The Varieties of Necessity in Aristotle's *Physics* II.9

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0.1. Introduction

Aristotle's discussions of natural teleology distinguish two ways of being necessary. One of them stands in opposition to being for the sake of something while the other one does not. Aristotle's distinction in these contexts is not like the one you may be familiar with between physical, metaphysical, and logical necessity. He seems to have two other notions of necessity in mind. I think the notions are philosophically interesting, and I want to understand them better.

Now, my work on this starts from an exegetical question. The second kind of necessity is a matter of being *needed* for the realization of an end, and when something is necessary in this way, Aristotle says that it is necessary 'hypothetically' (ἐξ ὑποθέσεως). My talk today stems partly from an inquiry into the question what the phrase 'hypothetically necessary' means. Most scholars seem to agree with John Cooper that when Aristotle calls something 'hypothetically necessary', he means precisely that the thing is necessary for the achievement of an end. But nobody has explained *how* Aristotle could use the phrase to express this meaning. In an effort to understand this, I made an examination of how Aristotle uses the word ὑπόθεσις throughout his corpus, and, more specifically, how he uses the phrase ἐξ ὑποθέσεως. And I have concluded that—in the absence of an explicit stipulation or some other special move, which Aristotle does not make—the phrase *cannot* be used to express the meaning 'necessary for an end'. We can discuss this later if you like. But my claim is that when Aristotle calls something hypothetically necessary, he means no more than that it is necessary on an assumption, where q is necessary on the assumption that p iff it is not necessary that q, and it is necessary that if p then q.

There is only one passage where it's difficult to understand the phrase in the way I suggest, and it is tempting to think it needs a richer meaning, like *necessary for the achievement of an end*. This is the first half of *Physics* II.9. **One of my aims** here is to go through this passage in

some detail, and argue that we can in fact make sense of it while reading 'necessary ἐξ ὑποθέ-σεως' as meaning simply 'necessary on an assumption'.

My second aim is to explain the sort of necessity that Aristotle *distinguishes* from being needed, the sort that stands in opposition to teleology. Most commentators identify this sort of necessity with what I will call 'Straight necessity', where (speaking roughly) something is 'Straight necessary' if there is no way things could be such that it would not obtain.[1] (I'm thinking that physical, metaphysical, and logical necessity are subspecies of straight necessity.) But I will argue against this identification. Aristotle seems to be talking about something else, which I will call 'Aimless necessity', and I will suggest that it is a matter of being efficiently caused by an aimless power.

My hope is that these claims will help us better understand Aristotle's teleology. But these claims are also part of a (tentative) narrative I am exploring concerning the early stages of philosophical thought about necessity. Although the language of necessity was in widespread use before Aristotle, he seems to be the first person to attempt a systematic philosophical account of it. The story I'm exploring is that the notions of necessity Aristotle inherited were interestingly different from the notion he passed down. I cannot defend this story here, but the idea is this: Aristotle inherited a range of notions on which being necessary centrally involves *being caused* in certain ways; and he crystallized out of these something closer to a purely modal notion, where something's being necessary says little or nothing about what sorts of causes it has or lacks.[2] What he crystallized was what I am calling 'Straight Necessity'. In my view, Aristotle took Straight Necessity to be the central case, and he tried to show how to un-

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1.   (Ross & Aristotle, 1924) i.299, commenting on *Metaph.* Δ.5, identifies the third kind of necessity in Δ.5 ('that which cannot be otherwise') with the second kind of necessity in *PA* 1.1, 642ª32 (dingbat-necessity), as well as *PA* 639ᵇ24 (unqualified necessity applying to eternal things), *Metaph.* E 1026ᵇ28 (things that are always and necessarily thus), *An. Post.* 94ᵇ37 (in accordance with nature and impulse). In his comments on *Phys.* II.9, he identifies unqualified necessity with 'the necessity of a result which must follow from certain conditions' (Ross & Aristotle, 1936, p. 531).

2.   (Leunissen, 2010) and (Kupreeva, 2011) speak of a difference between modal and causal senses of necessity. However, their understanding of the distinction is not the same as mine.

derstand preexisting notions of necessity in terms of it. This should be clear from T3, which we will get to in a few minutes.

But let us begin with a problem that seems to arise from the way Aristotle sets up the passage from II 9 on which I plan to focus.

0.2. An opposition between necessity and teleology

Physics II 8 begins as follows:

T1   We must explain, first, why nature is among the causes that are for the sake of something, and then about the necessary and how it figures in natural affairs. (*Phys.* II 8, 198^{b}10-12)

The pairing of topics in this sentence raises a question, namely: how are the two topics supposed to be connected? Does the question whether or not a given thing is necessary have any bearing on the question whether or not it is for the sake of something? Aristotle seems to think so. A few lines down he sets himself the challenge of answering the following question:

T2   What is to prevent nature from acting, not for the sake of something or because it is better, but in the way that Zeus makes rain, not in order that the crops grow but from necessity? (*Phys.* II 8, 198^{b}16–19)

This question, formulated as it is with a 'not' and a 'but', signals an opposition between being necessary and being for the sake of something.

