Iβ3: The "substantive" aporiai and the quarrel of the disciplines

The "substantive" aporiai B#5-15 pose a series of questions about the ἀρχαί: they ask, not what particular objects are ἀρχαί, but what <u>kind</u> of things the ἀρχαί will be, and how they are causally related to the manifest things (so we will ask whether the ἀρχή is the ultimate material substratum, but not whether it is air as opposed to water). These questions are thereby also asking what causal path the present science should pursue in order to discover the ἀρχαί, that is, they are asking what discipline is wisdom. As we have seen, it is impossible to draw a clear line between "methodological" and "substantive" aporiai: K rewrites the "substantive" aporia #5, whether there are substances beyond the sensibles, as asking whether ἡ ζητουμένη νῦν ἐπιστήμη is about sensibles or about Forms or mathematicals; K also rewrites the "substantive" aporia #6, whether the ἀρχαί of things are their material constituents or their genera, as asking whether ἡ ζητουμένη ἐπιστήμη is about the material constituents of things or about universals.[1] Still, aporiai #5-15 play a different role than aporiai #1-4 in structuring the argument of the <u>Metaphysics</u>. Aporiai #2-4 were resolved in <u>Metaphysics</u> Γ, which gave an outline account of the ἀρχαί of demonstration, and announced the program of the study of the causes of being and its <u>per se</u> attributes; Γ left unresolved the questions of what <u>senses</u> of being (and unity and so on), and what <u>kind</u> of cause, will lead to the ἀρχαί, questions that we will resolve only when we have pursued all the different possibilities and seen which ones succeed. Thus aporiai #1-4 call forth the general argument of <u>Metaphysics</u> EZHΘIMNΛ, but are not the explicit subjects of individual arguments in those books, until aporia #1 is answered at the very end of Λ. By contrast, these books do directly address the more specific questions of aporiai #5-15. This does not mean that aporiai #5-15, turning away from the questions <u>about</u> wisdom in #1-4 and to the objects themselves, present the positive content of wisdom, the questions that the science itself will treat. On the contrary, EZHΘIMNΛ (except Λ6-10) are not giving a positive treatment of wisdom, but discussing the different causal paths that might lead to wisdom, examining which succeed and which fail; and aporiai #5-15 are designed to guide and motivate this inquiry.

Aporiai #5-15 are all about special and remote objects, the ἀρχαί; none of them are about being-in-general.[2] These aporiai are thus an embarrassment to commentators who think that Aristotelian metaphysics is essentially ontology. Jaeger saw these aporiai as a program for reconstructing Platonism, that is, for discovering a new kind of separate immaterial substances to replace the Platonic Forms. But while this is not too far from right, it is too crude to make sense of the details of the series of aporiai. For instance, it does not really make sense of the sixth aporia, which asks whether the ἀρχαί and στοιχεῖα of things are their genera or their material constituents; on Jaeger's view, Aristotle should simply have asked whether universals are separate immaterial substances, and left it at that. What Aristotle is trying to reconstruct here is not simply Platonism, but wisdom, that is, the project of inquiry περὶ ἀρχῶν: he is confronting, not simply the objections to the Platonic Forms, but the failure of a long series of projects of wisdom including Plato's, and he is asking anew what path might take us to the ἀρχαί.

Aristotle's first task is to motivate the new discipline of first philosophy by showing that the

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[1] see above Iβ2a; and recall from the notes in Iβ2a, that it is K, not B, which is said (notably by Jaeger) to be obsessed with the question about the ἀρχαί

[2] references above: on the question of a "reconstruction of Platonism," see Iα4; on the aporiai and the existing disciplines, see Iβ1. for aporiai that are explicitly not about ἀρχαί but about whether Forms or mathematicals are οὐσίαι or exist χωρίς or καθ᾽ αὑτά, see above Iβ2a; the function of these aporiai will be discussed in detail below

existing disciplines--physics, dialectic, and mathematics--do not succeed in reaching the ἀρχαί, and hence that a new discipline is necessary. He asks questions about the ἀρχαί that the physicists and dialecticians and mathematicians will answer in different ways, so that these questions are in effect asking which of the three disciplines is wisdom; and he raises difficulties against each of the possible answers to the questions, so that the difficulties, taken together, amount to an argument that none of the existing disciplines is wisdom. It is an ἴδιον of the true wisdom that it can answer the questions in such a way as to resolve the difficulties, and Aristotle will refer back to the aporiai, in later books of the <u>Metaphysics</u>, both to show that the difficulties cannot be resolved on his opponents' presuppositions, and to show how he himself can resolve them.

An overview of the structure of the main series of "substantive" aporiai, from #5 through #12, may help to bring out their connection with the three older disciplines. Aporia #5 asks whether there are only sensible substances, or, if there are others besides the sensibles, whether these are Forms or mathematicals or both, and it raises difficulties against all the possible answers. This is a question about substances rather than about ἀρχαί, but being a substance is a necessary condition for being an ἀρχή, so that dialectic can be wisdom only if the Forms are substances, and mathematics can be wisdom only if the mathematicals are substances; if neither Forms nor mathematicals are substances, and there are no other substances beyond the sensible things, then physics must be wisdom.³ Aporia #6 asks whether the ἀρχαί of a given thing are the kind of ἀρχαί that the physicist will give in giving an account of the οὐσία of the thing, namely its material constituents, or rather the kind of ἀρχαί that the dialectician will give in giving an account of the οὐσία of the thing, namely its genera: this amounts to asking whether the path to wisdom is through physics or through dialectic. For Aristotle's intended readers, the more live possibility is that it is through dialectic, and the connected series of aporiai #7-11 raise difficulties against the dialecticians' answer to #6, not by giving further arguments on behalf of the physicists' position, but by arguing that, if the dialecticians' arguments for the priority of the genera were sound, parallel arguments for the priority of other universals would lead to untenable conclusions; or by arguing that, at least in some cases, genera or other universals cannot exist separately and so cannot be ἀρχαί; or by arguing that, even if the "upward" arguments to the ἀρχαί succeeded, there would be no "downward way" by which the many things we began with could be derived from these ἀρχαί. Thus he argues in #7 that, if the dialecticians' arguments were sound, by parallel arguments more universal things would always be prior to less universal ones, but that in some cases these more universal things do not exist "beside" or separate from [παρά] their species, as they must in order to be ἀρχαί; in #9 that if these universal ἀρχαί were each numerically one as the Platonists claim, they could not simultaneously enter into the many different combinations necessary to yield the multiplicity of posterior things; in #10 that, if these ἀρχαί were incorruptibly eternal, they could not combine to yield corruptible as well as incorruptible things; and in #11 that if the most universal of all things, being and unity, existed separately and καθ᾽ αὑτά, no plurality could arise from them at all.⁴ Aporiai #7-11 thus amount to an argument against the Platonic thesis that dialectic gives knowledge of the ἀρχαί, or rather an outline of such an argument, to be filled in when Aristotle gives a thorough treatment of the aporiai. But there are also difficulties that result if we do <u>not</u> posit such an ἀρχή as a form of X existing prior to X, and aporia #8 presents the difficulties against <u>not</u> positing, as well as against positing, such an ἀρχή. (As we will see in Part II below,

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³so explicitly the K parallel, K1 1059a38-b14
⁴see discussion below for explication and defense of this account of these aporiai

Metaphysics Z gives a systematic treatment of aporiai #5-11, fleshing out their difficulties against the physicists and the dialecticians into a full argument that neither the physical nor the dialectical account of the οὐσία of a thing yields ἀρχαί prior to the thing, and also answering the difficulties against not positing these ἀρχαί; these aporiai will be crucial to the interpretation of Z.) Aporia #12 then asks whether mathematical solids and especially the things mathematically prior to them, mathematical boundaries and ultimately points and units, are ἀρχαί existing prior to the natural things: #12 thus takes up the third path from #5, asking whether mathematics leads to the ἀρχαί of things, and raising difficulties both for the claim that it does and for the claim that it does not.[5] We can thus say with Jaeger that aporia #5 sets the fundamental question of the "substantive" aporiai, and that "the succeeding problems arise out of this root like trunk, boughs, and branches" (Jaeger 1923 ET p.195); but the question is not simply, as Jaeger says, "whether the supersensible world is real" (ibid.), but whether physics, dialectic, or mathematics give the true ἀρχαί of things. The difficulties serve to awaken the reader to the insufficiency of the existing disciplines, and they give an outline for Aristotle's subsequent argument that the causal paths pursued by these disciplines do not reach the ἀρχαί, and thus that a new discipline and a new causal path are needed.

