own form and privation. This will be the position of all of Aristotle’s predecessors who discussed nature if, as he suggests, they limit themselves to opposite principles.

In the next section (2), I situate my interpretation against existing ones and advert to some of the main challenges it faces. I then (3) analyze what I take to be the core of the dilemma and explain how it provides a genuine formal challenge that merits Aristotle’s attention. In the last two sections (4 and 5), I explain the remainder of the dilemma and of Aristotle’s response in a way that is consistent with my overall interpretation.

## 2 The Basic Picture

The dilemma, as Aristotle presents it in *Physics* 1.8, starts by claiming that “whatever comes to be must do so either out of what is, or out of what is not” (191a28–30). But it cannot be from ‘what is’, because “it already is” (191a31). And nothing can come-to-be from ‘what is not’ because “something must underlie” (191a32). Since neither alternative is viable, coming-to-be is impossible. The two alternatives that the Parmenidean argument considers are:

- (a) ‘what is’ comes-to-be from ‘what is’

and

- (b) 'what is' comes-to-be from 'what is not'.<sup>2</sup>

How are these alternatives to be understood?

The most prominent interpretation treats the word 'is' in the phrases 'what is' and 'what is not' *existentially*. According to this reading, the second horn (b) of the dilemma envisions generation *ex nihilo*, or 'sheer emergence'. The stated objection to horn (b), that "something must underlie" (191a32), is then taken to point out the need for an entity that pre-exists the generation.<sup>3</sup>

While the existential reading makes for a formidable dilemma, Aristotle, I will argue, does not address it. One basic reason for this (more to come) is that so understood, the dilemma will not motivate the need for a third, underlying principle in addition to Aristotle's opposite principles, form and privation; for these are not instances of existential being and not-being respectively.<sup>4</sup>

I will argue that Aristotle addresses a *predicative* reading of the dilemma.<sup>5</sup> The phrases 'what is' and 'what is not' admit of, and are in need of, completion with a predicate. The predicative reading allows (but does not require) that the predicate be in from any of the four categories in which Aristotle thinks change occurs (substance, quality, place, and quantity) and at any level of generality (e.g. horse, animal, substance) within the relevant category or categories. As I construe Aristotle's engagement with the dilemma, any particular statement of it is completed with a single predicate.

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<sup>2</sup> I take it for granted that the product is (at least an instance of) 'what is'. This is necessary for the objection that "it already is" (191a32) to apply.

<sup>3</sup> See Ross (1936, 23); Wieland (1962, 137f.); Williams (1984, 298); Loux (1992, 288); and Horstschäfer (1998, 389–391).

<sup>4</sup> The existential interpreter may point out that it is precisely the introduction of determinate not being that enables Aristotle to avoid the threat of generation *ex nihilo*. However, the distinctive mark of Aristotle's account of change in 1.7 is not its use of determinate as opposed to existential being, but its use of what is (in a way) a third principle in combination with two opposite principles.

<sup>5</sup> See Ross (1936, 494–496); Charlton (1970, *ad loc.*); Code (1976, 164); Lewis (1991, 229); and Kelsey (2006). In addition to the point above, that addressing an existential reading would bring Aristotle nothing as far as his own account of principles is concerned, his solution, as will emerge, presupposes a predicative reading. In thus claiming that Aristotle "addresses" only a predicative reading, I leave open, though it seems unlikely, that the *statement* of the dilemma might be intended to admit of both readings. However, this concession should not be taken to suggest that Aristotle's resolution turns on substituting predicative for existential being, as sometimes thought (see section 4 below).

Such a predicative reading meets two interpretative constraints. First, the phrases ‘what is’ and ‘what is not’ mark out a division that is, at least in one sense, exhaustive and exclusive: for each kind *F* and object *x*, *x* is either ‘what is *F*’ or ‘what is not *F*’ but not both. The defender of change is thus at least apparently committed to upholding one of horns (a) and (b). Second, horn (a) of the dilemma (from ‘what is’) is subject to the objection that “it already is” (191a31). For example, the idea that ‘what is musical’ should come-to-be from ‘what is musical’ is open to the objection that ‘it already is [musical]’.<sup>6</sup>

However, without recourse to generation *ex nihilo*, the predicative reading has been thought to face a difficulty in explaining the dilemma’s rejection of horn (b).<sup>7</sup> Some adherents of the predicative reading see in horn (b) a problem of the ‘sheer replacement’ of one entity (‘what is not’) by another (‘what is’). The objection that “something must underlie” (191a32) is taken to demand an entity that persists through change, perhaps a logical subject, and Aristotle’s resolution is thought to provide for such an entity.<sup>8</sup> I will argue that horn (b) (even on the predicative reading) need not and should not be read as involving a problem about replacement.

But there is a more fundamental difference between all of the interpretations I have mentioned and my own. According to these interpretations, Aristotle aims, by way of the dilemma, to bring out certain specific shortcomings of ‘what is’ and ‘what is not’ – especially the latter – in the role of what things come-to-be from. He then posits, in this role, a certain entity and makes clear that it is not subject to these shortcomings (whether generation *ex nihilo* or sheer replacement). In this way, Aristotle is thought to motivate, by way of the dilemma, theses about the ontology of change. In my view, Aristotle’s concern is neither to spell out the shortcomings of ‘what is not’ in the role of what things come-to-be from, nor to explain how some other entity is not subject to these shortcomings. It is rather to show

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<sup>6</sup> Kelsey, however, denies exclusivity on his (highly restricted) predicative reading. See section 5 below, esp. note 39.

<sup>7</sup> Thus Loux (1992, 288): “‘That which is musical comes-to-be from that which is not musical’ is not, in any obvious way, problematic; and if it is problematic, the nature of the difficulty is not that identified in the claim that nothing comes-to-be from that which is not. Any credibility attaching to that claim probably derives from the vague intuition that where there is nothing, there cannot, all of a sudden be something; and it is by no means evident that adherence to the idea that what is musical comes-to-be from what is not musical commits one to rejecting that intuition”. See also Williams (1984, 298) and Horstschäfer (1998, 386–391).

<sup>8</sup> One might take sheer replacement to be impossible, perhaps because it is or is similar to generation *ex nihilo*, or merely distinct from the phenomenon of genuine coming-to-be. See Charlton (1970, 139f.); Waterlow (1982, 8–22); Gill (1989, 7, 45); and Lewis (1991, 229) on the threat of replacement.

that the natural scientist is not, as his opponent claims, committed to either of the two problematic horns.

It may seem trivial to do so. For even if it is granted that horn (b) is somehow problematic, the ontological sophistication implicit in the predicative reading apparently enables us to avoid a commitment to it (as well as to horn (a)). Since 'what is not musical' can also be, say, a man, a third alternative is available: 'the man comes-to-be musical'. Is the challenge merely to see that that 'what is not musical' can also be something else? Horn (b), problematic or not, seems too easy to avoid.<sup>9</sup>

To understand the force of the challenge, we must note first that what must be avoided are the two horns of the dilemma understood on their strict, '*per se*' readings, as I shall put it, on which they purport to causally explain change by reference to the underlying subject. Second, recall that the dichotomy 'what is' vs. 'what is not' is exhaustive.

As I construe it, the challenge is then to explain away the following kind of inference: if 'what is musical' comes-to-be *per se* from anything, then it must come-to-be *per se* either from 'what is musical' or from 'what is not musical'. The apparent inescapability of this inference, I will argue, need not reflect a limitation in ontology; even a theorist who sees that 'what is not musical' can also be a man, for example, is not thereby entitled to treat these as playing *distinct causal roles* in explaining coming-to-be musical. The challenge is instead a formal one, which is resolved by distinguishing between causal-explanatory (*per se*) claims about change and their non-explanatory counterparts, and seeing that the former are sensitive to the differences between merely coinciding beings in a way that the latter are not. This is what affords the natural scientist the possibility of a genuine alternative to the two horns of the dilemma, while respecting the exhaustiveness of the dichotomy 'what is' vs. 'what is not'.

Now, the claim that things must come-to-be *per se* from 'what is' or 'what is not', if they come-to-be *per se* from anything, is problematic only given two additional claims, on which I believe Aristotle and his opponent here agree.<sup>10</sup>

The first claim is that the '*per se*' versions of the two horns of the dilemma are impossible. Neither 'what is' nor 'what is not' can be that from which things come-to-be *per se*, evidently, because 'it already is' and 'something must underlie' respectively. Thus my interpretation, like any, must explain how the two

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<sup>9</sup> Loux (1992, 289) hints at such a worry: "Aristotle could simply point out that when, in any particular case, we provide the appropriate fillers for the incomplete expressions [...] the argument loses its force and the paradox disappears".

<sup>10</sup> Here I speak somewhat loosely; the opponent does not employ the concept of *per se* coming-to-be. Still, Aristotle thinks he can capture the opponent's motivations in his technical language.

horns could be thought problematic on these grounds. Still, as I explained above, Aristotle's focus is not on spelling out what is problematic about the two horns (or on showing how a favored candidate for the *per se* source of change is not problematic in the same way), but on the formal challenge of avoiding a commitment to the two horns.