It is not immediately clear what this opposition amounts to. Since Aristotle recognizes several meanings of the word 'necessity' (ἀνάγκη), there are several sorts of opposition he might in principle have in mind. The first thing to consider is whether he sees any incompatibility between teleology and the kind of necessity that he regards as the primary kind. He describes this kind of necessity in terms of the impossibility of being otherwise, and he ascribes it, among other things, to scientific theorems and to eternal beings.[3] Now, with respect to this kind of necessity, we can find examples in Aristotle's writings that exhibit every possible com-

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3.   References for the primary notion of necessity.

bination of necessity or contingency, on the one hand, with aims or aimlessness, on the other. There are things that are contingent and not for the sake of anything, for example whatever occurs by luck or by chance.[4] There are things that are contingent and for the sake of something, for example deliberate actions.[5] There are things that are necessary and not for the sake of anything, for example mathematical objects and the truth of logical principles.[6] Finally, there are things that Aristotle believes to be both necessary and for the sake of something, for example the rotation and the existence of the outermost heavenly sphere.[7]

Aristotle's acknowledgment of these four kinds of case indicates that his primary notion of necessity is independent of teleology, neither opposed to it nor aligned with it. We will have to look for a different kind of necessity that is opposed to teleology.

Before proceeding, let us pause for a moment on the subject of 'not… but…' sentences. (My argument in Section 4.3 will turn on another key sentence of this form.) This sort of sentence is only felicitous when the 'not'-limb and the 'but'-limb are seen as alternatives to each other. However, the two limbs need not be strictly incompatible. For example, when Hamlet says, 'I shall in all my best obey you, madam,' he somewhat pointedly does not address the king but the queen. Of course, it is possible to address the king *and* the queen. Parallel to this, just because it is possible to be both necessary and for the sake of something, it does not automatically follow that it is wrong to say 'not necessary but for the sake of something'. Still, there is something to be explained here. The king and the queen do not strictly exclude each other as addressees, but it is easy to see that they are alternatives. With being necessary and being for the sake of something, on the other hand, we have two properties for which (1) there is no obvious range of alternatives to which both belong, and (2) the presence or absence of one implies nothing about the presence or absence of the other. When 'necessity' sig-

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4.   REF
5.   As Aristotle explains, REF, a sensible person deliberates exclusively about things that are neither necessary nor impossible.
6.   REF
7.   REF

nifies simply the impossibility of being otherwise, the phrase 'not for the sake of something but necessary' sounds like 'not blue but heavy'.

0.3. Varieties of necessity

So to start, let's look at **T3** and **T4** to get an overview of some notions of necessity which Aristotle distinguishes. Text 3 comes from *Metaphysics* Δ 5. Aristotle here describes three senses of the word 'necessary'.

T3 We call *necessary*:

[NEEDED:] that without which, as a contributory cause, something cannot live […] or without which something good cannot exist or come to be, or something bad cannot be thrown off or taken away […];

[COMPULSORY:] the compulsory and compulsion: this is what impedes and hinders in opposition to impulse and choice […];

[STRAIGHT NECESSARY:] and if something cannot be otherwise, we say that it is necessarily so.

(Aristotle goes on in this passage to say:)

All the others are in some way called necessary in accordance with this last necessity. (*Metaph.* Δ 5, 1015ᵃ20–36)

So we have here three ways of using the word 'necessary'. I can say that something is necessary in order to convey that it is needed: 'Why did you hire *him*?' — 'It was necessary in order to move up in the Leiter rankings'. I can say that something was necessary in order to convey that it was forced upon me—at least, I could have in 1677, and the corresponding thing could be done in ancient Greek.[8] 'Why did you launch the missiles?' — 'I couldn't help it, the villain forced (or necessitated(?), in Greek ἠνάγκασε) my hand onto the panel.' And finally, there is what I'm calling straight necessity, which Aristotle himself seems to regard as the central case, and which also seems rather close to the more purely modal notions opera-

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8.   From the OED, *s.v.* 'necessary': 'A.II.6.b Enforced by another; compulsory.   1655 Fuller Ch. Hist. ix. vi. §51 In the following words, he taketh away all necessary Oaths (and leaveth none but voluntary).   1677 W. Hughes Man of Sin ii. vii. 115 Such Penance, were it voluntary, deserveth greatly to be admired at; but when 'tis necessary, and upon a Prince, is worthy of utmost detestation.'

tive in philosophical discussions today. Something is straight-necessarily *so* if it cannot be otherwise than *so*.

As I mentioned earlier, Aristotle seems to be the first person who explicitly characterizes necessity in the third way. I hypothesize that what he did was to take over a range of existing notions, crystallize this one out of them, and then claim primacy for this notion, while proposing a way in which other existing usages could be derived from, or at least related to, it.

There is another passage in the *Parts of Animals* which seems to bring in one more notion of necessity. This is text 4 on the handout:

T4   Necessity signifies *either* that
[NEEDED:] if that for the sake of which will be, it is necessary to have these things; *or* that
[☙:] things are, and are naturally disposed (*pephuke*), thus. (PA I 1, 642ᵃ32 ff.)