It is important for Aristotle to present himself as a neutral judge between the contending parties, the physicists and the Academic dialecticians or mathematicians, showing the difficulties in which both parties are involved. But of course Aristotle is more sympathetic, and expects his audience to be more sympathetic, to the goals of the Academics: the Academics are right to be looking for incorporeal ἀρχαί, but Platonic dialectic is inadequate for the task, and Pythagorizing mathematics is not a successful substitute. In several passages, recalling the Sophist's contrast between the "gods" and the "giants," Aristotle draws a broad contrast between the older and cruder approach of the physicists and the more modern and subtle approach of the dialecticians and mathematicians. Thus Metaphysics Λ1 says that "the moderns [οἱ νῦν] posit that the universals are more substances, for the genera are universal, and they say that these are ἀρχαί and substances, since they investigate λογικῶς; whereas the ancients [οἱ πάλαι] [posited as substances, or as ἀρχαί] particular things, like fire and earth, rather than what is common, body" (1069a26-30); the twelfth aporia of B says that "the majority, and the earlier [thinkers], thought that substance and being were body, and that the other things were affections of this, so that the ἀρχαί of bodies would be ἀρχαί of [all] beings; whereas the more recent, and those who have seemed to be wiser than these, thought that numbers [were substances]" (1002a8-11). The views of the "moderns" as cited in these passages are in fact wrong, but that does not mean that Aristotle's praise is purely ironic. The "ancients" were also wrong, and Plato was right to set his goals higher: the fact that he set higher goals allows us to criticize him by his own standards, and helps point us toward finding the unchanging ἀρχαί that Plato was unsuccessfully seeking.[6]

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[5]in fact #11 had already raised questions about the one as a mathematical ἀρχή as well as about the one as a dialectical ἀρχή; see below. for aporia #13, an appendix to #12, and for the very short aporiai #14 and #15, very important but detached from the main series, see below; #13 arises from an issue about mathematics and dialectic, #14 from a dilemma facing the physicists, #15 from a dilemma facing the dialecticians

[6]note on the texts on both sides of "the common body" or "what is common, body": try to centralize discussion of this issues. with this B passage compare K2 1060a24-5 where the χαριέστατοι posit a separate eternal οὐσία as ἀρχή. Aubenque complains that this is an un-Aristotelian appeal to authority, but of course Aristotle is saying that the χαριέστατοι have failed to live up to the standards they have set for themselves. this is part of a typically Aristotelian rhetorical strategy: tease out the goals of your audience-members (here Academics), show that they cannot achieve their own goals by their usual means, offer to show that you can achieve their goals better than they

   Aristotle's criticisms of the dialecticians and mathematicians, beginning in aporia #5, are thus "internal," as indeed they must be to appeal to those who are attracted to the Platonic project of wisdom, but who are willing to be critical of Plato's execution, and to listen to Aristotle's alternative. (In many cases Plato's theses will already have been disputed in the Academy, and Aristotle may use other Academics' arguments against Plato, but he will try to show that these other Academics' alternatives do no better than Plato's original position at satisfying the Platonic aspirations for wisdom.) In aporia #5, as often elsewhere, Aristotle criticizes Plato in terms deliberately taken from Plato's criticism of earlier claimants to wisdom. Aristotle begins by criticizing the path to wisdom through dialectic, that is, through positing the Forms:

> In what way we say that the Forms are causes and substances by themselves has been said in the first discussions of them [i.e. in <u>Metaphysics</u> A]; and although they involve difficulty in many places, what is most absurd is to say that there are natures beyond those which are within the heaven, but to say that these are the same as the sensibles, except that the former are eternal and the latter are corruptible. For they say that there is a man-himself and horse-itself and health-itself, and nothing else, doing something close to those who said that there were gods, but in human form: for neither did those people [the poets] make [the gods] anything other than eternal men, nor do these people [the Platonists] make the Forms anything other than eternal sensibles. (997b3-12, cited in Iα4 above)

As I noted in Iα4 above, Aristotle is here taking an argument which philosophers from Xenophanes to Plato had used against the poets, and turning it against Plato, trying to convince an audience sympathetic to Plato audience that they should reject Plato's account of eternal things for the same reasons that they rightly reject the poets' accounts. Beyond the particular arguments that the philosophers can bring against the poets' anthropomorphic descriptions of the gods, the poets' anthropomorphisms are evidence that the poets do not really have knowledge of divine things as they claim, but are merely projecting the familiar corruptible things onto the divine realm. Xenophanes and Plato conclude, not that there are no divine things or that we should give up on knowing them and describing them, but that the poets have failed to satisfy their own aspirations to a knowledge of divine things, and that we can satisfy their aspirations better than they themselves can. Plato is thus trying, laudably, to provide a wisdom that will be neither (like the "wisdom" of the physicists) a mere knowledge of sensible things, nor (like the "wisdom" of the poets) a description of fictitious eternal things imagined on the model of sensible things. But Aristotle argues that Plato has not succeeded in this aspiration, and thus that people who share the aspiration should reject Plato's account of the Forms for the same reasons that they reject the poets' accounts of the gods, and should seek to try to satisfy the Platonic aspiration to wisdom by some means other than dialectic. The point is, in part, that Plato fails to give any distinctive predicate, other than eternity and separation from the things here, that would bring out what is different and superior about the things there (thus Aristotle's complaint in EE I,8, discussed in Iα4 above, that those who describe the good-itself as an idea of the good have not brought out why it is better than good things here); it is also, in part, that he attributes to eternally unchanging things predicates that, when their implications are thought through, can apply only to changeable things, such as the predicate "horse" (something cannot be a horse,

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can. still, Aristotle does un-ironically think these goals are good ones. coordinate, and avoid duplication, with a note at the beginning of Iα4; and cf. appendix on K for the reply to Aubenque

according to a scientific definition, unless it has particular kinds of organs of locomotion and nutrition and reproduction, which an incorruptible and unchangeable substance cannot: even if it has something shaped like a hoof, this will not have the function of a hoof and so will not be a hoof). But Aristotle also has a more direct argument that "these people [do not make] the Forms anything other than eternal sensibles," namely that Plato <u>says</u> "that there is a man-himself and horse-itself and health-itself, and nothing else [ἄλλο δ᾽ οὐδέν]" (997b11-12 and b8-9 as cited above). Ross' translation, "they say that there is a man-himself and a horse-itself and health-itself, <u>with no further qualification</u>," seems to assume a construal on which ἄλλο οὐδέν is the direct object of φασιν, "they say nothing else." But the Platonists do say other things (for instance, they say that man-himself is incorruptible): the point is rather that they say that this incorruptible thing is <u>nothing other</u> than man, being just <u>man himself</u>; and, as Aristotle has argued in A9 (in the "first discussions" referred back to in the present passage, B#5 997b3-5), when we posit a one-over-many, the Form must be the same in species as its participants, or it will contribute nothing to them (so A9 990b34-991a8).

Of course, not all Forms would be conspecific with sensibles: notably, Forms of numbers and virtues would not. But it seems that the same reasons the Platonists have for positing any Forms would also, if they were valid, lead to positing Forms conspecific with sensibles.[7] If we want some discipline and some chain of reasoning leading to grasping eternally unchanging substances that will not lead to this consequence, it seems that we would do better with mathematics, taken as supporting the existence of intermediate mathematicals rather than of Forms. And presumably one reason that Speusippus posited only separate mathematicals and not separate Forms was precisely that the reasons for positing mathematicals would not also lead to positing such separate eternalized duplicates of the sensibles. But Aristotle, following his usual strategy, argues that Speusippus' alternative cannot achieve its goals, that the reasons for positing mathematicals will in fact have the same unwanted consequence as the reasons for positing Forms.

The sub-aporia on the mathematicals (997b12-998a19) is not structured simply as an argument against Plato or Speusippus or others who posited separate mathematicals, but as an argument on both sides. There are arguments which seem to show that the objects of the mathematical sciences cannot be simply the sensible things (997b34-998a6, also 997b32-4), but neither can they be the Forms, each unique in its kind, since the theorems refer to several objects of the same type, such as two squares or two threes added together. But if we try to satisfy these arguments by positing separate mathematicals, absurdities will follow, not directly from positing separate mathematical numbers or geometrical magnitudes, but from separate objects of other sciences which the same reasons would seem to demand (997b12-34);[8] and an appendix argues that if we try to avoid the dilemma by positing mathematicals which are neither sensibles nor separate from the sensibles but <u>in</u> the sensibles, the difficulties will be even worse (998a7-19). The main arguments that the objects of the mathematical sciences cannot be the sensibles are that the theorems of the sciences must hold perfectly true of their objects, but do not hold perfectly true of any sensible thing; and that since knowledge and its object are correlative and correlatives must be simultaneous, if the object of knowledge were perishable then the knowledge would perish with it. But these arguments are not peculiar to arithmetic and geometry. The Academics

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[7]perhaps note on arguments leading to forms of e.g. qualities instantiated in sensible things, which will not be conspecific with sensible substances, and Aristotle's argument in A9 that this cannot work either; I hope I have a discussion of this in talking about the M4-5 parallel in Iγ2d, d check and add cross-reference if so