The second claim – to be specified more precisely below – on which Aristotle and his opponent agree is that change must have such an explanatory source. As I shall often put it, there must be a *per se* source of change. Since Aristotle's opponent is charged with conflating descriptions of change that purport to explain it and those that do not, it is tempting to think Aristotle should or does fault his opponent for showing at most that change cannot be explained, not that there can be no change at all. But the thesis that changes are subject to explanation is a fundamental presupposition of Aristotelian natural science. Changes that cannot be explained are no more amenable to natural science than a world without change. Thus, Aristotle can present the dilemma as a threat not only to the possibility of explaining change, but also to the very enterprise of natural science, whose basic conceptual apparatus the *Physics* sets out to establish.<sup>11</sup>

### 3 The Core Parmenidean Argument

In this section I fill out and support my reading of what I view as the core of the dilemma. My strategy is to read off the problem from Aristotle's rather austere response. The major part of Aristotle's response is to distinguish between *per se* and *per accidens* versions of horns (a) and (b). Aristotle agrees with his opponent that the *per se* versions cannot be true, but thinks that the defender of change is committed only to the *per accidens* versions. I will argue that this *per se* vs. *per accidens* distinction invokes a second distinction, the one-in-number vs. one-in-being distinction, introduced in the previous chapter.

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<sup>11</sup> My interpretation accounts for the placement of Aristotle's treatment of the dilemma in his introduction to natural science better than that offered by Code (1976, 163–165), which takes the dilemma to hinge on a difficulty about the reference of the phrase 'what is not', even if it is understood predicatively. The idea is that 'what is not musical' will pick out both the unmusical starting point of a change and (since what is not musical becomes musical) also the musical product, implying the absurdity that 'what is not musical' is musical. Although Aristotle was aware of a sophisticated *aporia* about just this issue (see *Metaphysics* E.2, 1026b18–20; *Topics* 1.11, 104b25–28), the strong assumptions about reference and time in the background seem foreign to the topic at hand; it is not clear how issues about the reference of a phrase like 'what is not musical' are relevant to Aristotle's theory of principles. Cf. also Lewis 1991, 210–216.

*Two Distinctions.* Aristotle introduces the *per se* vs. *per accidens* distinction by way of an example:

We say, however, that coming-to-be out of what is or what is not, or what is or what is not doing or suffering something or coming-to-be any particular thing, are in one way no different from the doctor doing or suffering something or something being or coming-to-be out of the doctor. Thus, since the latter is said in two ways, it is clear that [so] also [is coming-to-be] out of what is and what is doing or suffering. Now, the doctor builds not *qua* doctor but *qua* builder, and becomes pale not *qua* doctor but *qua* dark, but he cures and comes-to-be medically unskilled *qua* doctor. Since we say that the doctor does or suffers something or that something comes-to-be out of the doctor most properly if he suffers or does or comes-to-be these things *qua* doctor, clearly also coming-to-be out of what is not [most properly] means this: [coming-to-be out of what is not] *qua* what is not. (*Physics* 1.8, 191a34–b10)<sup>12</sup>

When we say that the doctor cures, we are stating what he does “*qua* doctor” (191b6), or, as Aristotle later puts it, “without qualification” (ἀπλῶς) (191b14). I will use the expression ‘*per se*’. Sometimes, however, we say what the doctor does ‘*qua*’ something else, for example, “*qua* builder” (191b5) or, as Aristotle later puts it, “according to what coincides” (κατὰ συμβεβηκός) (191b15, 18, 24). I will use the expression ‘*per accidens*’. What does it mean to say that the doctor builds *per accidens*, or “according to what coincides”?

We may begin with *Metaphysics* Δ.7, where Aristotle writes that “according to what coincides (κατὰ συμβεβηκός), e.g. we say ‘the just [person] is musical’, and ‘the man is musical’, and ‘the musician is a man’, just as we say ‘the musician builds’, because being musical is coincidental to the builder, being a builder to the musician” (1017a7–12). In this example, the musician builds *per accidens* only because the musician and the builder coincide.<sup>13</sup> What it means, then, in *Physics* 1.8, for the doctor to build *per accidens* is that the doctor builds only by virtue of coinciding with something else, in this case, the builder. The doctor cures, on the other hand, *per se*, that is, not by virtue of coinciding with some other kind

12 ἡμεῖς δὲ λέγομεν ὅτι τὸ ἐξ ὄντος [35] ἢ μὴ ὄντος γίνεσθαι, ἢ τὸ μὴ ὄν ἢ τὸ ὄν ποιεῖν τι ἢ [36] πάσχειν ἢ ὅτι οὖν τότε γίνεσθαι, ἕνα μὲν τρόπον οὐθὲν διαφέρει [1] ἢ τὸ τὸν ἰατρὸν ποιεῖν τι ἢ πάσχειν ἢ ἐξ ἰατροῦ [2] εἶναί τι ἢ γίνεσθαι, ὥστ' ἐπειδὴ τοῦτο διχῶς λέγεται, [3] δῆλον ὅτι καὶ τὸ ἐξ ὄντος καὶ τὸ ὄν ἢ ποιεῖν ἢ πάσχειν. [4] οἰκοδομεῖ μὲν οὖν ὁ ἰατρός οὐχ ἢ ἰατρός ἀλλ' ἢ [5] οἰκοδόμος, καὶ λευκός γίνεσθαι οὐχ ἢ ἰατρός ἀλλ' ἢ μέλας· [6] ἰατρεύει δὲ καὶ ἀνίατρος γίνεσθαι ἢ ἰατρός. ἐπεὶ δὲ μάλιστα [7] λέγομεν κυρίως τὸν ἰατρὸν ποιεῖν τι ἢ πάσχειν ἢ γίνεσθαι [8] ἐξ ἰατροῦ, εἴαν ἢ ἰατρός ταῦτα πάσχη ἢ ποιῆ ἢ γίγηται, [9] δῆλον ὅτι καὶ τὸ ἐκ μὴ ὄντος γίνεσθαι τοῦτο σημαίνει, τὸ [10] ἢ μὴ ὄν. (191a34–b10)

13 See also *Metaphysics* E.2, 1026b37–1027a5.

of thing, but by virtue of being a doctor.<sup>14</sup> Talk of ‘coinciding’ can be phrased in a more transparent way: the doctor and the builder are ‘one-in-number’ or ‘the same in number’ as opposed to one and the same ‘in being’.<sup>15</sup> What we have seen, in effect, is that for the doctor to build *per accidens* requires that the doctor coincide with, be one-in-number with, something else.

In particular, the doctor must coincide with not just any being, but with a being that builds *per se*, a builder. If this were not the case, then the fact that the doctor and builder coincide would not explain why the doctor builds *per accidens* any more than the fact that the doctor coincides with a musician would. The doctor could not be said to build “in accordance with what coincides”. In this sense, the *per accidens* claim about the doctor building depends on there being a true *per se* claim about his building.

Certain sentences expressing *per accidens* claims reveal and posit the relevant *per se* claim on which their truth depends. For example, Aristotle’s assertion that the “doctor builds [...] *qua* builder” (191b4f.) posits a *per accidens* relation between the doctor and the activity of building. But it also reveals and posits the underlying *per se* claim: that the builder builds *per se*.

We have now understood the *per accidens* claim as positing a connection between the agent and the activity that is in part mediated by some being with which the agent coincides. For example, the doctor’s connection to building is in part mediated by the builder. By contrast, the implied *per se* claim (e.g. ‘the builder builds’) invokes a connection between the builder and the activity that is unmediated by the builder’s being one-in-number with something else.

One might wonder what this more direct connection is, both in the case of building and in that of coming-to-be. However, note first that the *per se* vs. *per accidens* distinction, since it is a formal device with diverse applications, not all of which are causal, does not clarify or explain, but rather presupposes, the kind of

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14 Although it is not clear on syntactical grounds alone, I take the qualifying phrases ‘without qualification’ (ἀπλῶς), ‘*qua* F’, and ‘according to what coincides’ primarily to describe the *relation* between the agent specified in the claim (e.g. the doctor) and the activity performed (e.g. curing or building). Similarly, I take ‘*per se*’ and ‘according to what coincides’ in a ‘A comes-to-be from B *per se*/according to what coincides’ to characterize the sense in which A ‘comes-to-be from’ B, but neither to qualify B directly, nor as a sentential operator; cf. Lewis 1991, 230f.

15 In particular, both (the builder and the doctor) are accidents of the same substance (Δ.7, 1017a19–24, Δ.9, 1017b28–31). I take it that when Aristotle talks about various distinct ‘beings’ (ὄντα) that are ‘one-in-number’ but not ‘in-being’ (τῶ εἶναι), he is not merely talking about different descriptions under which a single being falls, as Williams (1985) suggests, but about genuinely different beings. For Aristotle, there are various ways in which these beings can be the same or different.



unmediated connection (in this case causal) relevant to a particular case.<sup>16</sup> Moreover, Aristotle does not explain what this connection is in the case of the builder; presumably he thinks it intuitive enough that the agent's being a builder causally explains building in a way that his being a doctor does not. Applying the *per se* vs. *per accidens* distinction to the dilemma invokes no more than the idea that there is, similarly, something about the patient of coming-to-be that explains why something comes-to-be from it in a way that, for example, its lacking the relevant form does not. I will argue, further, that Aristotle's entire treatment of the dilemma is similarly minimal in this respect. We can understand the main dispute of *Physics* 1.8 and how Aristotle resolves it independently of this issue.