The first notion looks very close to what I labeled 'NEEDED' in text 3. The second notion is described very sparingly, and for the moment I am just labeling it with a dingbat (☙). Sir David Ross, in his commentary on the *Metaphysics*, identifies ☙-necessity with the notion I have labeled 'straight necessity' in Text 3. And many scholars (including John Cooper) follow him in this. I suggest, instead, that this is a distinct notion of necessity, and that this notion of necessity is the one that Aristotle treats as standing in opposition to teleology.

To get there, let us now turn to the text I want to focus on, in Physics II 9. This is Text 5 on the second page of the handout. Let us read through the text together, and then I'll zero in on the parts of it that are important for me.

0.4. Reading *Physics* II 9

The general structure of the passage is as follows. In part [A] Aristotle asks a question, and in part [F] he answers the question. In between, he describes a view that was current in his time about the sort of necessity that applies to natural things (I'm calling this the Wall

Theory, in part [B]). Then he rejects this view (in [C] and [D]), and (in [E]) he adopts the view that natural things are subject to necessity in a different sense, namely in the sense of being *needed*. I have a special interest today in the Wall Theory (in part [B]) and Aristotle's rejection of it (in part [C]). For the sort of necessity in the Wall Theory is the sort that Aristotle contrasts with teleology, and that is what I want us to reach an understanding of today. But I will also say a word about the question and answer that bracket it.

In part A, Aristotle opens with a question:

T5 [A] As for necessity, does it belong hypothetically or without qualification?

In part B, he gives us an analogy designed to illustrate how his contemporaries think that necessity figures in natural generation.

> **[B]** For nowadays people think of necessity as being in generation as if someone were to suppose that a wall had come into being from necessity because heavy things are naturally disposed (*pephuke*) to move downward and light things upward, because of which the stones and foundations went down, the earth went above them because of its lightness, and the wood went uppermost, since it is lightest.

This analogy is a highly simplified, and therefore highly implausible, story about the process by which a wall comes into being. The story includes only two causally relevant properties (weight and lightness), and no interactions between things. But I think it does (in its stripped-down way) exhibit the essential features, as Aristotle saw them, of the explanations that his contemporaries were giving of natural phenomena.

In part C of the passage, Aristotle contradicts the story about walls.

> **[C]** Whereas, although the wall has not come into being without these things, it has not come into being because of them except as because of matter, but for the sake of concealing certain things and preserving them.

Aristotle contradicts the wall theory by making two assertions. First: the wall *has not come into being because of* the stones, earth, and wood *except as because of matter*. Second: the wall *has come into being for the sake of* concealing and preserving things. He connects these

two statements by joining them in a sentence of the form 'Not *p* but rather *q*.' So again we've got an opposition that we'll need eventually to explain.

Part D generalizes the claims of part C.

[**D**] Similarly in all cases in which things are for the sake of something: though not without things having a necessary nature, not because of them except as because of matter, but for the sake of something.

Aristotle generalizes from the wall to 'all cases in which things are for the sake of something', and from stones, earth and wood to 'things having a necessary nature'. In all these cases, he says, the thing in question *does not come into being because of* the things having a necessary nature *except as because of matter*, and *does come into being for the sake of* something. This completes Aristotle's rejection of the way in which his contemporaries think about natural necessity.

In E, Aristotle presents his own positive view about the way in which necessity is involved in nature.

[**E**] For example, why is the axe like this? In order that this, and for the sake of that. But it is impossible for that for the sake of which to come about unless the axe is made of iron. Hence it is necessary for it to be made of iron if there will be an axe and its work.

Here is the rough idea. Suppose that something exists, or happens, or has some feature, for the sake of an end T. And suppose that T cannot be attained unless X is in place, where X is some sort of means to, or condition for, T's attainment. Then X is necessary. 'Necessary' here means something like 'needed'.

In this passage Aristotle proposes to understand being necessary, in the sense of being needed, in terms of being conditionally straight necessary: when X is needed, there is an end T such that, straight necessarily, if T will be attained then X is in place.[9]

Finally, Aristotle returns to his opening question and gives an answer to it.

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9.   Although this seems to be what Aristotle says, it is clearly too strong. Perhaps something closer to the truth is: X is needed when there is an end T such that necessarily, if T *can reliably be expected* to be attained, then X is in place.

[F] What is necessary is necessary hypothetically, and not as an end. For the necessary is in the matter, while that for the sake of which is in the account.

I will talk about this sentence in a moment.

0.4.1. *Hypothetical Necessity*

When we read this passage, it is natural to expect the two alternatives in Aristotle's opening question to match up with the two alternatives he endorses and rejects in the main body of the passage. So, it is tempting to think that, in the opening question, 'hypothetically necessary' means something like 'needed for the achievement of an end', and 'necessary without qualification' means something like 'resulting from, or necessitated by, the natural motions of material stuffs'. Pretty much all commentators have thought this. For example, Ross expresses this view in his commentary on the *Physics*, and, as I mentioned, John Cooper's account of hypothetical necessity follows this pattern as well.

But a survey of Aristotle's use of the phrases 'hypothetically' and 'without qualification' throughout his corpus does not suggest any way that these phrases could be used to mean what they would have to mean in order for that to be Aristotle's question. Rather, it seems like Aristotle is simply asking whether things are conditionally necessary or unconditionally necessary. This is most easily understood as a question about Straight necessity. It does not line up with the question in the middle of the passage about Aimless necessity vs. necessity as Need.