[8]I am thus reversing Aristotle's order

will try to distinguish between mathematical sciences like geometry, and sense-dependent cognitive states like practical geometry or surveying [γεωδαισία], for which it would be absurd to posit separate objects; but the art of surveying too persists when any particular sensible object is destroyed (997b32-4). But even if the Academics can avoid this difficulty (e.g. by saying that if all sensible objects were removed, the surviving core of the art of surveying would just be theoretical geometry), they will agree that there are other mathematical disciplines beyond arithmetic and geometry: Plato in Republic VII adds astronomy and harmonics, and Aristotle here adds optics as well. Are there also intermediate objects of these sciences? It might be said (and may well have been said by some Academics) that mathematical astronomy does apply perfectly to things in the heavens, but whether or not Aristotle is right that "the motions and spirals of the heavens are not like those which astronomy discusses" (988a4-6),[9] he is certainly right that "points do not have the same nature as stars" (a6), whereas texts of deductive mathematical astronomy like Autolycus and Euclid do assume that the stars are points without magnitude. And indeed Plato in Republic VII explicitly accepts non-sensible objects of astronomy, of which the sensible heavens are merely an imperfectly drawn diagram (529c7-530c1); these astronomicals also cannot be Forms, not because (like arithmeticals and geometricals) they are many-per-type, but because, as Plato stresses in this same passage, they are in motion. But Aristotle argues that this is as damaging to separate intermediates as to Forms: e.g. a separate sun "could not reasonably be unmoved, and if moved is completely impossible" (997b19-20), since it is absurd to say that a sun grasped by reason alone is in one place in the zodiac today and will be in another place in the zodiac tomorrow: certainly it is in principle unknowable both to sensation and to reason where such an object is today. The worst absurdities, however, are not with intermediate astronomicals, but with intermediate opticals and harmonicals, since these disciplines are specifically about visibles and audibles respectively: since sensibles are inseparable from the correlative sentients, "if there are intermediate sensibles, and [therefore] sensations, clearly there will also be animals intermediate between themselves [i.e. the Forms] and the corruptible [animals]" (997b23-4). Or, as the K parallel puts it, "there is an aporia why, if one posits [intermediate mathematicals], it should not be in the case of other things of which there are Forms as in the case of the mathematicals, I mean that they posit the mathematicals in between the Forms and the sensibles, as third things beside [παρά] the Forms and the things here, but there is no third man or third horse beside [παρά] [man or horse]-himself and the individual [men or horses]" (K1 1059b3-9). The "third man" is not the name for some one argument, but rather a standard form for delivering absurd conclusions. Usually, in response to a Platonist arguments for the Forms, we construct a parallel argument concluding to an unwanted third man, and leave the opponent with the challenge of explaining why his argument succeeds and our parallel argument does not (so allusively A9 990a15-17, and according to Alexander ad locum Aristotle developed this strategy of parallel argument in his On Ideas; see discussion in Iβ4c and Iγ2d below); here Aristotle constructs arguments to the same unwanted conclusion parallel to the opponent's arguments for the mathematicals, and again challenges him to explain why his arguments succeed and ours do not.[10]

   Aristotle's arguments in B#5 do not show that there are not some Forms or some intermediate mathematicals, but they show that merely exhibiting the disciplines of dialectic and mathematics does not yield knowledge of substances beyond the sensibles, and so does not give a new path to the ἀρχαί. The opponent, in trying to show that dialectic or mathematics yield a path to the

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[9] accepting Jaeger's emendation οἵαι for EJ ὅμοιαι, omittunt A^bM
[10] contrast Aubenque discussed above in the appendix on K

ἀρχαί, has the burden of providing a more narrowly tailored argument that some particular kind of Form or of mathematical object does exist separately from, and prior to, sensible things, an argument-form within which we cannot also construct arguments to absurd conclusions. Aporiai #6-11 consider more closely the possibility of making dialectic work as a path to the ἀρχαί (#11 also involves mathematics), and #12 considers a specifically mathematical path. All of these aporiai will be taken up in subsequent books.

<center>Aporiai about dialectical ἀρχαί, from #6 through #11</center>

The sixth aporia, like the fifth, is asking whether physics or dialectic is wisdom (discussion of mathematics is deferred). But where the fifth aporia was framed in terms of οὐσίαι, the sixth is framed in terms of ἀρχαί. The fifth aporia had asked whether the objects of dialectic (and/or the objects of mathematics) are substances existing beyond the objects of physics; the sixth aporia asks instead whether the true "στοιχεῖα and ἀρχαί" (B3 998a21-2) of things are the kind the dialectician will give, namely their genera (a21), or the kind the physicist will give, namely their material constituents (a22-3). Both sides implicitly assume that we will search for the ἀρχαί by beginning with the posterior things that are better known to us and asking τί ἐστι until we reach something ultimate; different views on what is a satisfactory answer to τί ἐστι will go with different views on what kind of thing the first ἀρχαί are. Aristotle presents here several connected disputes between the physicists and the dialecticians, without clearly distinguishing them; I will start by translating his whole discussion, and then try to disentangle the different issues that emerge.
Aristotle says:

> There is much aporia both what one should suppose about these things [aporia #5] in order to hit the truth, and about the ἀρχαί, whether one should suppose that the genera are στοιχεῖα and ἀρχαί, or rather the things out of which, as primary constituents, each thing is [ἐξ ὧν ἐνυπαρχόντων ἐστὶν ἕκαστον πρώτων]. Thus the στοιχεῖα and ἀρχαί of speech [φωνή] seem to be the things out of which, as primary [constituents], spoken sounds [φωναί] are composed, rather than what is common, [the genus] speech. So too, we call στοιχεῖα of geometrical proofs [διαγράμματα] those [propositions] whose demonstrations are present [ἐνυπάρχουσι] in the demonstrations of all or most of the other [propositions]. Again, both those who say that the στοιχεῖα of bodies are many, and those who say that they are one, say that the things out of which [bodies] are composed and out of which they have been put together are ἀρχαί: thus Empedocles says that fire and water and so on are στοιχεῖα out of which, as constituents, beings are, not that these things are genera of beings. In addition, if someone wants to observe the nature [φύσις] of the other things, for instance [if he can say] out of what parts a bed has been put together and how they are composed, then he knows its nature. So from these arguments the ἀρχαί would not be the genera of beings. But if we know each thing through definitions, and the genera are ἀρχαί of definitions, necessarily the genera will also be ἀρχαί of the definables. And if grasping ἐπιστήμη of beings is grasping the forms according to which the beings are said, then the genera will be ἀρχαί at least of the forms. And some also of those who say that the one or being or the great and small are στοιχεῖα of beings

seems to be using these as genera. But it is not possible to speak in <u>both</u> ways of the ἀρχαί. For there is one λόγος τῆς οὐσίας [of a given thing]; but the definition through genera and the one that says out of what constituents [the thing] is are different. (B3 998a20-b14)[11]

The basic question here is whether the material constituents of things or their genera are the true ἀρχαί: Empedocles and the other physicists are cited as witnesses on one side, Plato and the dialecticians on the other. That the first kind of ἀρχαί are specifically <u>material</u> constituents emerges from Aristotle's official account of the material cause in <u>Physics</u> II,3, which never actually uses the word ὕλη, but describes this cause instead as "that out of which, as a constituent, something comes to be [τὸ ἐξ οὗ γίγνεταί τι ἐνυπάρχοντος], as the bronze [is the cause] of the statue and the silver of the bowl, and the genera of these [i.e. as metal is the cause of the statue or the bowl]" (194b24-6 = <u>Metaphysics</u> Δ2 1013a24-6). Earlier in <u>Physics</u> II, Aristotle had cited Antiphon for the view that "the nature and οὐσία of the things that are by nature ... is the primary constituent [πρῶτον ἐνύπαρχον] of each thing, which is in itself not worked-up, as the nature of a bed is wood, and the nature of a statue is bronze" (<u>Physics</u> II,1 193a9-12),[12] what Aristotle there calls nature-as-matter as opposed to nature-as-form; he is attributing the same view to the physicists here in B#6, and the example of the nature of the bed suggests that he again has Antiphon in mind (cp. <u>Physics</u> II,1 193a12-17). The dialecticians, by deliberate contrast with the physicists, speak instead of the <u>Form</u> of the bed as "the bed which exists in nature" (<u>Republic</u> X 597b5-6).