*A Model Dilemma.* To see how Aristotle applies these distinctions – *per se* vs. *per accidens* and one-in-number vs. one-in-being – to the dilemma, and ultimately to understand the dilemma itself, consider a model dilemma based on the foregoing discussion:

- (0') Every man is musical or unmusical.
- (1') If any man cures, then either a musical man cures or an unmusical man cures. [(0')]
- (2') A musical man cannot cure.
- (3') An unmusical man cannot cure.
- (4') Therefore, no man can cure. [(1'), (2'), (3')]

One might argue that it is impossible for a man to cure, on the grounds that every man is either musical or not musical, and so, if any man cures, either the musical man cures or the unmusical man cures, both of which scenarios are impossible. Intuitively, one reading of (0') is true; every man falls on one side or the other of the dichotomy musical vs. unmusical. Further, neither kind of man, just in virtue of being of that kind, can cure; neither the musical man nor the unmusical man cures *per se*. But it does not follow (and is false) that no kind of man cures *per se*.

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**16** Aristotle uses problematic examples of *per se* coming-to-be from opposites here: “the doctor [...] becomes pale not *qua* doctor but *qua* dark, but [...] comes-to-be medically unskilled *qua* doctor”. Such examples might suggest that Aristotle views opposites as *per se* sources of change in the same way as the underlying principle. Against this, note that these examples contradict Aristotle's relegation of the privation to a mere *per accidens* source of change at 1.7, 190b25–27 (prepared at 1.6, 189a20f.). These examples might be dealt with in one of two (not entirely satisfying) ways. First, as mentioned above, being the *per se* agent, patient, source, etc. will always presuppose, and be relative to, some particular intrinsic relation; thus one might hold that opposites play some *other* intrinsic, *per se* role in change, but that Aristotle here fails to distinguish it from that of the underlying nature, by using precisely the same language for both cases. Second, these examples might be seen as overstatement of the fact that the starting point and endpoint of coming-to-be necessarily instantiate opposites, argued for in 1.5, and made more concrete in terms of privation in 1.7.

This does not follow because within the context of looking for the *per se* agent of curing, we need to distinguish agents more finely. The dichotomy musical vs. unmusical is not exhaustive in the sense that these are the only kinds of man. If the dichotomy were exhaustive in this way, it would provide the only options for a kind of man that is the *per se* agent of curing. That is, it would entail the *per se* version of (1’):

(1’-*per se*) If any man cures, then either a musical man cures *per se* or an unmusical man cures *per se*.

And this claim, in conjunction with the plausible *per se* readings of (2’) and (3’),

(2’-*per se*) A musical man cannot cure *per se*,

(3’-*per se*) An unmusical man cannot cure *per se*,

leads to the problematic conclusion (4’). Claim (0’), however, does not entail (1’-*per se*). It leaves open the possibility that neither the musical man, nor the unmusical man, but some other kind of man (e.g. a doctor), cures *per se*.

Such a *per se* source of curing would still be one-in-number either with the musical or with the unmusical man. But these are just the cases in which the musical man and the unmusical man respectively cure *per accidens*. Thus, while claim (0’) does not commit the defender of *per se* curing to (1’-*per se*), it does commit him, so long as he accepts (2’-*per se*) and (3’-*per se*), to:

(1’-*per accidens*) If any man cures, then either a musical man cures *per accidens* or an unmusical man cures *per accidens*.

However, from this claim, the argument yields the conclusion that (4’) no man can cure only if (2’) and (3’) are understood as follows:

(2’-*per accidens*) A musical man cannot cure *per accidens*.

(3’-*per accidens*) An unmusical man cannot cure *per accidens*.

But these two claims should be rejected.

*The Core Argument.* I will now put forward an analysis of the core of the Parmenidean argument and of Aristotle’s response. I leave the phrases ‘what is’ and ‘what is not’ uninterpreted in order to show that the mere structure of the argument and of Aristotle’s response rule out a (purely) existential reading. Nevertheless, these phrases can be construed throughout as if filled in with a (single) completing predicate. Consider the following reconstruction:

- (0) Everything is 'what is' or 'what is not'.
- (1) If 'what is' comes-to-be, then it comes-to-be either from 'what is' or from 'what is not'. [(0)]
- (2) 'What is' cannot come-to-be from 'what is'.
- (3) 'What is' cannot come-to-be from 'what is not'.
- (4) Therefore, 'what is' cannot come-to-be. [(1), (2), (3)]

The argument begins with a platitude about an exhaustive dichotomy (0). What is alleged to follow is claim (1), that if it comes-to-be at all, then 'what is' comes-to-be from something on one side of the dichotomy or on the other. But these two alternatives are ruled out by (2) and (3), respectively. So, as (4) claims, the antecedent of (1) cannot be true.

Claim (0) is true, as Aristotle insists when he claims to leave intact "the [principle that] everything is or is not" (191b27f.). In particular, it is true if it is taken to mean that each thing is an instance either of 'what is' or of 'what is not', for example, that everything is either an instance of 'what is musical' or of 'what is not musical'. However, from claim (0), so understood, the *per se* reading of (1),

(1-*per se*) If 'what is' comes-to-be, then it comes-to-be either from 'what is' or from 'what is not' *per se*,

does not follow.<sup>17</sup> For example, the fact that everything is an instance of 'what is musical' or 'what is not musical' does not imply that if anything comes-to-be musical *per se* then either 'what is musical' or 'what is not musical' comes-to-be musical *per se*. Consistently with claim (0), there may be some other being, for example, a man, that comes-to-be musical *per se*. More generally, for all that the Parmenidean has said, 'what is' might come-to-be *per se* from something that, while one-in-number with 'what is' or with 'what is not', is nevertheless distinct from them in being.

If (1-*per se*) were to follow from (0), the Parmenidean could then reach the conclusion that there is no coming-to-be (4) on the basis on the plausible *per se* readings of (2) and (3), which he and Aristotle accept:

(2-*per se*) 'What is' cannot come-to-be from 'what is' *per se*.

(3-*per se*) 'What is' cannot come-to-be from 'what is not' *per se*.

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<sup>17</sup> One might imagine a stronger, 'one-in-being' reading of (0), according to which 'what is' and 'what is not' exhaust the kinds of being there are. From (0) so understood, (1-*per se*) would follow. One might ascribe such a thesis to Parmenides and Melissus, at least as they appear in *Physics* 1.2–3, where they are presented as failing to distinguish kinds of being.

But while claim (0) does not commit the defender of *per se* change to (1-*per se*), it does commit him to:

(1-*per accidens*) If ‘what is’ comes-to-be, it comes-to-be either from ‘what is’ or ‘what is not’  
*per accidens*.

For whatever the starting point of the change, it must fall on one or the other side of the dichotomy ‘what is’ vs. ‘what is not’. But given (2-*per se*) and (3-*per se*), neither ‘what is’ nor ‘what is not’ can itself be the *per se* source of coming-to-be ‘what is’. So the *per se* source of change must be merely one-in-number either with ‘what is’ or with ‘what is not’. But this is just what it is for ‘what is’ to come-to-be *per accidens* from ‘what is’ or from ‘what is not’. For example, whatever the starting point of coming-to-be musical, it must fall on one or the other side of the dichotomy ‘what is musical’ vs. ‘what is not musical’; one of these will be (merely) one-in-number with the *per se* source of coming-to-be-musical. But these are just the cases in which something comes-to-be *per accidens* from ‘what is musical’ and from ‘what is not musical’ respectively.

In this way, Aristotle’s defense of *per se* change commits him to coming-to-be *per accidens* either from ‘what is’ or from ‘what is not’, as encapsulated in claim (1-*per accidens*). From this claim, the argument yields the conclusion,

(4) ‘What is’ cannot come-to-be,

only if (2) and (3) are understood as:

(2-*per accidens*) ‘What is’ cannot come-to-be from ‘what is’ *per accidens*.

(3-*per accidens*) ‘What is’ cannot come-to-be from ‘what is not’ *per accidens*.

But, as Aristotle explains, these two claims are to be rejected.

*Clarification.* The analysis just given is partial in two respects. First, as I mentioned above, I have not presupposed either the predicative or existential reading of the phrases, ‘what is’ and ‘what is not’, so that the mere structure of the argument and Aristotle’s response can help adjudicate between these two readings. Second, Aristotle both mentions objections against the two horns – i.e. justifications for steps (2) and (3) –, namely, that “it already is” (191a31) and that “something must underlie” (191a32) respectively, and offers illustrations to the effect that, understood in one way (*per accidens*), the two horns are not in fact problematic. In the analysis above, I have left aside both the question of why the two horns of the dilemma should be thought problematic (instead treating steps (2) and (3) as premises) as well as Aristotle’s contention that on one reading, they are not. This second feature of my analysis reflects the fundamental difference in ap-

proach between my interpretation and the broadly 'ontological' interpretations mentioned above, which have usually been supported by appeal to these parts of the dilemma and of Aristotle's response, whose treatment I have postponed. My aim in doing so is to draw attention to the formal challenge of blocking the inference from (0) to (1-*per se*) and to show that it arises independently of these issues.