So what are [A] and [F] doing there, bookending [B]–[E]? Well, I suggest that the controversy in those middle paragraphs is orthogonal to the opening question, but that Aristotle thinks the outcome of the controversy determines how we should go about answering the opening question. Here's the idea. Suppose we know that q necessarily follows from p. Then if we also know that p is necessary (full stop), we can infer that q is necessary (full stop). If we know that p is contingent, well, nothing follows about the necessity or contingency of q, but Aristotle sometimes talks as if he can infer that q is contingent (*GC* 2.11, 337^{b}25 ff.). Maybe

there's some extra, tacit premise in these contexts, something to the effect that if *anything* is going to make q necessary, it's p.

Now, we could think of the Wall Theorist in [B] and the Need-based theorist in [E] as offering up different conditional necessities. The Wall Theorist thinks that the wall necessarily results from a certain antecedent configuration of stone, earth and wood. The Need-based Theorist thinks, let's suppose, that the wall is a necessary condition for the protection of her property. Then we ask each theorist whether the wall comes into being necessarily (full stop). The Wall Theorist will say Yes if she thinks that the antecedent configuration was necessary (full stop). Otherwise she'll probably say No. On the other hand, the Need-based Theorist will say yes if she thinks it is necessary (full stop) that her property is protected. Otherwise, she'll probably say No. So, the approach to answering the 'merely conditionally, or unconditionally?' question is different depending on what sort of conditional necessity we think things are subject to, and what candidates we think there are for making things unconditionally necessary.

That is my proposal for how to tie the passage as a whole together. When Aristotle reaches part [F], he has told us that necessity in nature is need-based necessity. So, he can answer the 'hypothetical or unqualified?' question by answering the question whether or not the ends for which things are needed are themselves necessarily achieved. They are not (that is what 'not as an end' conveys, [a]13-14); so the things needed for their achievement are not; they are only hypothetically necessary. On this proposal, the text turns out to be somewhat poorly signposted, but to represent a coherent line of thought.

0.4.2. *Aimless Necessity*

Now let's look at the notion of necessity that is at work in the Wall Theory. See [B]. What is the sense in which this story about the wall gives us reason to say that the wall has come into being *from necessity*?

The story shares some phrasing with an earlier passage at the beginning of chapter 8,

where Aristotle described people as saying, 'since the hot is naturally disposed (*pephuke*) thus, and the cold thus, and so on for each such thing, therefore this is or comes about from necessity'. In the present passage, he has someone say that a wall has come into being from necessity 'because heavy things are naturally disposed (*pephuke*) to move downward and light things upward'. In both passages, necessity is associated with how certain things '*pephuke*'—which is, very roughly, how they are naturally disposed to behave or act or be affected. And looking back at **T4**, we see something similar: the remark that 'necessity' can signify 'that things are, and are naturally disposed, thus.' There are other passages too in which the word 'necessary' appears in conjunction with talk about how things *pephuke*, how they are naturally disposed, to act. I take the conjunction of these words as a signal that Aristotle has this particular notion of necessity in mind, namely the notion that I'm after, the one that he contrasts with teleology.

The wall-theorist refers to the properties of heaviness and lightness. She claims that the bearers of these properties are naturally disposed to do certain things: namely, to move downward and to move upward. She describes a situation in which, because some things are naturally disposed to move downward and upward, they do in fact move downward and upward, and the result of this is that they come to be arranged as in a wall.

Aristotle's Wall-theorist does not explicitly claim that, given their natural dispositions, it is *impossible* for the things not to move downward and upward, or that it is *impossible* for them not to become arranged as in a wall. He just says that they move into the arrangement *because* they are naturally disposed to move as they are. This is striking. Aristotle is illustrating a way of thinking about something he calls 'necessity', but his description of it focuses squarely on the *causal* or *explanatory* features of situations, not on their *modal* features.

And Aristotle's focus stays on the causal or explanatory features in his rejection of the wall theory. He says, to repeat, that the wall

> has not come into being *because of* these things except *as because of* matter,
> but *for the sake of* concealing certain things and preserving them.

Saying that something does or does not occur *because of* some things is a way of address-

ing the question why the thing occurs. Saying that something occurs *for the sake of* something is also a way of addressing the question why the thing occurs. So, both parts of Aristotle's response to the wall theory consist in claims about the causal or explanatory features of a situation, as distinct from its purely modal features.

My proposal, then, is that the anti-teleological variety of necessity, which is in play in this passage, consists primarily in having or lacking certain sorts of *causes*, and not in having a certain *modal status.* In this respect anti-teleological necessity differs from straight necessity: being straight necessary does not consist in having or lacking any particular sort of cause.[10] I suggest that one of Aristotle's accomplishments was to extract the more purely modal notion of straight necessity out of the fundamentally causal notions he inherited from his predecessors.

0.4.3. *Final, material, and efficient causes*

I have just proposed that being necessary in the anti-teleogical sense means having or lacking certain sorts of causes. *Which* sorts of causes?