The two contending parties, the physicists and the dialecticians, differ not just in what kind of thing they cite as their ultimate ἀρχαί (fire and water, or unity and being), but in how they go about giving a λόγος of a given thing such as a bed. The physicist will try to list the parts of which the bed is composed (if we took Plato's illustration at <u>Theaetetus</u> 207a3-7 at face value, an enumeration of the different parts of a wagon would be a λόγος of the wagon); the dialectician, by contrast, will try to list the essential predicates of the bed, the genera (or genera and differentiae)[13] which will have to go into its definition. As Aristotle says at the end of our passage, the physicist and the dialectician are giving two rival λόγοι τῆς οὐσίας of the bed, and they cannot both be right. A λόγος τῆς οὐσίας of X is a formula that gives the οὐσία of X, i.e. that answers the question "what is X?": so the physicist and dialectician, in giving rival answers to this question, are making contrary claims about the οὐσία or φύσις of X. And since the λόγος τῆς οὐσίας of X is the necessary starting-point for scientific knowledge of X, the disagreement about whether the physical or the dialectical λόγος grasps the οὐσία of a thing is connected with a disagreement about which discipline gives scientific knowledge. Aristotle is citing the dialecticians as arguing from this connection at 998b4-8: for their argument is that the ἀρχαί of a thing, or at least of a scientifically knowable thing, should be the starting-points from which we can scientifically know the thing, and that these are the starting-points of the definition of the

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[11]d collect textual issues; and cite the K parallel (noting, as above, rephrasing as a "methodological" aporia; contrary to Jaeger's view that K is more about ἀρχαί, B about οὐσίαι and about the constitution of the science)

[12]"πρῶτον" in "πρῶτον ἐνυπάρχον" must mean <u>temporally</u> first, cp. ἔσχατον in Δ3, and maybe the example of the heart in embryology. "nature" will have been the word that Aristotle found in Antiphon, "οὐσία" his gloss in modern terms of Antiphon's meaning (quite likely misleading, since Aristotle is interested in an opposition of οὐσία to accident, Antiphon in an opposition of nature to art or convention)

[13]note on Aristotle's use of "genera" for "genera and differentiae", particularly when he is talking about Platonic dialecticians' attempts to find the στοιχεῖα of something as the parts of the λόγος of the thing. cite the <u>Topics</u> on in what sense differentiae count as genera (so that these are lumped together in <u>Topics</u> IV)

thing, and that these are the genera of the thing; so that the ἀρχαί of scientifically knowable things, that is, of forms, would be the genera. This disagreement about who has scientific knowledge of X is again connected with a disagreement about what are the <u>causes</u> of X, since to know a thing scientifically is just to know its causes: the physicists say that the things out of which an X comes to be are the causes of X, whereas the dialecticians say that the causes are the things in which something must participate in order to be an X. So each party puts together a λόγος of X out of the things they take to be the true causes of X (the dialecticians say that the "causes" cited by the physicists are mere συναίτια and do not belong in the λόγος τῆς οὐσίας).

This dispute about the true causes and the true λόγος τῆς οὐσίας of X is obviously connected with the dispute of <u>Physics</u> II,1, whether the true nature and οὐσία of a thing is its matter or its form, and with the question of B#1, whether wisdom is knowledge of material or formal (or efficient or final) causes. But here in B#6 Aristotle is approaching the issue from a significantly different perspective. Here Aristotle is not interested in identifying any <u>single</u> thing as the οὐσία or the cause of X; rather, he is interested in what <u>plurality</u> of things belong in the λόγος of X. Every λόγος involves a combination of parts (so explicitly Z10 1034b20), and this is important because it offers both to the physicists and to the dialecticians a program for searching for the ἀρχαί. Namely: begin with one of the manifest things, and analyze what it is by breaking it up into simpler constituents (either material constituents, or constituents of its essence or definition). The full content of the λόγος of X must be in some way identical to X (the content of the dialectical definition will be only the <u>form</u> of X, but that is what this λόγος is a λόγος of), and so it will not be something <u>prior</u> to X; but the things signified by <u>parts</u> of the λόγος of X will each be things existing prior to X, and then combining to constitute X. The ἀρχαί, as the first of all things, will be the ultimate simples into which everything else is analyzed: this offers both a program for finding the ἀρχαί, and a program for understanding any given thing, by analyzing it into some combination of these ἀρχαί.

This way of understanding ἀρχαί, shared both by the pluralist physicists (Empedocles, Democritus) and by the dialecticians, is intimately bound up with the metaphorical description of the ἀρχαί as "στοιχεῖα," which occurs repeatedly here, but is almost absent from the rest of B.[14] "Στοιχεῖον" means, in the first instance, a letter of the alphabet (indifferently a written letter or a spoken letter, what we would call a "phoneme"), and is metaphorically extended to the στοιχεῖα of bodies or definitions or the ABC of geometry:[15] where necessary, people single out στοιχεῖα

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[14]it occurs in the parallel to the sixth aporia in B1; also in the ninth aporia, pursuing the same conception (though only as a simile, not as a metaphor); also, though, in the fourteenth aporia, perhaps for no special reason, and once each fairly incidentally in the tenth and eleventh aporiai in referring to the ἀρχαί of the pluralist physicists; nowhere else in B

[15]note Burkert's denial of this, consider to what extent this requires revising the standard picture. Burkert is right that we often see "γράμματα" intead of "στοιχεῖα" for "letters", except where there is emphasis on the individual letter-types as repeatable units of analysis; he is probably right in conjecturing that the word "στοιχεῖον" originates in musical/prosodic theory, and that it applies to musical notes as well as to phonemes or letters; his idea that the geometrical meaning is basic strikes me as crazy. also the way he connects στοιχεῖον with στοῖχος makes no sense to me, though he is right that the usual way of connecting it with στοῖχος [the series of letters of the alphabet] is suspect, since there is almost no emphasis on any canonical order of the letters; but why not just that the letters of a verse or the notes of a melody are steps in a sequence, namely the whole verse or melody? note on the Latin word "<u>elementum</u>" as the conventional equivalent of "στοιχεῖον". as Burkert says, the case with "<u>elementum</u>" is the opposite of the case of "στοιχεῖον", in that the etymology is disputed (L-M-N is only a guess, though a clever one [see Coogan, "Alphabets and Elements," <u>Bulletin of the American School of Oriental Research</u>, 1974, for some evidence of division of the alphabet, in various ancient languages, into two halves with the second starting L-M-N]); but the original meaning is indisputably "letter". in any case, for Plato and Aristotle, although the idea of "repeatable

in the non-metaphorical sense by calling them στοιχεῖα τῆς φωνῆς, and whenever Plato or Aristotle speak of στοιχεῖα in some other sense, the comparison with the στοιχεῖα τῆς φωνῆς is close to the surface. On this way of thinking about the ἀρχαί, to understand a thing is to spell it out into its simple constituents, and a λόγος of a thing is just such a spelling-out. The metaphor of letters of the alphabet offers the promise that we can understand the vast multiplicity of changing phenomena by reducing them to a few simple and eternally constant ἀρχαί: the same ἀρχαί can combine into strikingly different-seeming complexes, "for a tragedy and a comedy come to be out of the same letters" (GC I,2 315b14-15, summarizing or quoting Democritus),[16] and one complex can again dissolve and be recombined into another.

It was the physicists, and in particular the atomists, who had first proposed understanding the ἀρχαί of beings as στοιχεῖα; and, as Aristotle here notes, they seem to have the better claim on the term, since the paradigm case, the στοιχεῖα τῆς φωνῆς, are more like the material constituents of φωναί than like their genera (though, as we will see, it was controversial how even this paradigm case was to be described).[17] But Plato takes over the Democritean metaphor of στοιχεῖα without assuming that the στοιχεῖα are material constituents of things; and, at least according to Aristotle, Plato reapplies the metaphor so that the στοιχεῖα of things are their genera, and the λόγος of a thing, spelling it out into its στοιχεῖα, is its genus-differentia definition. Thus Socrates at Theaetetus 201e-202c proposes the hypothesis (heard from someone, perhaps in a dream) that "we ourselves and other things ... are composed ... out of primary as-it-were στοιχεῖα" (201e1-2), and that things have λόγοι (where "the essence of a λόγος is [that it is] a combination of names," 202b5-6) just to the extent that they are composed out of these στοιχεῖα: each στοιχεῖον is itself simple, and so has no λόγος but only a name. Plato makes it clear that "the models that [the author of this hypothesis] was using when he said all this" (202e4) are letters and their combinations, "τὰ τῶν γραμμάτων στοιχεῖά τε καὶ συλλαβαί" (e6), and that giving a λόγος of a thing is conceived on the model of spelling out a word into a series of letters (203a6-b8). But despite the physical language of being "composed out of" the στοιχεῖα, the suggestion that "we ourselves" are such compounds, and the later suggestion that the λόγος of a wagon would be the enumeration of the different pieces of wood that make it up (206e6-207c4), Plato clearly does not intend the στοιχεῖα of beings to be material constituents in the ordinary sense: his denial that a στοιχεῖον by itself can be called "existent" or "non-existent" or "this" (201e3-202a7) makes no sense for Democritean atoms, and suggests instead that the στοιχεῖα are simple Platonic Forms abstracted from communion with other Forms, like the One of the first Hypothesis of the Parmenides.[18] It would be very difficult to determine from the

units of analysis" is certainly important, they also take it for granted that the main application of that idea is to the letters of the alphabet (or the corresponding phonemes), and that any philosophical applications are to be understood by analogy with this. the letters-metaphor is still very live in Aristotle; note that "στοιχεῖον" is always correlative with "συλλαβή". note to Marrou on the order of learning in γραμματική: first letters, then syllables. this must be part of the point of "elements" as a title in geometry (which apparently goes back to Hippocrates of Chios circa 430 BC). as Aristotle says here and in Δ3, the "elements" of geometry are propositions that will be applied many times in more advanced propositions, and this is why it is useful to have a separate collection of them for teaching or reference; Proclus cites this in explaining why some "elementary" propositions are left out of Euclid's Elements.
[16]"letters" here is "γράμματα", as also in some philosophical uses in Plato. note West's emendation to τρυγῳδία, and addition of πλὴν ἑνός, which would force a reinterpretation; and see Rashed's Budé (and his article there cited), which accepts the τρυγῳδία but not the πλὴν ἑνός, claiming support from a Hebrew version
[17]apart from the obvious discussion of the status of the στοιχεῖα τῆς φωνῆς in Z10, note also Z12 1038a5-8, against the physicists' claim to the στοιχεῖα τῆς φωνῆς as staked out in B#6 998a23-5
[18]the argument in the Theaetetus is that the simple X cannot be called "being" because being is something other than it, so this would entail a composition. this strongly recalls the Parmenides.