I have treated both parties to the dispute as assuming that change is explainable. In particular, the inference from (0) to (1-*per se*) might be seen as resting on a 'Principle of *Per Se* Change' (PSC):

- (0) Everything is 'what is' or 'what is not'.  
 (PSC) If 'what is' comes-to-be, then it comes to be from something *per se*.  
 (1-*per se*) If 'what is' comes-to-be, then it comes-to-be either from 'what is' or from 'what is not' *per se*. [(0), (PSC)]

One could block the above inference either by rejecting (PSC) or by rejecting the move from (0) and (PSC) to (1-*per se*). Moreover, both (PSC) and the move from (0) and (PSC) to (1-*per se*) might plausibly rest on a conflation of *per se* and *per accidens* coming-to-be, which Aristotle is at pains to distinguish. It is thus tempting to think that Aristotle blocks the argument by rejecting (PSC), insisting that there need only be a *per accidens* source of change. But this temptation should be resisted because, as I claimed earlier, the idea that changes are subject to explanation is a fundamental presupposition of his natural science, one that is especially evident in *Physics* 1's task of securing the explanatory principles of change and, in particular, in *Physics* 1.6–9's task of motivating the need for a principle of change distinct from the two opposites. Note further that all the examples of *per accidens* claims that 1.8 uses to introduce the *per se* vs. *per accidens* distinction are parasitic on *per se* claims. Aristotle does not here consider the possibility that changes lack *per se* explanations of the relevant kind.<sup>18</sup>

Another perhaps unexpected feature of my reconstruction is that I have treated (0) as a premise, albeit an implicit one. In support, note that the Parmenidean argument considers only these two items ('what is' and 'what is not') as candidates for the source of change. Aristotle explicitly points out that his resolution does not violate (0), that "everything is or is not" (191b26f.), though it may appear to. Moreover, it is precisely because Aristotle accepts claim (0) that he is committed to the possibility of coming-to-be *per accidens* from 'what is' or from 'what is not'.

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<sup>18</sup> See below, section 5, for a possible qualification of this principle.

These last two points depend on the closely related one-in-number vs. one-in-being distinction: even a *per se* source of change, though distinct from ‘what is’ and ‘what is not’ in being, will be one-in-number with one of them, as (0) requires. And because it will be one-in-number with one of them, Aristotle is committed to *per accidens* coming-to-be from one of them. Although Aristotle does not explicitly bring up such a distinction in *Physics* 1.8, he repeatedly claims in 1.7 that the underlying nature and privation are one-in-number but different in being or account (190a14–17; 190b10–13; 190b23–191a3). Furthermore, I have argued that the *per se* vs. *per accidens* distinction, as Aristotle construes it, depends on the one-in-number vs. one-in-being distinction. In any case, even if Aristotle were to operate with some sort of *per se* vs. *per accidens* distinction that could be made out independently of the one-in-number vs. one-in-being distinction, it would not serve him here. He would have to insist, in effect, that there are unproblematic readings of the two horns. But this would leave unscathed the same argument, stated with the addition of the qualifier ‘*per se*’ at each stage. The *per se* versions of the two horns would provide the only alternatives for understanding change, short of denying *per se* change altogether.

In quite general terms, the Parmenidean argument’s plausibility derives from three thoughts. The first is that ‘what is’, if it comes-to-be, must come-to-be from something *per se* – this is the force of (PSC). The second is that ‘what is’ can come-to-be *per se* neither from ‘what is’ (2-*per se*) nor from ‘what is not’ (3-*per se*) – that the *per se* versions of the two horns are impossible. In other words, neither of the two proposed candidates are viable candidates for the *per se* source of change. These two thoughts express the minimal intuition about change that is necessary to motivate the dilemma. The third thought is that because the candidates considered in horns (a) and (b) are in a certain sense exhaustive, change would, *per impossibile*, have to be the way that the *per se* version of either horn (a) or horn (b) envisions it. This thought is not about change in the same way as the first two. It is a principle that is manifest, for example, in the thought that since all men are musical or unmusical, then, if any man cures *per se*, either a musical man cures *per se* or an unmusical man does. I have argued that this third thought, rather than the first two, is Aristotle’s primary target.

*The Formal Challenge.* The ‘formal challenge’, as I have called it, is the challenge of resisting this thought, and thus of seeing how to avoid a commitment to the *per se* versions of the two horns while accommodating *per se* change. As I mentioned, it may seem that this is no challenge at all on the predicative reading, since an ontology that distinguishes kinds of (predicative) being seems to provide sufficient resources to avoid the two alternatives. For example, in the case of the coming-to-be of ‘what is musical’ the defender of change may point out that ‘what is not musical’ is also a man. We may even suppose that the man persists through

the change as a logical subject. And thus we can say that 'what is musical comes-to-be from the man'.<sup>19</sup> But the fact that we can describe the situation in this way does not make the description 'what is musical from what is not musical' any less applicable or problematic. Unless more is said, the Parmenidean has been given no reason or license to deny the problematic claim.<sup>20</sup>

It has been granted that the unproblematic claim describes what is in a way (i.e. in being or account) a distinct being (the man) from the one ('what is not musical') described by the problematic claim. However, this is not enough. We must also suppose that the relevant fact concerns only this distinct being (the man) and not the being that figures in the problematic claim ('what is not musical'), even if the two beings are one, in a sense (i.e. in number). But this is just to say that the truth of a *per se* claim about coming-to-be musical is sensitive to the differences between merely coinciding beings.<sup>21</sup> This framework is implicit neither in the principle of the homonymy of being (that there are different kinds of being), nor in the *Categories* thesis that non-substances are in a way dependent on substances (nor yet, for that matter, in the thesis that logical subjects persist through change). In broad terms, to acknowledge that there can be two distinct beings that are one-in-number is not yet to acknowledge that they can serve as distinct causal-explanatory principles, and so it is not yet to increase the number of distinct candidates for the *per se* source of change.

The simple-minded ontology Aristotle sometimes attributes to the Eleatics, according to which being is univocal, leaves no room for the idea that two distinct beings are one-in-number. Though not necessary for the force of the dilemma to be felt, this ontology is especially burdensome in that it leaves the defender of change with no alternative to the two horns of the dilemma. Thus the idea that there are different kinds of determinate being removes one obstacle to resolving

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<sup>19</sup> See Loux (1992, 289), though he does not distinguish, as we must, between giving an alternative to horn (b) and giving a reading of it.

<sup>20</sup> This point reveals the inadequacy of focusing primarily on the 'appropriateness' of certain descriptions, as in Loux's emphasis on "perspicuous" descriptions. Waterlow, though she points out that merely providing a new description of the same fact does not do away with the problematic one, is content to have Aristotle point out that different descriptions, though true, might not be "equally appropriate" or "equally revealing of the structure of the fact" (1982, 16). This falls short of Aristotle's claim that the *per se* readings of the two horns are false, and the *per accidens* readings sometimes true.

<sup>21</sup> This proposal bears some similarity to that put forward by Code mentioned above (1976, 163–165). Note that if, as he claims, 'what is not musical' would also have to refer to the musical, we could toggle between the two problematic claims using a substitution principle. But there is not only no need to be able to derive one horn from the other; if this were possible, it is not clear that we would have a dilemma, since the 'horns' would entail one another.

it, but does not alone resolve it. Accordingly, I take Aristotle to be addressing even an opponent who distinguishes between kinds of being.<sup>22</sup>

*The Dilemma and Aristotle's Account of Principles.* Without the principle that causal explanation is sensitive to the differences between coinciding beings, Aristotle's opponent must, if he is to explain change, posit one of the two problematic horns of the dilemma. Aristotle's account of principles, however, posits a third, 'underlying' principle, distinct in being from the opposite principles, but one-in-number with one of them, privation. And implicit in the idea that the privation and the underlying nature are distinct *principles* is the idea that one can play the causal-explanatory role that the other does not, even if they are one-in-number. That is, certain *per se* claims will discriminate between the two principles, even though they coincide. In this way, Aristotle's resolution draws precisely on features of the account of principles in 1.7, as he claims it does, and contrary to some commentators' doubts.<sup>23</sup> And so Aristotle's treatment of the dilemma shows that his own theory of the causes and principles of change developed in 1.7, unlike those theories that merely posit opposite principles, is able to resolve the dilemma.

Aristotle begins 1.8, however, with a stronger claim, that "only in this way is the *aporia* of the early thinkers resolved" (191a23f.; my emphasis), where "this way" refers back to the account of principles in 1.7. I suggest that he is assuming (i) that a theory of change requires opposite principles and (ii) that these opposite principles alone cannot properly explain change, i.e. that the *per se* readings of the two horns of the dilemma are impossible. So much has been argued for in *Physics* 1.5–6. A theory of change will then (minimally) have to posit a third principle in addition. But since the two opposites form an exhaustive dichotomy, this third principle must always be one-in-number with one of the opposites. In other words, there must be "in a way two, and in a way more" (191a14f.) principles. Understood somewhat abstractly as a minimal theory that adds to the agreed upon opposite principles, Aristotle's theory is the *only* way to resolve the dilemma.