Let us look yet again at the sentence in which Aristotle contradicts the Wall theory. The wall '(1) has not come into being because of these things except as because of matter, but (2) for the sake of concealing certain things and preserving them.'

Aristotle is commonly taken here to be denying that matter plays a genuine explanatory role. But what he is literally saying is simply this: the stone, earth and wood are material causes of the wall's coming into being and *not any other of the four kinds of cause.* (**T6** shows an example of this same 'as' locution used to refer to kinds of cause.) He takes the Wall theorist to regard them as another kind of cause as well.

And indeed, the Wall Theorist pretty clearly takes stone, earth and wood to be function-

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10.   Indirectly, straight necessity does have consequences for a thing's causes. For example, if an object exists necessarily then it exists always, so it has not been produced and hence has no efficient cause. (A straight necessary *motion*, on the other hand, can have an efficient cause.) Also, anything made of (generable) matter is perishable, so if something exists necessarily it is not made of (generable) matter.

ing as *efficient* causes as well as material causes. She describes the wall's coming into being as resulting from the natural dispositions these materials have in so far as they are heavy or light. So we could say she thinks that the materials, or their heaviness and lightness, *bring about* the wall's coming into being. And that's what an efficient cause is. So in a nutshell: the Wall Theorist says that stone, earth and wood are both material causes *and* efficient causes of the wall's coming into being; Aristotle says, they are not efficient causes but *only* material causes of the wall's coming into being.

Let me illustrate the difference between Aristotle's view and the view of his opponent. First, I hold a figure of Saint Anthony in my hand and move it about. Here, then, is Saint Anthony being moved by me. There is a motion here, and there is a way in which the motion depends on Anthony; the motion occurs, in part, because Anthony exists. When a change depends on Anthony in *that* way, he is functioning as a material cause: he is a cause of the change 'as its subject' or 'as matter'. There's another way in which the motion depends on *me*; it occurs, in part, because I exist. When a change depends on me in *that* way, I am functioning as an efficient cause: I am a cause 'as that whence the motion'. (*Undergoing* a motion is a material way of being responsible for it; *bringing about* a motion is an efficient way of being responsible for it.)

Next, I hop around. This time the material and efficient cause coincide: I am both the thing that undergoes the motion, and and the one who brings about the motion.

The Wall Theorist thinks of the wall's coming into being as like my hopping: the things that undergo it are also the things that bring it about. Aristotle thinks of it instead as like Anthony's motion (where the material and efficient causes are distinct).

In addition to denying that stone & co. are efficient causes of the wall's coming into being, Aristotle affirms that the wall comes into being 'for the sake of concealing certain things and preserving them.' The denial and the affirmation are joined in a 'not… but…' construction. So Aristotle is treating the claim he *affirms* about the change's *final* cause (what the change happens for the sake of) as an *alternative* to the claim he *denies* about the change's *efficient* causes (what brings the change about).

But having an efficient cause and having a final cause are not, in general, alternatives to each other. I would not say, for example, 'The statue was not brought into being by Michelangelo but for the sake of beauty.' But it does seem as if Aristotle takes *having stone, earth and wood* as efficient causes as an alternative to *having concealment and protection* as final causes.

This makes sense *if* Aristotle accepts it as obvious that whenever stone, earth, and wood bring about a change in virtue of their weight and lightness, the change does not occur for the sake of concealment and protection. If he accepts this it is presumably as an instance of a more general rule. Here is a guess at the general rule. We start with a broad division among efficient causes. Some, like skills, crafts, desires, policies, and (in Aristotle's view) natures, have a goal-directed character: they characteristically bring things about for the sake of a goal. Others do not have this character: they do not characteristically bring things about for the sake of a goal. Perhaps weight, lightness, heat and cold are examples. Let's call the first group 'goal-directed powers', and the second group 'aimless powers'. (I am using the word 'power' more loosely than Aristotle uses the word δύναμις.) The general rule is: if a change occurs for the sake of something, then it is efficiently caused by a goal-directed power.

The thought is that, in the realm of changes, having a final cause implies being efficiently caused by a goal-directed power, while being aimless necessary implies being efficiently caused by an aimless power. Being efficiently caused by a goal-directed power is an alternative to being efficiently caused by an aimless power; so, by extension, having a final cause is an alternative to being efficiently caused by an aimless power.

Compare, 'This wasn't deposited there by the wind—it was left here to warn us!' Or, in the other direction, 'I did not bump into you in order to offend you, but because I was pushed.'

(If I am right that Aristotle accepts this rule, it could have applications in thinking further about Aristotle's teleology, or at least the teleology of changes. It might provide an approach to the question how far Aristotle's teleology is compatible with 'the modern scientific world-view' [is there such a thing?].)

0.4.4. *Aimless necessity again*

Let us review some essential features of the Wall Story.

(i)   The efficient causes of the change coincide with the material causes of the change
      (In other words, the process is undergone by the very things that bring it about)

(ii) The efficient causes of the change are aimless powers (heaviness, lightness)

(iii) The change does not occur for the sake of what its product will do (and maybe not for
      the sake of anything at all)

Let's try out the following suggestion, then, about what is conveyed by saying that the change occurs from necessity: namely, that the change has the second feature. So, it is at least a sufficient condition for a change's being necessary in this sense that the change be efficiently caused by aimless powers. Let us call necessity in this sense, 'Aimless Necessity'.