Theaetetus alone whether Plato himself endorsed the hypothesis of στοιχεῖα, and, if so, what he took the στοιχεῖα to be. But Plato does elsewhere speak of στοιχεῖα (or γράμματα in an equivalent sense) where there is no doubt that he is expressing his own view. In the Statesman Plato again considers learning to discern the different letters within a (spoken or written) word as a model for knowledge, applying this model by analogy to the "στοιχεῖα of all things" contained in the "long and difficult syllables of reality" (278c8-d6); and in the Sophist he compares the Forms, and especially the simple Forms of being, sameness, difference, motion, and rest, to letters (here γράμματα) of which some groups will combine to form syllables and some will not (252e8-253c3). These different hypotheses and comparisons may or may not add up to a single Platonic theory of στοιχεῖα, but at least they show that the late Plato was attracted to the metaphor of ἀρχαί as στοιχεῖα, and to projects of understanding more complex things by "spelling them out" into such στοιχεῖα.[19]

In any case, Aristotle's view, whether it is right or wrong, and whether it is based only on the dialogues or also on Plato's oral teaching, is that Plato is committed to a systematic theory of στοιχεῖα, according to which the στοιχεῖα are the genera of things, or more precisely the simple constituents of genus-differentia definitions. On this view, if the fully explicit definition of "man" were "wingless biped animal," then the Form of man would be a composite substance whose atomic components are the Form of wingless, the Form of biped, and the Form of animal. Aristotle will examine and criticize this position in Metaphysics Z14, pursuing "[the difficulty] that follows for those who say that the ideas are separate substances and also make the Form/species out of the genus and the differentiae" (1039a24-6; see IIδ below). Aristotle himself, in practicing dialectic, is willing to say that the genera and differentiae of X "are present in" or "are constituents of" [ἐνυπάρχουσι] the λόγος of X or the τί ἐστι of X, or simply that they are present in X, as "biped and animal are present [ἐνυπάρχει] in man" (De Interpretatione c11 21a17-18). But Plato takes this language much more seriously than Aristotle, because he takes the definable essence of X to be a separate eternal substance, whose components must be simpler separate eternal substances. The belief that definable essences are separate eternal substances, together with the belief that the genera and differentiae of X are constituents in X (and that the spoken λόγος of X is just a reflection of this objective composition), suggest the program of searching for separate eternal ἀρχαί as the simple constituents of definitions, that is, the logically simple things which occur in the λόγοι of other things and cannot themselves be given a λόγος in terms of anything else. Since each of the predicates in the definition of X is more universal than X, this means that we will be going to more universal things at each stage; the first of all στοιχεῖα, those that are present in the λόγοι of all other things, will be the most universal things, being and unity.[20] The cases of being and unity are the most important to Plato, since these are

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[19]references to other discussions of Platonic στοιχεῖα, in this book (notably IIδε), my "Collecting the Letters," and elsewhere; maybe note other Aristotelian passage on genera as elements, in Δ3 and Posterior Analytics II,19, and some explanation of in what sense the hypothesis of στοιχεῖα in the Theaetetus is refuted, esp. its epistemology. the Δ3 passage is cited below, "since what are called genera are universal and indivisible (for they have no λόγος), some people say that the genera are στοιχεῖα, and more so than the differentia, since the genus is more universal" (1014b9-12)

[20]Aristotle will, of course, argue (in the seventh aporia, B3 998b22-27, discussed already in Iβ2b above) that unity and being cannot be parts of a λόγος, on pain of absurdity or infinite regress. Aristotle also points out (998b30-32) that there is a problem about the differentiae. it is in fact not obvious that an ultimate differentia is any more universal than its species (can there be a biped that is not an animal?), and Aristotle will himself deny this, although Plato is surely committed to it as a presupposition of the practice of giving definitions (even Aristotle endorses this somewhere [ref?-- Topics IV 123a1 says that the differentia extends "equally or to more" than the species]). Plato seems to prefer to speak of "the genera" rather than "genus and differentia," in the hope that the species will be the

his preferred ἀρχαί, which are constituents of everything else and from which (in the second Hypothesis of the Parmenides) he will try somehow to derive all the other Forms. Indeed, while it is difficult to find textual support in Plato for the claim that the genus and differentia of a Form/species are parts of the Form/species (it is easier to support the view that the species are parts of the genus, i.e. that Forms have "extensional" rather than "intensional" parts),[21] the crucial text that does support Aristotle's interpretation is the account of the One Being in the second Hypothesis of the Parmenides, which argues that whatever exists and is one (whether it is just the Form of what-exists-and-is-one, or something more specific one existent) must contain being-itself and unity-itself as parts.[22]

Aristotle thinks, not just that this Platonic program fails, but that a fundamental reason why it must fail is that Plato has bought into the materialistic metaphor of the ἀρχαί as στοιχεῖα. Indeed, Plato accepts, along with the word "στοιχεῖον", the theses that a thing is "composed" [σύγκειται] out of its στοιχεῖα and that the λόγος of the thing gives its οὐσία by spelling it out into a series of separable constituents. Aristotle himself sharply distinguishes, in Metaphysics Δ1-3, between ἀρχή and αἴτιον, on the one hand, and στοιχεῖον on the other, and he insists that not all ἀρχαί are στοιχεῖα. Some ἀρχαί are ἐνυπάρχουσαι (Δ1 1013a4-7) and others are not (a7-10); the first kind of αἴτιον, the material, is described as ἐνυπάρχον (Δ2 1013a24-6 = Physics II,3 194b24-6, cited above), and the others are not. But the first and basic meaning of στοιχεῖον is "that out of which, as a πρῶτον ἐνυπάρχον not divisible in species into another species, each things is composed, like the στοιχεῖα of φωνή, out of which φωνή is composed and into which it is finally divided" (Δ3 1014a26-9);[23] and Aristotle insists that the implication of ἐνυπάρχειν is preserved in all the extended senses of στοιχεῖον. Thus after showing how this meaning is extended, first to the physicists' "στοιχεῖα of bodies ... [namely] the final things into which bodies are divided, which are themselves not further divisible into things different in species" (a32-4),[24] and then to "the most universal things ... since each of these, while being one and simple, is present [ὑπάρχει] in many things, or in all or maximally many" (b6-8)--this might include "the one and the point" (b8-9), and "since what are called genera are universal and indivisible (for they have no λόγος), some people say that the genera are στοιχεῖα, and more so than the differentia, since the genus is more universal" (b9-12)--Aristotle sums up all of these meanings, even the most Platonic, by saying that "it is common to all [these meanings] that the πρῶτον ἐνυπάρχον of each thing is a στοιχεῖον of the thing" (b14-15). Aristotle specifically

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intersection of several overlapping genera. but even so, it remains that there will be a lot of differentiae, and a lot of minimal constituents of genus-differentia definitions, which will not all reduce in this way to unity and being. and even apart from the possible inconsistencies that Aristotle tries to derive from this, this is bad for the Platonic project of deriving the multiplicity of forms from as small a set of ἀρχαί as possible. this threatens to defeat the point of the Democritean analogy, which is that just a few [types of] things, combining in different ways, can produce many different kinds of complexes: but there seems to be only one way that a given set of στοιχεῖα can combine in a genus-differentia definition, so we are not really going to get an explanation of the multiplicity of the forms. Plato's answer to this, apparently, is to look for στοιχεῖα in the λόγος of something which are not simply its genus or differentia. Aristotle too admits that X is present in the λόγος of not-X and of potentially-X, and also that β and α are present in the λόγος of βα, and line in the λόγος of triangle, though none of these are genera. especially where forms can be described in mathematical terms, this may allow us to reduce them to simpler constituents, and ultimately (Plato hopes) to absolute simples like being and unity and perhaps a few others. but this is going beyond the bounds of dialectic in the usual sense