*Interim Conclusion.* I have argued that the 'formal challenge' of *avoiding* a commitment to the problematic horns of the dilemma arises forcefully on a predi-

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<sup>22</sup> It is worth noting in this connection that although the dismissive discussion comprising *Physics* 1.2–3 faults Parmenides and Melissus for (among other things) thinking that 'being' is univocal, Aristotle later draws on the 'way of opinion' and treats Parmenides as employing opposite material principles (1.5, 188a19–22).

<sup>23</sup> See Loux (1992, 292), Madigan (1992, 322), and Horstschäfer (1998, 381–384). It is no accident, I think, that all three endorse the existential reading, on which the key move in resolving the dilemma is to distinguish determinate from existential (not-)being; such a distinction does not figure as a distinctive feature of Aristotle's account of principles (or otherwise) in *Physics* 1.7.



cative reading, and that Aristotle's theory of principles is unique in being able to resolve it. Moreover, I have explicated this challenge for the most part independently of (i) *why* the two horns of the dilemma are problematic – recall that the intuition about change required to motivate the formal challenge is *that* the two horns are problematic – and of (ii) *why* Aristotle thinks that, understood in one way, they are not in fact problematic. But as I mentioned, it is precisely in Aristotle's discussion of these issues that the broadly 'ontological' readings of the dilemma have found support. I take up these issues in turn in the next two sections.

## 4 What Is Problematic about the Two Horns?

*Why Not from 'What Is Not'?* It may be objected that, by leaving aside up to now the question of why horn (b) should be thought problematic, I have ignored the strongest evidence for the existential reading. Recall that on the existential reading, horn (b) is vulnerable to a charge of generation *ex nihilo*, often seen in the objection that "something must underlie" (191a32). But despite the intuitive impossibility of generation *ex nihilo*, the (purely) existential reading is no longer an interpretive option; it is ruled out by the structure of the formal challenge and of Aristotle's response to it. For Aristotle's resolution is in part an accommodation of *per accidens* coming-to-be from 'what is not'; only the *per se* version of horn (b) is rejected. But generation *ex nihilo* is impossible both *per se* and *per accidens*. 'What does not exist', i.e. nothing, cannot become existent in virtue of its coinciding in something else, since 'what does not exist' cannot coincide in any existent being. In this sense, the *ex nihilo*, *nihil fit* principle is not only stronger than is necessary to motivate the dilemma; it is so strong as to be disqualified from playing the role it is often thought to.

To deal with this problem, some existential interpreters switch to a predicative reading in Aristotle's resolution. Aristotle (like his opponent) rejects coming-to-be from existential not-being, they claim, but in his resolution, accommodates coming-to-be from determinate not-being. Such a shift of meaning, however, would leave us with no reason to reject *per se* coming-to-be from determinate not-being – this version of horn (b) would not be subject to the charge of generation *ex nihilo* – and so the dilemma would not motivate the need for a third principle of change. Moreover, Aristotle's resolution simply does not disambiguate different readings or senses of the phrases, 'what is' and 'what is not'.

One way around these concerns is to insist that coming-to-be *per se* from determinate not-being is incoherent, on the grounds that the qualifiers '*per se*' and

'*per accidens*' indicate existential and determinate (not-)being respectively.<sup>24</sup> But the *per se* vs. *per accidens* distinction as applied here does not invoke different kinds or senses of 'what is not', in just the same way that curing (which the doctor does *per se*) and building (which the doctor does *per accidens*) do not require different kinds of doctor or senses of the term. Moreover, if the qualifier '*per se*' were to signal existential rather than determinate being, it is not clear how Aristotle could ascribe to the underlying nature a privileged explanatory role by claiming that it is what things come-to-be from *per se*; it is not even clear what this claim could mean.

Discarding the existential reading brings up, once again, the question whether, on the predicative reading, there is a genuine difficulty with horn (b). The key again lies in the structure of the formal challenge and of Aristotle's response. Aristotle rejects only the *per se* version of horn (b). Whatever is problematic about that scenario should not also rule out coming-to-be from 'what is not' *per accidens*. It follows that what is problematic about horn (b) is not the lack of some entity. For switching the qualifier from '*per se*' to '*per accidens*' does not add or enable us to add to the scene any entity whose presence was otherwise ruled out. For this reason, the stated objection, "something must underlie", should not be taken to mean that there is nothing available that could 'underlie', but only that the candidate source of change under consideration, 'what is not', does not itself 'underlie'. And this is true: 'what is not' is not a subject. Moreover, Aristotle has emphasized in 1.6 the need for a principle that is a subject, and in doing so claimed that opposites are neither subjects (189a27–32) nor substances (189a32f.). He insists in 1.7, in response to these concerns, that every type of change – even substantial change – involves something that underlies not as an opposite (190a13–21) – to which he later restricts the language of 'underlying' (190b12–17; 191a7–12) – and that it is from this that things come-to-be "not according to what coincides" (190b25–27). There can be no doubt that for Aristotle there is a genuine difficulty here, and so 'underlying' should be understood literally, rather than in terms of persistence or (pre-)existence.

But it is also clear that in 1.8, Aristotle exhibits a concern neither with spelling out this difficulty, nor with capturing the views of his predecessors. The phrase, "something must underlie", simply repeats his characterization of his third principle from 1.6–7 in his own technical terminology. Aristotle's predecessors could not have put forward the objection in these or similar terms, as he is no doubt aware. This again suggests a predominant focus on the formal challenge.

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<sup>24</sup> Wieland (1962, 137f.) is explicit about this. It is not clear to me whether Horstschäfer intends this position; see his 1998, 399–412.

Why must the *per se* source of coming-to-be 'underlie'? Indeed, one might, for various reasons, find the rubric of 'underlying' itself insufficient or unsatisfying in this context.<sup>25</sup> But although this is no doubt a worthwhile question, it is important to emphasize that it is not the function of Aristotle's treatment of the dilemma to answer it, and I shall not pursue it further.<sup>26</sup> Still, I hope it is clear that a literal reading of the objection, "something must underlie", on which it points to what is (for Aristotle) a genuine difficulty, is available to the predicative reading.

*Why Not from 'What Is'?* I take the objection that "it already is" at face value: if something is to become musical, for example, it must not already be musical. Now, the *per se* version of horn (a) is certainly impossible: what is musical cannot, in virtue of being musical, come-to-be musical. But this natural reading seems vulnerable to the kind of worry I raised about the existential interpreter's use of the *ex nihilo, nihil fit* principle. It seems to rule out the *per accidens* reading of horn (a) as well: what is musical cannot come-to-be musical, even if its first being musical is not construed as that in virtue of which it becomes musical.<sup>27</sup> Until this worry is dealt with, the easy explanation of what is problematic about the *per se* version of horn (a) remains open to question. I postpone it until the discussion of a series of connected concerns about accommodating the *per accidens* version of horn (a) below.

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<sup>25</sup> One might doubt that that from which a new substance is generated *per se* is a genuine subject on the basis of *De Generatione et Corruptione* 317b25–28, for example.

<sup>26</sup> The starting point would have to be the arguments of *Physics* 1.6 in favor of a subject as principle, which seem to undercut the claim of opposites to being principles. The first consideration (189a22–27), that opposites are not the kind of thing out of which something can be made, is far from clear. Is the issue one of the right ontological category? Or rather one of causal efficacy or explanatory power: how can a mere *lack* of the form cause or explain the coming-to-be of something with that form? The latter kind of issue meshes more easily in my view with Eleatic concerns. The second consideration (189a27–32) is that principles must be subjects and thus prior, which plausibly leads to the idea that principles must be substances and might ultimately motivate the idea that substances come-to-be from substances of a sort, namely, potential substances. See Kelsey (2008) for an excellent discussion of the role of these arguments.

<sup>27</sup> In fact, the existential interpretation is more straightforward in just this respect: coming-to-be from something existent precisely because it is something existent, seems impossible or at least objectionable, whereas coming-to-be from something existent because it is, say, a seed, seems unobjectionable (cf. Charlton 1970, *ad loc.*). A common perspective, according to which the existential interpretation falters on the rejection of horn (a), the predicative interpretation on the rejection of horn (b), has things backwards.

## 5 *Per Accidens* Coming-to-be

From ‘What Is Not’ *Per Accidens*. After presenting the *per se* vs. *per accidens* distinction, Aristotle turns to explaining that coming-to-be *per accidens* from ‘what is not’ is possible. I leave one key phrase untranslated for now:

We too ourselves say that nothing comes-to-be without qualification (ἀπλῶς) out of what is not, but that in a way [something] does come-to-be out of what is not, namely, according to what coincides [i.e., *per accidens*] (for out of the privation, that which is in itself what is not, οὐκ ἐνυπάρχοντος, something comes-to-be. But this causes astonishment and it is thought impossible that something come-to-be in this way out of what is not). (191b13–17)<sup>28</sup>

Aristotle is clearly drawing on the idea from *Physics* 1.7 that two principles can be one-in-number: ‘what is not’ can be a source of change, but only by being one-in-number with the *per se* source of change, that is, only “according to what coincides” (191b15). In the next sentence, he repeats this claim using the concept of privation: something can come-to-be from the privation *per accidens*. So much is uncontroversial.