Perhaps we should add that being Aimless-necessary is a matter of being efficiently caused by *basic*, or *simple*, or *low-level* aimless powers. Heaviness and lightness, and heat and cold, in the context of ancient science, were regarded as relatively primitive, basic properties. There are more complex, high-level aimless dispositions. For example, there's a friend of mine who has this kind of quirk or tic, such that whenever he hears the words 'blue moon' he starts singing the song 'Blue Moon'. I don't know whether or not Aristotle would say that, when this happens, he sings the song 'from (aimless) necessity'.

I'd like to lay out some merits of the view that Aristotle takes what I call Aimless Necessity as a distinct sense of necessity, and that he identifies being aimless necessary with being efficiently caused by aimless powers.

Thinking of aimless necessity in this way makes sense of a good number of passages. In the biological writings, especially the *Parts of Animals*, there are a number of things that Aristotle says come about from necessity, where he seems to envisage an explanation broadly in the style of the Wall Theory. In all these cases, it seems to make sense to think that what he means by 'from necessity' is that the things are brought about by aimless powers. Some examples are listed on the bottom of page 4 of the handout:

Blood decomposes into serum by necessity. Human heads are hairier than other animals' heads from necessity, because they're so moist. Eyelashes grow from necessity, because veins end there and a sort of moisture seeps out. Deer horns fall off from necessity, because, unlike some other animals' horns, they are not hollow, so they are heavy, which makes them fall off. In certain animals that have extra earthy material, this material flows to their head from necessity; and from that point, the material can be made use of to make horns or tusks or extra big sharp teeth. Also, certain frightened animals discharge their bladders from necessity. (This, again, is something nature can make use of, for example in the case of squids. They've got ink; when they are frightened they discharge this ink, which distracts the predator and the squid has a chance of getting away.)

Another merit of the proposal is that if we think of aimless necessity in this way, it makes good sense why it would both stand in opposition to, and also be combinable with, having an aim. So it works out nicely comparable to the case of 'not addressing the king but the queen'. They are alternatives, but they don't strictly exclude each other. They are alternatives because (1) being efficiently caused by an aimless power is an alternative to being efficiently caused by a goal-directed power, (2) being aimless necessary implies being efficiently caused by an aimless power, and (3) having an aim (if you're a change) implies being efficiently caused by a goal-directed power. They don't strictly exclude each other because a change can have more than one efficient cause. An interesting case of this, for Aristotle, is where a change has a *proximate* efficient cause that is used as an instrument by a more *remote* efficient cause.

So, for example, let's say that fire has an aimless power to heat things when it comes into contact with them (and when they are not already as hot as fire). If some fire comes by chance into contact with a stone, the stone will heat up, without heating up for the sake of anything. But suppose I put a fire under a pan. Now I am using the fire as an instrument, and if I do this with the purpose of frying eggs, then the pan heats up for the sake of frying eggs. The pan heats up from aimless necessity ('that's just what fire does', we might say) but also for the sake of something.

Aristotle seems to describe situations of just this kind. Two examples are Texts 7 and 8 on the handout.

T7   Nature uses both heat and cold; they have powers from necessity so as to act in this way and that, but nevertheless, in things that are coming into being, it results that the one cools and the other heats for the sake of something. (*GA* II 6, 743ᵃ36)

Here heat and cold are said to have certain powers from necessity, which is contrasted ('but nevertheless') with their cooling and heating for the sake of something. Their cooling and heating for the sake of something seems to be tied to the fact that they are used by nature. It looks like Aristotle has a case in mind very much like the story I told.

T8   These are causes as movers and tools, and as matter. […] Saying that the causes are from necessity is like thinking that water drains out from people with dropsy because of the knife alone, and not on account of being healthy, which is that for the sake of which the knife cuts. (*GA* V.8, 789ᵇ7–15.)

The phrase 'causes as movers and tools' is a hendiadys. The things are causes *as tools used to impart motion.* And they are also causes as matter. So here we have a sort of refinement or elaboration on the picture we got in Physics II 9. There Aristotle said that heavy and light things are causes as matter and in no other way. Now he allows them to be efficient causes as well, but not *ultimate* efficient causes. They act as efficient causes under the instrumental control of goal-directed powers.

These are two benefits of thinking of aimless necessity in the way I suggest.

There remains one last important question. Why would the notion of aimless necessity, as I have proposed to understand it, be called 'necessity' (ἀνάγκη)? Does it hang together in some way with the other notions of necessity—with need, compulsion, and straight necessity?

We could ask this question already about the other three kinds of necessity on their own, and **T9** shows Aristotle's attempt to answer it by paraphrasing compulsion and need in terms of straight necessity. We could follow his lead and offer the following account of aimless necessity: *X* results from aimless necessity iff there is a configuration of aimless powers in place such that straight necessarily, if the configuration is in place then *X* is brought about by the aimless powers.