[21]texts on μέρος and διαίρεσις; and the species of animal as parts of the animal-itself; + Xenocrates as below

[22]see discussion in Iβ2b above

[23]explain the point of the qualification "indivisible in species"

[24]Aristotle adds, as in B#6, the elements of geometrical proofs

criticizes the Academics for "making every ἀρχή a στοιχεῖον" (N4 1092a6-7), which is one of the sources of the difficulties they fall into (here specifically about the way that the good, or the one, is an ἀρχή); and he criticizes the Platonic practice of definition on the ground that "man is not <u>animal and biped</u>, but there must be something apart from these, if these are matter: [this further thing is] neither a στοιχεῖον, nor [composed] out of a στοιχεῖον, but the οὐσία: but they [the Platonists] leave out [this further thing], and formulate [λέγουσιν] [only] the matter" (H3 1043b10-13). This is, of course, Plato's complaint against the physicists' λόγοι, that they leave out the true οὐσία of the thing, and formulate only its material constituents: Aristotle argues, as so often, that Plato is liable to the same complaint, and he thinks that the source of Plato's error is his acceptance of the materialistic conception of the ἀρχαί as στοιχεῖα, and of the λόγος giving the οὐσία of a thing as giving the list of the στοιχεῖα it contains.

When Aristotle takes up B#6, in <u>Metaphysics</u> Z10-16, he will argue that this conception of the ἀρχαί leads the physicists, and also and especially Plato, into absurdity. He himself thinks that the ἀρχαί-in-the-strict-sense, which must be eternal, and must be substances, are not στοιχεῖα, since such things cannot ἐνυπάρχειν in anything and cannot enter into composition with other things (no οὐσία is ἐξ οὐσιῶν, as he puts it in Z16): thus the ἀρχαί are not part of the οὐσία, and are not mentioned in the λόγος, of anything but themselves. Thus in one sense Aristotle's answer to the aporia is simply negative: both parties are wrong about the ἀρχαί, and we need some discipline other than physics and dialectic in order to find the true ἀρχαί. But Aristotle has to say something more than this in order to extricate himself from the aporia that he has raised for the physicists and dialecticians. For assuming that things have λόγοι, these λόγοι must have indivisible constituents or στοιχεῖα: so it seems that these στοιχεῖα must be prior to the composite thing, and therefore must be substances if it is a substance (another argument that they must be substances is that the λόγος gives the substance of the thing, and the substance of a substance is a substance); so that even if there are <u>also</u> divine ἀρχαί which do not enter into λόγοι, it seems that the στοιχεῖα of λόγοι must be <u>among</u> the ἀρχαί (and that, if genuinely simple, they must be eternal, like Democritean atoms or Platonic Forms). So there is a danger that Aristotle, in refuting the thesis of the physicists and dialecticians that the ἀρχαί are στοιχεῖα, will also have refuted himself, unless he can accept the paradoxical conclusion (which he attributes to Antisthenes, H3 1043b23-8) that it is impossible to give a λόγος of anything.

Aristotle's answer to this challenge is complicated; I will discuss in IIδ his use of the aporia against physicists and Platonists in Z10-16, and in IIε his own solution. But a necessary condition for a solution is to say that the στοιχεῖα of a thing (the indivisible constituents of its λόγος) need not be prior to the thing, and thus need not be ἀρχαί. The στοιχεῖα are certainly prior <u>in λόγος</u> (that is, they are mentioned in the definition of the whole, and the whole is not mentioned in the definition of them), but Aristotle will say that what is prior in λόγος need not be prior in οὐσία, the relevant sense in looking for the ἀρχαί as objects of wisdom. This will allow him to argue that the στοιχεῖα of a substance need not be separately existing substances, and need not be eternal except in species. Aristotle will also answer the argument that the στοιχεῖα must be substances because the λόγος of a thing states its substance, by arguing that a properly constructed λόγος can state the substance of a thing without stating it either as a στοιχεῖον or as something composed ἐκ στοιχείων; how this is supposed to work, we will see in IIε. But the distinction between priority in λόγος and priority in οὐσία will also be important for the internal development of the argument of B.

B's argument to show the difficulties involved in the physical and dialectical conceptions of the ἀρχαί as στοιχεῖα is not complete with the official discussion of B#6, but continues through

the end of B#11. The official discussion of B#6 cites the authority of the physicists, and the paradigm case of the letters of the alphabet, in support of the claim that the στοιχεῖα of things are their material constituents; it cites the authority of "those who say that the one or being or the great and small are στοιχεῖα of beings" in support of the claim that the στοιχεῖα are genera; and it says that they cannot both be right, since "the λόγος τῆς οὐσίας is one." But it does not give sufficient arguments for us to be able to decide who is right. The substantive arguments that it does give are arguments from scientific practice, from how we go about trying to give a λόγος that says what something is, in order to understand the thing scientifically. Aristotle first argues that we do this by saying "out of what parts a bed, for instance, has been put together and how they are composed," and then he argues, on the other side, that we do it by defining the form of a thing in terms of its genera. So we might try to decide who is right about the ἀρχαί by deciding, on independent grounds, whether physics or dialectic gives scientific knowledge of a thing. But these considerations, at best, could only decide who is right about what belongs in the λόγος of a thing; and Aristotle wants to call into question the assumption that the constituents of the λόγος of a thing are the true ἀρχαί. In B#7 and #9-11, Aristotle raises difficulties that confront the dialecticians' answer to B#6: these difficulties add up to an argument that the thesis of the dialecticians on the ἀρχαί and στοιχεῖα--which Aristotle expects his readers to find much more plausible than the thesis of the physicists, and which seems the best hope for finding ἀρχαί beyond physical things--is untenable. (B#8 also raises some brief difficulties against positing Forms beside the sensible individuals [at 999a29-32, which just restates the results of B#8, and more interestingly at 999b17-24], but concentrates on difficulties against proceeding as the physicists do and not positing Forms, and I will postpone a full discussion of it to the end of this section, with the difficulties against the physicists.) These aporiai are focussed specifically on the dialecticians' theory of the ἀρχαί, not on the theory of Forms as presented in B#5: Aristotle is challenging the claim that universals are prior to the things they are predicated of, and thus that the highest universals will be ἀρχαί, prior to all things. Aristotle does not dispute the dialecticians' claim that X is prior to Y in λόγος, where X is a higher universal that is predicated of Y; rather, while accepting this claim, he questions whether X is prior to Y in οὐσία, as it must be in order to be an ἀρχή. Now Plato has an argument that, in cases of this kind, X is prior to Y in οὐσία as well as in λόγος: "things are [also called] prior and posterior by nature and οὐσία, [namely] those things which can be without others, but those others cannot be without them: Plato used this division" (Metaphysics Δ11 1019a1-4), and so, since (for example) animal can exist without dog existing, but dog cannot exist without animal existing, animal will be prior to dog in οὐσία as well as in λόγος.[25] Indeed, Aristotle cites this argument on Plato's behalf in the Metaphysics K parallel to aporia #7, first to argue that being and one are "most like ἀρχαί since they are first by nature, for when these are destroyed everything else is destroyed along with them" (K1 1059b28-31) then more broadly to argue that the genera are ἀρχαί of their species

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[25]cited and briefly discussed in Iα3 above {it needs to be flagged there more clearly with the label "Plato's test" and it's advantages discussed: it's supposed to give a criterion that works where priority in time fails, and to break deadlocks between physicists insisting on priority in time and dialecticians insisting on priority in λόγος}. I will refer to this as "Plato's test" for priority in οὐσία. Aristotle in the Categories had simply accepted it {refs in the chapter on priority, and note the apparently contradictory applications, to priority of individual substances and to priority of genera}; now he accepts it only with important reservations; I will have a fuller discussion in Iβ4 below. the argument I describe here is probably implicit in the argument for ideas that Aristotle cites in the On Ideas (Alexander 80,8-15), which specifically claims to show that the one thing that is predicated of the many individuals exists παρά them and is separated from them and is eternal, since "it is always equally predicated of all the things which numerically succeed one another [πάντων τῶν κατ᾿ ἀριθμὸν ἀλασσομένων]"

(1059b38-1060a1). But Aristotle answers that Plato's test is not sufficient to prove priority in οὐσία, since, in order for X to be prior to Y (where Y is a substance), X must also exist χωρίς or beside [παρά] Y, or must exist καθ᾽ αὑτό or be a τόδε or an οὐσία. Why Aristotle thinks this, what these terms mean and how we are supposed to test whether X satisfies them, and whether they are all equivalent or how else they may be related, are complicated questions which I will treat in detail in the next section, Iβ4. For now, in trying to get an overview of Aristotle's strategy of argument against Plato in B#6-11, the main point is that he challenges the claims of the Platonic ἀρχαί to be ἀρχαί, or to be prior in οὐσία to other things, by questioning whether they have the ontological status that this would require. Aristotle does not frame the question as asking whether these things exist--he takes it as obvious that animal, being, and one do exist--but as asking about their <u>mode</u> of existence. He takes it as agreed that, <u>if</u> these things are ἀρχαί, they must exist χωρίς and καθ᾽ αὑτά and so on. His first question is, then, what grounds the dialecticians have for supposing that these things do have this mode of existence.