But the next clause is often taken to show that positing a persistent subject is central to resolving the dilemma. Much hangs on how the participial phrase left untranslated above is to be understood. It consists of a negation (οὐκ), followed by a neuter singular present participle, in the genitive, of ἐνυπάρχειν, which means ‘to be a constituent’ or ‘to be present in’; unlike the latter phrase, ἐνυπάρχειν does not require a complement. Now, the participial phrase is usually taken to describe the *privation* as not being present in something. Thus one might translate the first half of the parenthetical remark (191b15f.) as follows: “for out of the privation, that which is in itself what is not, although it [what is not] is not a constituent, something comes-to-be”.<sup>29</sup> In particular, the phrase is usually taken to mean that the privation is not present in the *product*.<sup>30</sup>

**28** ἡμεῖς δὲ καὶ αὐτοὶ φαμεν γίνεσθαι μὲν μηθὲν [14] ἀπλῶς ἐκ μὴ ὄντος, πῶς μέντοι γίνεσθαι ἐκ μὴ ὄντος, οἷον [15] κατὰ συμβεβηκός (ἐκ γὰρ τῆς στέρησεως, ὃ ἐστὶ καθ’ αὐτὸ μὴ [16] ὄν, οὐκ ἐνυπάρχοντος, γίνεται τι· θαυμάζεται δὲ τοῦτο καὶ [17] ἀδύνατον οὕτω δοκεῖ γίνεσθαι τι ἐκ μὴ ὄντος). (191b13–17, adding a comma after ἐνυπάρχοντος (16) and striking the comma after γίνεσθαι τι (17))

**29** So Ross (1936, *ad loc.*); Charlton (1970, *ad loc.*); Lewis (1991, 238); Loux (1992, 299); and Horstschäfer (1998, 410). The translation above is based on what I take to be the most plausible construal of the grammar of the sentence in a way that supports this kind of interpretation: (a) οὐκ ἐνυπάρχοντος is a genitive absolute, whose implied subject (e.g. τούτου) is supplied and picks up ὃ ἐστὶ καθ’ αὐτὸ μὴ ὄν. That phrase is a relative clause modifying στέρησεως. Note that the neuter ὃ is not ‘irregular’ as Ross suggests, but is consistent with Aristotle’s use of a generalizing relative clause – in this case specifying what privation in general is (cf. Kühner/Gerth 1904, § 361;

Drawing on the idea that the partial phrase describes the privation as not persistent, scholars then quite reasonably cite this feature to account for other thinkers' rejection of coming-to-be from 'what is not', which Aristotle describes next: "But this causes astonishment and it is thought impossible that something come-to-be in this way out of what is not" (191b16f.).<sup>31</sup> In other words, they reject coming-to-be from 'what is not' because it involves coming-to-be from something that does not persist into the product. Subsequently, scholars sometimes take Aristotle to be indicating a contrast here between the *per se* source of change, as something that must persist, and a *per accidens* source of change, as something that (seemingly in conflict with the idea that things somehow come-to-be from it) need not persist.<sup>32</sup>

A problem with this interpretation is that it attributes to Aristotle's predecessors an expectation that what something comes-to-be from must persist into that thing. But the idea that persistence is in this way a condition of coming-to-be seems utterly foreign to their thinking.<sup>33</sup> And there is, as far as I can see, no other good reason for bringing up the idea that the privation does not persist, since it has not figured in the dilemma thus far.

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Smyth 1956, § 2502; thanks to Oliver Primavesi on this point). Construal (a) is preferable, I think, to (b) treating ἐνυπάρχοντος as a conjunct participle to στερήσεως because doing so introduces a second, and unexplained gender mismatch into the sentence. A third construal (c) supplies an antecedent (e.g. τούτου) for the relative clause, ὃ ἐστι καθ' αὐτὸ μὴ ὄν, one which also serves as the grammatical subject of ἐνυπάρχοντος in a genitive absolute construction, thus "for out of the privation, though that which is in itself what is not is not a constituent, something comes-to-be". Against this construal, ὃ ἐστι καθ' αὐτὸ μὴ ὄν appears to be a definitional or generalizing relative clause modifying στερήσεως; second, given that ὃ ἐστι καθ' αὐτὸ μὴ ὄν can only pick out the privation, (c) is a roundabout way of expressing the same content as (a).

**30** Horstschäfer (1998, 410–412) takes the clause to say that privation is not present in the starting point.

**31** One might take οὐκ ἐνυπάρχοντος to be picked up by "this" (τούτο), i.e. what "causes astonishment" and/or by "in this way" (οὕτω), treated (as in my translation) as a specific way of coming-to-be from what is not. Ross' comma between γίνεσθαι τι and ἐκ μὴ ὄντος suggests instead that "in this way" just signifies "out of what is not", thus: "it is thought impossible that something come-to-be in this way, namely, out of what is not".

**32** To be sure, I believe that the assumption that the participial phrase concerns the non-persistence of the privation, even if this is also what is said to cause astonishment and/or seem impossible about coming-to-be from what is not, warrants neither the further idea that a need for a persistent *per se* source of change motivates the rejection of horn (b) nor the claim that it reflects Aristotle's own thinking on what it is to be the *per se* source of change.

**33** There is, for example, no evidence of a 'sheer replacement' worry among Aristotle's predecessors. Of course, many pre-Socratic thinkers do believe that some material persists through change, but this is part and parcel of *limiting* the scope of coming-to-be.

As I construe it, the participial phrase describes the product, not the privation. In particular, it describes the product as not already present in what it comes-to-be from. Thus, I translate: “For out of the privation, that which is in itself what is not, something comes-to-be, although it [this something] was not a constituent”.<sup>34</sup> The line of thought is as follows: Aristotle has claimed that something can come-to-be from the relevant privation, albeit *per accidens*. This implies that before the change, that which is to be generated into something fully lacks the relevant form; privation is after all, as Aristotle claims, “in itself what is not”.<sup>35</sup> So what comes-to-be is not already present.

In *Physics* 1.4, Anaxagoras is said to hold that things cannot come-to-be from ‘what is not’, but must come-to-be from ‘what is’, a thesis he equates, according to Aristotle, with the idea that that the (apparent) coming-to-be of some material is really the extraction of some quantity of that material that was already present in (ἐνυπάρχον) the starting mass.<sup>36</sup> At 191b15f., Aristotle is thus emphasizing his

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**34** I construe οὐκ ἐνυπάρχοντος as a genitive absolute, with an implicit subject (e.g. τινος) looking forward to the product, τι, which is said at line 16 to come-to-be. As in reading (a) mentioned above (note 29), the lack of an explicit subject is allowed because a subject is easily supplied. However, (i) it is unusual to have a genitive absolute with the same subject as the finite verb in the relevant clause, (ii) especially when the subject is explicitly given in that clause. We might rather expect a conjunct participle, thus: ἐκ γὰρ τῆς στερήσεως, ὃ ἔστι καθ’ αὐτὸ μὴ ὄν, γίγνεται τι μὴ ἐνυπάρχον. Regarding (i), genitive absolutes with the same subject as the finite verb can occur in order to set apart and contrast the content of the genitive absolute and that of the clause containing the finite verb, thus emphasizing the kind of relationship between them typically signified by a genitive absolute (Kühner/Gerth 1904, § 494). Such considerations are certainly germane, on my reading. For it is said that something comes-to-be *despite* not already being a constituent of what it comes-to-be from. The unusual genitive absolute can be further explained by the fact that it mitigates what would, with a conjunct participle, appear as a somewhat jarring combination of (concurrently) not being present in and coming-to-be. In any case, my contention is that while grammatical and textual considerations allow for my reading, its decisive advantage is philosophical. For a comparable construction see *Republic* 547b7–c1. I have benefited from David Ebrey’s unpublished work on the term ἐνυπάρχειν. I thank Cordula Bachmann, Pieter Sjoerd Hasper, George Karamanolis, Mirjam Kotwick, and especially Christopher Noble for discussion of this sentence.

**35** As far as I can tell, nothing of significance hangs of whether the product is said to be not already present in the privation (‘what is not’), or in the starting point, construed either loosely as ‘containing’ the privation, or more strictly as the underlying nature, merely one-in-number with the privation. Perhaps this is why Aristotle does not add a complement to ἐνυπάρχοντος.