Three equivalences are offered on the handout. None of them is true, but they could probably be patched up (we can discuss if you like). Even if they were true, though, would they *explain* why the notions count as varieties of a single thing, or explain why all the notions are expressed by the same word? I am inclined to say No. There are all sorts of notions that can be analyzed employing straight necessary conditionals, but which cannot (under ordinary circumstances) be expressed by the word 'necessity' or ἀνάγκη alone. There must be some other unifying factor which makes it understandable why these notions can all be expressed by the single same word.

One place we might look to is the range of practical situations where we say 'I had no choice' or 'I couldn't help it'. It seems as if cases of need and cases of compulsion could both prompt this sort of statement. 'I had no choice: it was the only way to launch the expedition,' or 'I had no choice in the matter: a gale blew my ship to Sicily.' Perhaps some sort of generalization of that (so as to cover natural events as well as practical ones) could account for the notions of necessity as need and necessity as compulsion.

It isn't immediately clear how well this sort of story would work for aimless necessity. I think of the old joke where the scorpion says, 'I can't help it, it's my nature.' Maybe a transferal of that sort of thought from scorpions over to rock and water and fire and so forth could account for this usage? We could also think about the role of necessity in Plato's *Timaeus,* where the notion of necessity seems very close to that of aimless necessity, and where the necessary coincides with what the divine craftsman is given to work with; so this is the stuff that the divine craftsman has no choice about.

This line of questioning could lead into a whole other story, but it is time to wrap up.

Why Does Aristotle Oppose Necessity to Teleology?

Jacob Rosen

Part One

T1   We must explain, first, why nature is among the causes that are for the sake of something, and then about the necessary and how it figures in natural affairs. (*Phys*. II 8, 198ᵇ10-12)

T2   What is to prevent nature from acting, not for the sake of something [...] but from necessity? (*Phys*. II 8, 298ᵇ16–19)

Are the two topics related? Does something's being necessary (or not) have any bearing on its being for the sake of something (or not)? It doesn't seem so:

	Not for the sake of anything	*For the sake of something*
Contingent	(i) Chance occurrences	(ii) Deliberate actions
Necessary	(iii) Existence of mathematical objects; Truth of logical principles	(iv) Existence of the sphere of fixed stars; Rotation of same sphere

(References: (i) *Physics* II 4–6; (ii) *Nicomachean Ethics* III 3; (iv) *De Caelo* II 3, *Metaphysics* Λ 7)

But not so fast: remember that Aristotle acknowledges more than one sense of 'necessary'.

T3   We call *necessary*:

[NEEDED:] that without which, as a contributory cause, something cannot live [...] or without which something good cannot exist or come to be, or something bad cannot be thrown off or taken away [...];

[COMPELLED:] the compulsory and compulsion: this is what impedes and hinders in opposition to impulse and choice [...];

[STRAIGHT NECESSARY:] and if something cannot be otherwise, we say that it is necessarily so.

All the others are in some way called necessary in accordance with this last necessity. (*Metaph*. Δ 5, 1015ᵃ20–36)

T4   Necessity signifies either that

[NEEDED:] if that for the sake of which will be, it is necessary to have these things; or that

[☙:] things are, and are naturally disposed (*pephuke*), thus. (PA I 1, 642ᵃ32 ff.)

Proposal: ☙-necessity can be contrasted with being for the sake of something.

Part Two

The text:

T5 **[A] Opening Question**

As for necessity, does it belong hypothetically or without qualification?

[B] Opponent's View of Natural Necessity: The Wall Theory

For nowadays people think of necessity as being in generation as if someone were to suppose that a wall had come into being from necessity because heavy things are naturally disposed (*pephuke*) to move downward and light things upward, because of which the stones and foundations went down, the earth went above them because of its lightness, and the wood went uppermost, since it is lightest.

[C] Aristotle's Denial of the Wall Theory

Whereas, although the wall has not come into being without these things, it has not come into being because of them except as because of matter, but rather for the sake of concealing certain things and preserving them.

[D] Aristotle Generalizes His Denial of the Wall Theory

Similarly in all cases in which things are for the sake of something: though not without things having a necessary nature, not because of them except as because of matter, but for the sake of something.

[E] Aristotle's View of Natural Necessity: Necessity As Need

For example, why is the axe like this? In order that this, and for the sake of that. But it is impossible for that for the sake of which to come about unless the axe is made of iron. Hence it is necessary for it to be made of iron if there will be an axe and its work.

[F] Answer to the Opening Question

What is necessary is necessary hypothetically, and not as an end. For the necessary is in the matter, while that for the sake of which is in the account. (*Phys.* II 9, 199ᵇ34–200ᵃ15)

Part Three

The opening question has two alternatives: Hypothetical necessity; Unqualified necessity.

Parts [B]–[E] have two alternatives: Wall Theory-style necessity; Necessity as Need.

A tempting and widely-held reading:

- The alternatives in the opening question correspond to the alternatives that Aristotle accepts and rejects in parts [B]–[E].

- Hypothetical necessity = Necessity as Need. When Aristotle says 'hypothetically necessary', he means: necessary as a *conditio sine qua non* for the achievement of an end.