Aristotle's arguments in B#7 do not directly refute the claim that, in some cases, a universal is prior to the things of which it is predicated, and so is their ἀρχή or stands closer to the ἀρχαί than they do. Rather, he applies the strategy of "parallel arguments" from <u>On Ideas</u> to show that Plato's arguments, if they worked, would prove too much; this puts the burden on the opponent to give a more specific argument that will establish the conclusion in some specific range of cases, and to explain why the argument succeeds in those cases but would fail if extended more broadly. And, as elsewhere, he is exploiting disagreements within the Academy. Often Aristotle uses Speusippean arguments against some Platonic thesis (at least, he uses arguments which would tend to support Speusippus' position against some Platonic thesis, and it is often plausible that he is starting from Speusippus' own arguments), and then argues that Speusippus, by the standards implicit in his own arguments against Plato, does no better. Here Aristotle instead gives arguments that seem to support <u>Xenocrates</u> against Plato, and then argues that Xenocrates does no better than Plato, and therefore that their shared assumptions should be rejected.

B#7 is formally constructed as an argument on both sides of a question arising as a dilemma for the dialecticians of B#6: if the genera are ἀρχαί, "should we take the <u>first</u> [i.e. most universal] of the genera as ἀρχαί, or rather the last ones predicated of the individuals" (998b15-16). Plato thinks that the most universal genera are prior (like B#6's examples of genera said to be στοιχεῖα, "the one or being or the great and small," 998b9-11), whereas, according to an essay of Alexander of Aphrodisias preserved in Arabic, Xenocrates thought that species were prior to their genera, on the ground that the genera are wholes composed of their species as parts and that the parts are prior to the whole.[26] However, Aristotle does not argue here that Xenocrates' thesis could not be true. Rather he argues that if, as seems from the arguments he marshals against Plato, "the things that are predicated [immediately] of the individuals are ἀρχαί more than the genera are" (999a15-16), then "it is not easy to say why we should suppose these to be ἀρχαί. For the ἀρχή and cause must exist beside [παρά] the things of which it is an ἀρχή, and must be able to exist when it is separated from them.[27] But why would one suppose that such

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[26]references to Badawi (two books, for the Arabic and for the French translation) and Pines and to my discussion of the text in Iγ2c-d below {I'm a bit afraid of a shell game in which each section refers to discussion elsewhere: if possible the whole thing should be translated in a footnote somewhere, although that would involve dealing with some textual and construal issues, for which see my letter to David Sedley}; Pines corrects some errors in Badawi's translation and proposes some plausible emendations in his text

[27]note on translation: εἶναι in εἶναι παρά may be "locative" rather than existential: the effect is the same either way. in δύνασθαι εἶναι χωριζομένην αὐτῶν, it grammatically has to be existential with an appended circumstantial participle ("be able to exist when it is separated from them"--so, or words to this effect, Ross) rather than predicative

a thing exists beside the individuals, except because it is predicated universally of all of them? But if this is the reason, then we should posit that the more universal things are more ἀρχαί: so that the first genera would be ἀρχαί" (999a16-23). In other words, the arguments that Xenocrates gives (or that can be given on his behalf) against Plato turn on denying that Plato's alleged ἀρχαί, the higher universals, exist beside or separably from the things of which they are predicated (e.g. because the genera are composed of the species as parts, and wholes do not exist παρά their parts); so, even though the higher universals are prior in λόγος to their species, they are not prior in οὐσία, and cannot be ἀρχαί. But, says Aristotle, Xenocrates thereby undermines his own reasons for positing the <u>infimae species</u> as ἀρχαί existing separately from their individuals. It seems that the only ground for positing that X exists beside Y and Z is that it is predicated universally against Y and Z (the thought would be: animal can exist without horse existing, because animal would still hold of cow, but horse cannot exist without animal existing, therefore animal is prior to horse),[28] but Xenocrates has shown that this ground is insufficient, and he has thus removed the motivation for positing his own ἀρχαί as well as for Plato's; if, on the other hand, there are sufficient grounds for positing Xenocrates' ἀρχαί, there should be better grounds for Plato's. The result is to undermine the shared assumption of Plato and Xenocrates, that some sort of universals are ἀρχαί. (Xenocrates has an obvious reply, which is that the reason for positing an <u>infima species</u> such as horse as an ἀρχή beside individual sensible horses is not that it is predicated universally of them, but rather that individual horses are imperfect and come-to-be and pass away, and either would not come-to-be at all or would not come-to-be well if they were not made in the likeness of an eternal paradigm.[29] But Aristotle's aim here is only to force the opponent to give a more narrowly tailored argument, which can be discussed in its turn; he will discuss arguments from coming-to-be and the necessity of a paradigm in B#8.)

    Aristotle's strategy in B#7 thus turns on his arguments that we cannot assume in all cases that what is universally predicated of several things exists beside them or separately from them. One argument is that "if indeed the one is more ἀρχή-like and the indivisible is one, and everything indivisible is so either in quantity or in species, and what is [indivisible] in species is prior, and the genera are divisible into species, the last thing predicated [of the individuals] would be more one: for man is not the <u>genus</u> of individual men" (999a1-6); but this turns on Xenocrates' conception of the genus as a whole composed of its species, and will not have much force for a Platonist who treats the genera and differentiae as (intensional) parts of the species, not the species as (extensional) parts of the genera. But Aristotle gives two other arguments which are supposed to have force against such a Platonist opponent. One is the argument about the highest universals, being and unity, which we examined in Iβ2b above: being and unity cannot be things existing over and above the things that exist and are one, because if we can decompose an existing thing X into two constituents, Y + existence, then either we have an infinite regress of existences, or we reach a constituent that does not itself exist, or we reach a constituent that exists without an existence beside itself, in which case we had no reason to posit an existence beside X in the first place.[30] As we saw in Iβ2b, this is directed above all against the second

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Hypothesis of the Parmenides, where Plato divides the one-that-is into a one-constituent and a being-constituent, and so ad infinitum; here it is presented as an argument that being and one cannot be genera as constituents of a genus-differentia definition, since genera cannot be predicated of their differentiae and therefore the differentiae could not themselves exist or be one (998b22-7; if a genus were predicated of its differentia, then the same genus would occur twice in the definition of the species, and so on). The other argument is that, in the case of "things in which there is prior and posterior" (999a6-7), such as number and (polygonal) figure, the universal cannot exist beside the things: "so if two is the first of the numbers, there will not be any number beside [παρά] the species of numbers [sc. two, three, four, etc.], and likewise neither is there a figure beside the species of figures [sc. triangle, quadrilateral, pentagon etc.]" (a7-10). Aristotle assumes, rightly, that no Academic will dispute this conclusion. There may be a two--or rather a "dyad," a "pair" of objects--which is neither a pair of apples nor a pair of oranges, but exists beside these, being simply a pure dyad, that is, a pair of pure units, but there cannot be a number which is neither a two nor a three nor a four (etc.), a pure number which is not any number in particular, and no Academic said there was: "those who put forward this doctrine [sc. the Forms] did not posit ideas in things in which they spoke of prior and posterior, and this is the reason why they did not posit an idea of numbers" (NE I,6 1096a17-19).[31] In a related passage of Metaphysics A9, Aristotle cites from someone who "followed the doctrines about the ideas," and is probably Xenocrates, an argument that Plato's arguments for the Forms, if they worked, would yield the embarrassing consequence that "not the two is first, but rather number" (990b17-20): this is embarrassing because Plato wants to generate the numbers from their appropriate ἀρχαί, the one and two, by repeated arithmetical operations, rather from a number-itself independent of these ἀρχαί.[32] For these reasons, Plato cannot argue that, because X is predicated universally of Y and Z, it must be prior to Y and Z; he might be able to reconstruct a narrower argument that will apply to some universals but not to cases like "number,"[33] but he must concede that some universals, including "number" and "polygon," have a mode of existence that makes them inseparable from the things of which they are predicated, and disqualifies them from being ἀρχαί (he will probably have to concede this also about other kinds of universals, notably negative universals like not-white and not-Socrates). This concession allows Aristotle to raise the question, in general, of when the universal X has only the weaker mode of existence (existing "inseparably" or "not καθ᾽ αὑτό"): he suggests that genera, and even infimae species, "exist" only in the way that number-in-general and not-Socrates do, and so he challenges Plato and Xenocrates to give arguments, not merely that the genera or species exist and are prior in λόγος to the things that fall under them, but that they exist separately or καθ᾽ αὑτά. To evaluate such