**36** Aristotle claims that Anaximander, Anaxagoras and Empedocles “separate out other things from the mixture” (187a23). Further, Anaxagoras, noticing that opposites come-to-be from one another, and supposing that nothing can come-to-be from ‘what is not’, supposed that “things come-to-be out of things that are, which are constituents (ἐνυπαρχόντων), and from things imperceptible to us due to the smallness of their size” (187a36–187b1).

acceptance of precisely what Anaxagoras rejects in the idea of coming-to-be from 'what is not': coming-to-be without already having been present in the starting point. Furthermore, I take Aristotle to be indicating this feature of coming-to-be at 191b16f.: "But *this* causes astonishment and it is thought impossible that something come-to-be out of what is not *in this way*" (my emphasis). The addition of "in this way" is germane because an Anaxagorean might countenance coming-to-be from 'what is not' if the latter is understood in a looser sense. For example, water might come-to-be from something of which water is a constituent, though not the main constituent; for such a thing might be called 'what is not water' according to the linguistic practices Aristotle attributes to Anaxagoras.<sup>37</sup>

*From 'What Is' Per Accidens.* As I mentioned, it is straightforward why the *per se* version of horn (a) should be thought problematic. But the *per accidens* version of horn (a) seems to be equally problematic, in precisely the same way. Moreover, *Physics* 1.7 requires that the underlying nature always coincide with the privation. This explains, as we saw, why the *per accidens* version of horn (b) is always satisfied, but appears to rule out the satisfaction of horn (a), even the *per accidens* version. Finally, Aristotle, it seems, need not accommodate horn (a), since the original dilemma is disjunctive. How and why does he do so?

In dealing with these problems, commentators have often sought to deny that 'what is' and 'what is not' form an exclusive dichotomy. Existential interpreters sometimes hold that in the resolution of the dilemma, while 'what is' refers to what exists, 'what is not' refers to determinate not being, thanks to the kind of shift in meaning between existential and predicative being considered and rejected earlier.<sup>38</sup> More recently, Kelsey has proposed that 'what is' and 'what is

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<sup>37</sup> Aristotle claims that for Anaxagoras, things "are called according to the chief constituent" (187b23f.). There is, however, no explicit application of this practice to phrases of the form 'what is not F' in the way I suggest.

<sup>38</sup> Thus something could come-to-be *per accidens* from both 'what is' (i.e. exists) and from 'what is not' (understood predicatively). Some commentators go further and take matter (i.e. the underlying nature) to be the relevant instance of 'what is'. This leads to the following inconsistent triad:

- (i) What underlies (i.e. matter) is 'what is'.
- (ii) Coming-to-be is from matter *per se* (e.g. *Physics* 1.7, 190b25–27).
- (iii) Coming-to-be is from 'what is' only *per accidens*.

Ross (1936) and Lewis (1991) deny (ii), holding the textually unsupported view that the *per se* source of coming-to-be is the combination of the matter and the privation. Loux attempts to hold to all three, by ascribing to Aristotle an admittedly drastic equivocation in his use of κατὰ συμβεβηκός (*per accidens*) (1992, 310). According to Loux, 'what is not' qualifies as a *per accidens* source of change because some determinate privation of which it is an essential generalization ("the privation is in itself what is not", 191b15f.) coincides with matter. A relation of *merely coinciding* underwrites the *per accidens* claim (incidentally, it is not clear that 'what does not exist'

not', though completed with the same predicate ('substance'), are necessarily co-instantiated throughout the dilemma.<sup>39</sup> I will argue that it is unnecessary to deny exclusivity. We will see, however, that Aristotle's accommodation of horn (a) represents a departure from the intuitive terms of the original problem.

I begin by analyzing the text in which Aristotle illustrates the possibility of coming-to-be *per accidens* from 'what is', especially the strange example he uses. He writes:

Likewise, [we say,] neither does what is come to be, nor does [anything] come-to-be out of what is, except according to what coincides. But in that way [i.e., according to what coincides] even this [what is] comes-to-be, in the same way as, for example, if out of animal animal should to come-to-be, i.e. [καὶ], out of some kind of animal some kind of animal, for example, if dog should come-to-be out of horse.<sup>40</sup> For the dog would come-to-be not only out of some particular animal, but also out of animal, however, not *qua* animal; for that belongs already. If, on the other hand, something is to come-to-be animal not according to what coincides, it will not be out of animal, and if something [is to come-to-be] what is [not according to what coincides], [it will] not [be] out of what is, nor out of what is not. (191b17–25)<sup>41</sup>

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is a generalization of determinate privation). On the other hand, 'what is' qualifies as a *per accidens* source of change even though, according to Loux, matter is *essentially* 'what is' (i.e. existent). In this case the *per accidens* claim is underwritten not by a relation of coinciding, but by a "misplaced generality" (1992, 314).

**39** Kelsey (2006, 340–342) has in mind, for example, that a horse is 'what is substance' by being a horse, and 'what is not substance' by not being a dog. I reject this reading because the resources needed to distinguish 'what is substance' and 'what is not substance', though one-in-number, as two distinct candidates for the source of generation, i.e. as two distinct explanatory factors – in effect, to distinguish the two horns – are sufficient to distinguish a *per se* source of change from each of these in the same manner, i.e. to resolve the 'formal challenge'. Note in particular that Aristotle does not limit or even specify the scope of application of the *per se* vs. *per accidens* distinction; he begins, as we have seen, with the examples of the doctor and (unfortunately) of transformations between opposites. Also, the alleged co-instantiation of 'what is' and 'what is not' is nowhere explicit. See Kelsey (2006, 336f.).

**40** I prefer to take the καὶ at line 20 (in brackets) epexegetically, so that the second description, 'out of some kind of animal some kind of animal' can then justify the applicability of, by providing an innocuous reading of, the more general description, 'animal from animal'; in any case, the essential point is that although Aristotle is here illustrating *per accidens* coming-to-be, this does not imply that all three descriptions of the example at 191b19–21 (the third being "if dog should come-to-be out of horse") should be read with a supplied qualifier, 'according to what coincides'.

**41** ὡσαύτως δὲ [18] οὐδ' ἐξ ὄντος οὐδὲ τὸ ὄν γίνεσθαι, πλὴν κατὰ συμβεβηκός. οὕτω [19] δὲ καὶ τοῦτο γίνεσθαι, τὸν αὐτὸν τρόπον οἷον εἰ ἐκ ζῴου ζῶον [20] γίγνεται καὶ ἐκ τινός ζῴου τι ζῶον, οἷον εἰ κύων [21] ἐξ ἵππου γίγνεται. γίγνεται μὲν γὰρ ἂν οὐ μόνον ἐκ τινός [22] ζῴου ὁ κύων, ἀλλὰ καὶ ἐκ ζῴου, ἀλλ' οὐχ ἢ ζῶον· ὑπάρχει [23] γὰρ ἤδη τοῦτο· εἰ δέ τι μέλλει γίνεσθαι ζῶον μὴ [24] κατὰ συμβεβηκός, οὐκ ἐκ ζῴου ἔσται, καὶ εἴ τι ὄν, οὐκ ἐξ [25] ὄντος· οὐδ' ἐκ μὴ ὄντος. (191b17–25, with a comma added after ζῶον at line 20; see previous note.)



I take the example to be the bizarre case of a horse being transformed into a dog, as the manuscripts indicate.<sup>42</sup> Aristotle's use of the optative case at 190b19–21 suggests that he is well aware of the oddity of the example, reinforcing the idea that his resolution in *Physics* 1.8 is limited to introducing the formal tools required to block the Parmenidean argument. In fact, I think that the example is yet more bizarre in that it depicts the horse as becoming a dog *per se*; for Aristotle's example should exhibit a *per se* source of coming-to-be a dog in order to accommodate the shared commitment to *per se* change.<sup>43</sup>

Aristotle insists that, in this example, a certain *per se* claim is false, though the corresponding *per accidens* claim is true. But the text is grammatically ambiguous as to precisely what *per se* claim this is. When he writes “however, not *qua* animal” (191b22), what *per se* claim is he ruling out? He is often taken to deny:

(c) ‘what is canine’ comes-to-be from ‘what is animal’, insofar as the latter is animal.

This reading is more natural to the extent that it involves two putative sources of change, as the discussion so far might lead us to expect. But I think the correct reading, following Ross (1936), must be:

(d) ‘what is canine’, insofar as *it* is animal, comes-to-be from ‘what is animal’.

First, only reading (d) can make sense of Aristotle's reason for denying the *per se* claim: “for that belongs already” (191b22f.). “That” (τούτο) must refer back to “animal” in “not however *qua* animal” (191b22). It would be redundant to point out that what something comes-to-be *from* belongs already. But it is not redundant to point out that a feature of the product belongs already. Second, there appears to be a contrast between this case and one in which there *is* a *per se* source of coming-to-be ‘what is animal’: “If, on the other hand (δέ), something is to come-to-be animal not according to what coincides, it will not be out of animal” (191b23f.). Thus, in the case at issue at 191b18–23, the product should be characterized as ‘what is animal’. Third, the justification for the claim at issue (“however, not *qua* animal”, 191b22) is that “that [animal] belongs already”, which un-

<sup>42</sup> Ross (1936) emends 191b20f. so that it reads, “dog out of dog or horse out of horse” and takes the text to describe one animal giving birth to another. This shifts the focus from the material cause to the efficient cause. Furthermore, the role of the objection ‘it already is’ becomes, at the very least, unclear.

<sup>43</sup> I take it that in the accommodation of horn (b), since Aristotle employs his general notion of privation as a *per accidens* source of change, the reader is to supply and assume a corresponding ‘underlying nature’ as a *per se* source of change, one-in-number with the privation.

mistakably picks up the objection to horn (a) raised in the original statement of the dilemma: “it is already” (190b30). Therefore, we should expect the *per se* claim at issue to contain or imply a *per se* instance of horn (a), one in which the same term (animal) is used to characterize the product and its putative source, namely:

- (e) what is animal comes-to-be from what is animal *per se*.