- Unqualified necessity = Wall Theory-style necessity. When Aristotle says, 'necessary without qualification' in this passage, he means: resulting necessarily from antecedent material conditions (or something along those lines).

My proposed reading:

- The pair of alternatives in the opening question is orthogonal to the pair of alternatives that Aristotle accepts and rejects in parts [B]–[E].

- The passage involves three types of necessity:

  (1) STRAIGHT NECESSITY (Ar.'s question: does this apply conditionally or unconditionally?)

  (2) AIMLESS NECESSITY: what the wall-theorist appeals to in [B]

  (3) NECESSITY AS NEED: what Aristotle describes in [E]

- On my reading, the passage discusses two different questions about necessity, and the answer to one does not settle the answer to the other. However, the answer to the one affects *how we can go about deciding* the other.

  - [AIMLESS:] X is necessitated by antecedent material conditions, so X is unconditionally necessary if the antecedent material conditions are unconditionally necessary.

  - [NEED:] X is necessary for the achievement of an end, so X is unconditionally necessary if the end's achievement is unconditionally necessary.

  - Aristotle endorses the NEED view, and then, in [F], he says that things are merely conditionally necessary, on the grounds that ends are merely contingently achieved.

Part Four

In what sense of 'necessity' does the wall in [B] come into being from necessity?

The story and Aristotle's denial of it both focus on *explanatory* (rather than purely modal) features of the situation.

Wall Theorist: The things '*pephuke*' to move up and down

that's ↓ why

The things move up and down

that's ↓ why

The things end up configured as a wall

Aristotle: The wall comes into being **because of** the things **only as because of matter**;

The wall comes into being **for the sake of** concealment and protection.

Only as because of matter means: they are material causes and not any other kind of cause

T6   Since causes are spoken of in many ways, there turn out to be many causes of the same thing […] not in the same way, but one **as matter**, another **as source of motion**. (*Physics* II 3, 195ᵃ4–8)

Some Central Features of the Wall Theory

(i)   The efficient causes of the change coincide with the material causes of the change

(ii)   The efficient causes of the change are aimless powers (heaviness, lightness)

(iii)   The change does not occur for the sake of what its product will do

I Propose That In the Wall Theory 'Necessity' Means This: feature (ii) is expressed by 'from necessity'; feature (iii) is taken to follow from it.

Aimless Necessity (proposed account): Something is Aimless-necessary iff it is efficiently caused by aimless powers.

Question: should we say, '… of *basic/simple/low-level* aimless powers'?

I Propose That Aristotle Assumes: if a change happens for the sake of something, then it is efficiently caused by a goal-directed power.

Merits of the proposed definition, and a question:

⊕   Makes sense of many passages

- Things attributed to 'necessity' in *Parts of Animals*: blood decomposes into serum; human heads are the hairiest; eyelashes grow; deer horns fall off; earthy material flows to the head; frightened animals discharge their bladders; etc. (*PA* 651ᵃ17; 658ᵇ3; 658ᵇ21; 663ᵇ13; 663ᵇ32; 679ᵃ24)

⊕   Explains why Aimless necessity would be opposed to, but also combinable with, aims

- Being Aimless-necessary means being brought about by an aimless power.

- If a change happens for the sake of something, it is brought about by a goal-directed power.

- One power can be controlled and *used as an instrument* by another. When a goal-directed power *uses* an aimless power to bring about a change, then the change happens both from Aimless necessity and for the sake of a goal. (Example: you use a fire to heat a pan.)

T7   Nature uses both heat and cold; they have powers from necessity so as to act in this way and that, but nevertheless, in things that are coming into being, it results that the one cools and the other heats for the sake of something. (*GA* II 6, 743ª36)

T8   These are causes as movers and tools, and as matter. […] Saying that the causes are from necessity is like thinking that water drains out from people with dropsy because of the knife alone, and not on account of being healthy, which is that for the sake of which the knife cuts. (*GA* V.8, 789ᵇ7–15.)

?   Why is this called 'necessity'? And is it related to Straight necessity?

The question could also be raised for the other kinds of necessity.

T9   A thing is said to do or suffer what is necessary in the sense of compulsory, only when it cannot act according to its impulse because of the compelling force,—which implies that necessity is that because of which a thing cannot be otherwise; and similarly as regards the conditions of life and of good; for when in the one case good, in the other life and being, are not possible without certain conditions, these are necessary. (*Metaph.* Δ 5, 1015ª36–ᵇ6, trans. Ross)

Aristotle seems to say:

(*i*)   I am **compelled** to do X iff I do X while a force is applied to me such that **straight necessarily,** if the force is applied then I do X. (Or?: …then I do not do what I want.)

(*ii*)   I **need** to have X iff I have an important end T such that **straight necessarily,** if I achieve T then I have X (*sc.* as a contributing cause of the achievement of T).

I could follow his lead and say:

(*iii*)   X results from **aimless necessity** when there is a configuration of aimless powers in place such that **straight necessarily**, if the configuration is in place then *X* is brought about by the aimless powers.

But all three equivalences (*a*) are false, (*b*) don't explain the usage of 'necessity'.

Perhaps the unity of the usages of 'necessity' appears in practical contexts: 'I had no choice'.