But while (e) is clearly contained in claim (d), its relation to claim (c) is less clear.

One might of course argue that since a dog is essentially animal, the problematic claim (e) (animal from animal *per se*) does in fact follow from reading (c) (dog from animal *per se*); the idea is that *per se* claims can be generalized to the essential genera of the kinds they involve.<sup>44</sup> In fact, by the same generalizing inference, my claim that the horse is here imagined as the *per se* source of becoming a dog might be rejected on the grounds that this would imply that ‘what is animal’ becomes ‘what is animal’ *per se*.<sup>45</sup>

However, it is not obvious that Aristotle must accept the generalizing inference. Even if being an animal is *in part* explanatory (as that out of which) of the dog’s coming-to-be, such an ‘explanation’ leaves out a crucial feature of the (putative) *per se* source of change, such that Aristotle might still reasonably withhold the status of *per se* source of change from ‘what is animal’. Also, the generalizing inference is not obviously plausible in some cases (cf. Loux 1992, 298), among them, that with which Aristotle introduces the *per se* vs. *per accidens* distinction. The doctor cures *per se*. But the doctor is essentially, say, knowledgeable. Does it follow that what is knowledgeable cures *per se*?<sup>46</sup>

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<sup>44</sup> In this vein, Kelsey (2006, 336f.) suggests that in rejecting horn (a) Aristotle relies on the principle that the *per se* source and product of change can have no essential genera in common, not even the genus, substance.

<sup>45</sup> This line of reasoning leads to the conclusion that no particular substance can become any other particular substance *per se*, suggesting that potential substance is needed to explain generation (Kelsey 2006, 356 n. 42). For this reason, according to Kelsey, the illustration does not specify a *per se* source of coming-to-be. In one respect, the situation is like that of a proposal considered earlier, which attempts to apply the *per se* vs. *per accidens* distinction without the one-in-number vs. one-in-being distinction. We are told that there are unproblematic *per accidens* readings of the two horns, but given no indication of how there could be a *per se* source of change in such cases. A reader limited to the resources of *Physics* 1 – without the notion of potential being – will be puzzled about the extent to which Aristotle has defended the possibility of *per se* change.

<sup>46</sup> The issue may come down to the relation between the two definition-based senses of καθ’ αὐτὸ (73a34–b1) and the ‘causal’ sense (73b10–16) in *Posterior Analytics* 1.4.

Moreover, even if Aristotle does accept the generalizing inference, his use of an illustration which violates it in this context can be explained. He has not yet in *Physics* 1 introduced potential being into his ontology, and so he must choose either a substance, a non-substance, or a privation to serve as the *per se* source of coming-to-be a substance (dog) in his example. The first alternative – one substance from another substance *per se* – is the least problematic of the three. But this requires that the *per se* source and product of change share at least the essential genus *substance*. The perceived tension between thinking of the horse as the *per se* source of the dog, and thinking of ‘what is animal’ as the merely *per accidens* source of the dog (and of ‘what is animal’) can then be seen as the inevitable result of attempting to make do without bringing in potential being.

The above analysis can straightforwardly resolve the concerns cited earlier about horn (a), and can do so without denying the exclusivity of the dichotomy ‘what is’ vs. ‘what is not’. First, note that in the accommodation of horn (a), the completing predicate (animal) is not the form of the change (canine). Although the particular example is fraught with difficulty, there is no general problem about the starting point and product of change sharing some common predicate G that is not the form of the change. A change in which such a predicate is shared will not be an instance of ‘what is G’ coming-to-be from ‘what is G’ *per se*, but can be described (somewhat oddly) as an instance of ‘what is G’ coming-to-be from ‘what is G’ *per accidens*. Second, when in *Physics* 1.7, as well as in the accommodation of horn (b), Aristotle implies that the *per accidens* version of horn (b) is always satisfied, he is clearly thinking in terms of the form and privation of the change. This is consistent with, and not immediately threatened by, the fact that horn (a) might be satisfied when the completing predicate is not the form of the change. Third, once the completing predicate is specified, a particular change will satisfy exactly one of the two horns (*per accidens*). Aristotle’s accommodation of both horns does not imply that the same change will satisfy both horns when completed with the same predicate.

Still, the accommodation of horn (a) involves a significant departure from the intuitive framework of the dilemma. To see this, consider the way I filled in the crucial move from (0) to (1-*per se*):

- (0) Everything is ‘what is’ or ‘what is not’.
- (PSC) If ‘what is’ comes-to-be, then it comes to be from something *per se*.
- (1-*per se*) If ‘what is’ comes-to-be, then it comes-to-be either from ‘what is’ or from ‘what is not’ *per se*. [(0), (PSC)]

I suggested that we construe Aristotle’s commitment to the explicability of change as a commitment to (PSC), a principle that is falsified by Aristotle’s accommodation of horn (a) (‘what is animal’ does not come-to-be *per se* from any-

thing; cf. 191b23f.). The background assumption was that ‘what is’ will pick out the form of the change. One possible reaction is to give up this assumption, and to revise our understanding of the relevant principles and arguments accordingly. For example, one might replace (PSC) with the weaker principle that if ‘what is’ comes-to-be, then there is a *per se* source of this coming-to-be (but not necessarily of coming-to-be ‘what is’). And there is no real threat of deriving (1-*per se*) from (0) and this weaker principle alone.<sup>47</sup>

These avenues may complicate matters, but should not thereby be deemed implausible. However, I am inclined to give less weight to Aristotle’s accommodation of horn (a), and see it rather as a formal exercise, showing that even the schema of horn (a) – which to a reader of book 1 thus far will seem inviolable – could be interpreted in such a way as to yield a true sentence. My reasons for this are two. First, Aristotle’s accommodation of horn (a) depends on construing, say, the transformation of a horse into a dog as an instance of ‘what is animal’ coming-to-be.<sup>48</sup> This runs counter to the exceedingly intuitive idea that what ‘comes-to-be’ in a change is a new element in the product, as well as to the more precise Aristotelian formulation of this idea that what comes-to-be is essentially characterized by the form of the change. Second, this intuitive framework has yielded insights into the structure of the dilemma and of Aristotle’s response, whose merits I hope to have made clear.

*The Limits of Aristotle’s Response.* Earlier I argued that in blocking the Parmenidean argument, Aristotle refrains from making any claims about the kinds of entities involved in change and what they do – for example, about whether there is a persistent subject – beyond the minimal claims involved in the thesis that there is, in a way, a third principle in addition to the two opposites. Aristotle’s allowance of *per accidens* coming-to-be from ‘what is’ and ‘what is not’ is minimal in just the same way. Note in particular that the illustration of horn (a) (from ‘what is’) depicts one substance coming-to-be from another. There is no persistent *substance*, of which the form characterizing the product, canine, is predicated. Nor is there mention of any other persistent subject (e.g. flesh). There is thus no indication in this example that a *per se* source of change must persist.

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<sup>47</sup> In line with the interpretation I have spelled out, the threat resurfaces with the added assumption that the completing predicate is the form of the change. Thus, even on this alternative interpretation, Aristotle could still hold that, unless the formal challenge is addressed, the threat of (1-*per se*) remains for each change, (at least) when the completing predicate is the form of that change.

<sup>48</sup> For just this reason, the revision to (PSC) mentioned just above would not alter the substance of Aristotle’s commitment to the explicability of change; for the revision would rest entirely on a terminological difference.

In the illustration of horn (b) (from 'what is not'), Aristotle is content to simply point out that on his account, things do come-to-be *per accidens* from 'what is not', namely, from the privation, one of the technical concepts of his own theory. He does not attempt to show specifically how the underlying nature avoids the shortcomings of 'what is not' in the role of the *per se* source of change.<sup>49</sup> Moreover, whatever his commitments about persistence in 1.7, his illustration of how to accommodate the *per accidens* version of horn (b) does not, as I read the text, indicate that he intends to assert such a commitment, or explain how he would do so. And so his illustration of coming-to-be from 'what is not' may tell against, rather than support, reading a demand for a persistent logical subject into the dilemma. Aristotle's illustration shows only that we can accommodate the *per accidens* reading of (b) without endorsing the problematic *per se* reading. This is consistent with my general claim that Aristotle's primary interest is to show how a defender of *per se* change can avoid the (*per se*) horns of the dilemma – to address the formal challenge.<sup>50</sup>

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<sup>49</sup> This distinction between avoiding a problematic claim and explaining how an alternative proposal runs clear of the shortcomings of that claim is difficult to make out with respect to horn (a). Any genuine alternative to horn (a) that involves a *per se* source of coming-to-be 'what is', will thereby not be subject to the objection that 'it already is'.

<sup>50</sup> Several key ideas of this essay were formulated in discussion with David Ebrey and Sean Kelsey. I am especially grateful also to Jessica Gelber, Pieter Sjoerd Hasper, and Christopher Noble among the many colleagues who have helped improve this essay.

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