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[31] the reason why the Academics cannot possibly accept a number-itself which is neither a two, nor a three, nor a four, etc. depends on the "self-predication" of numbers: a two-itself must contain two units on pain of not being a two, and a number-itself must contain some determinate set of units on pain of not being a number, thus must be either a two or a three etc. various people, often relying on Cook Wilson's incompetent article of 1904, have denied that Plato believed in the self-predication of the numbers, but the evidence is unambiguous; see discussion in Iγ2c-d
[32] see Iγ2c-d for issues about the interpretation of this text (including whether the "two" here is, as I think, the number, or rather the indefinite dyad), and for why the source is likely to be Xenocrates; and also for how Plato wants to generate the numbers
[33] the argument in the On Ideas, Alexander pp.82-3, looks promising. in the case of number, Plato's view is presumably that there is indeed a first number which is number in the primary way, and all other numbers are numbers by virtue of their derivation from it, but this is simply the number two, not something παρά the different kinds of number. if for every universal F there is such a first F, then, since there is no one mortal human being who would have this kind of special privilege over the others, there must be an eternal one that has it instead

arguments we will need a more precise understanding of existence καθ᾽ αὑτό and not καθ᾽ αὑτό, which we will examine in detail in Iβ4.

The arguments of B#7 work to undermine Plato's arguments that the genera are ἀρχαί, but they do not show (except in some special cases) that the genera <u>cannot</u> be ἀρχαί. By contrast, the arguments of B#9-11[34] are supposed to show that the genera cannot be ἀρχαί, and especially that, once they are posited, the other things cannot be generated out of them: the arguments are designed more particularly to bring out difficulties that Plato is involved in because he conceives his ἀρχαί as στοιχεῖα. Plato's search for ἀρχαί has to begin from the many corruptible manifest things, but the ἀρχαί it is seeking must be eternal; the ἀρχαί must also exist separately, which implies that they must each be numerically one; if we are to gain scientific knowledge by learning these ἀρχαί, they must be finite in total, and it is best if they can all be derived from a single first ἀρχή, or from a very small number of first ἀρχαί. Aristotle agrees with all of these Platonic goals, but he thinks that Plato's conception of the ἀρχαί as στοιχεῖα, taken over from the physicists, makes them impossible to achieve. If the ἀρχαί are finite in number, how can they be constituents of unlimitedly many things at once? If the ἀρχαί are eternal, why are some of the things composed of them corruptible? Democritus would solve the first problem by saying that the ἀρχαί are not finite in number, though they may be finitely many in <u>kind</u>:[35] when we say that comedies and tragedies can be produced out of only twenty-four letters, what we mean is that they can be produced out of twenty-four <u>kinds</u> of letters, whose unlimited instances can combine into unlimitedly many complexes. Democritus can also solve the second problem, by saying that while all of the atomic ἀρχαί are eternal (because they have no constituents into which they could be dissolved), all compounds are formed in time by collisions of atoms, and can be corrupted by being broken up again into their atomic constituents. But these solutions are not available to Plato. Plato wants the ἀρχαί to be what is prior to other things in λόγος, and what is universally predicated of other things is prior to them in λόγος: α-as-such is prior to this-α-here, and it must be α-as-such which is the ἀρχή. This means that Plato cannot honestly compare the infinite variety of things formed out of the ἀρχαί to comedies and tragedies formed out of the twenty-four letters of the alphabet, unless all the comedies and tragedies of the world are composed out of <u>a single set</u> of alphabet-blocks. And while Plato might be able to generate the many generable and corruptible things out of the many individual α's and β's, he cannot generate them out of the α-itself and β-itself: perhaps in some sense the eternal α-itself and β-itself combine to generate a βα-itself, but this would be an eternal syllable, or an eternal paradigm for corruptible syllables, and no matter how many other eternal στοιχεῖα are added on to this βα-itself, they will not add up to produce an individual corruptible syllable.

Against this background, B#9 argues against Plato (without saying explicitly that the ἀρχαί it is criticizing are the genera):

> If each of the ἀρχαί is one in number, and they are not, as in the case of the
> sensibles, different for different things (as this syllable, the same in species, has
> ἀρχαί which are also the same in species: for they are the same, but numerically
> distinct)--if it's not like this, but rather the ἀρχαί of beings are [each] one in
> number, then there will not be anything beside [παρά] the στοιχεῖα. For saying
> "one in number" is no different than saying "individual": for this is what we call

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[34]as noted above, I'm deferring full discussion of B#8 to the end of this section

[35]actually, Democritus seems to have thought they were infinite even in kind. I will credit him with limiting the kinds--which he could have done, and which Epicurus later did--in order to show what Plato cannot do

individual, what is one in number, and the universal is what is over [ἐπί] these. So [it would be] as if the στοιχεῖα τῆς φωνῆς were limited in number: necessarily all γράμματα would be only as many as the στοιχεῖα, since there would not be two or more of the same [type]. (999b27-1000a4)[36]

Aristotle's presentation of the argument here is slightly misleading. He says that the ἀρχαί of sensible things are different for different things, and he seems to accept the implication that the ἀρχαί of sensible things are not in each case numerically one. But this cannot be his considered view, since every ἀρχή exists separately and everything that exists separately is numerically one. But Aristotle is accepting, for purposes of the argument, his opponent's description of the ἀρχαί as στοιχεῖα; and his point is that, while each στοιχεῖον within an individual syllable is numerically one, these στοιχεῖα are not one-per-type but many-per-type, since numerically distinct syllables have numerically distinct letters, and the syllable-type βα, "the same in species," has στοιχεῖα which are the same in species, the letter-type β and the letter-type α. The opponent, in using the metaphor of στοιχεῖα, is drawing a comparison between "the ἀρχαί of sensibles"--the letters of audible or visible language, or things closely analogous to them--and "the ἀρχαί of beings." Aristotle is pointing out that, if the στοιχεῖα of beings are numerically one-per-type, as Plato wants the genera to be, then they are significantly different from the στοιχεῖα of sensibles, and they cannot explain the multiplicity of eternal things (let alone the greater multiplicity of sensible things) in the same way that the limited number of <u>types</u> of spoken or written letters, or of Democritean atoms, can explain the multiplicity of sensible complexes.[37] To put it another way: Plato hopes that, as a limited number of simple sensible <u>types</u> can explain a vast multiplicity of complex sensible <u>types</u>, so a limited number of simple eternal <u>individuals</u> can explain a vast multiplicity of complex eternal <u>individuals</u>. Aristotle is saying that the analogy does not work, because a single simple type contains many individuals that combine with individuals of many different other types (some α's with β alone, others with γ alone, others with β and ρ), so producing many complex types, whereas a single simple eternal individual cannot be part of many complex individuals at once. Aristotle might seem to be overstating his case when he says that "there will not be anything beside the στοιχεῖα ... as if the στοιχεῖα τῆς φωνῆς were limited in number: necessarily all γράμματα would be only as many as the στοιχεῖα, since there would not be two or more of the same [type]": you cannot write a tragedy or a comedy with only one alphabet-block of each type, but at least you can form a decent variety of words and a few short sentences, thus at least some things beside the στοιχεῖα. But no individual letter can be part of two syllables at once: so, if there is to be both a βα and a γα at once, there must be two different individual α's. In the case of sensibles, a single individual α alphabet-block might belong first to a βα and then later to a γα, but this cannot happen to the Platonic στοιχεῖα of beings: since these στοιχεῖα are eternal and unchanging, they cannot enter into different combinations at different times, and the συλλαβαί they form are eternal and so must all exist together, rather than succeeding one another in time. So it is a reasonable inference that there is nothing παρὰ τὰ στοιχεῖα: if there is only a single eternal individual α, then there cannot be both an eternal βα and an eternal γα, and why should there be one and not the other? That is (to drop the metaphor of letters), if there is only a single eternal individual animal, then there cannot be both an eternal biped-animal and an eternal quadruped-animal, and why should

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[36]add as a footnote B#13, showing that the view that the ἀρχαί/στοιχεῖα are (each) one in number is a Platonic view, and referring back to #9 for the difficulties facing such a view

[37]note on the discussions in M10 and Z14, making clear that this is a difficulty for Plato: esp. M10 1087a4ff

there be one and not the other?

Plato can solve this aporia in only two ways, either by multiplying eternal α's (one for βα, one for γα, and so on), or by denying to the "syllables" βα and γα the unity that makes them syllables. Dropping the metaphor, as Aristotle does in Z14, it cannot be numerically the same animal in man and in horse, because the first animal is a biped and the second is a quadruped: to solve the aporia, Plato must either multiply eternal animal-itselves or else deny that the animal in horse is a quadruped; and this (Aristotle argues) would be to deny to the "Form" horse the unity that makes it a Form, and to say that really Bucephalus just participates independently in two different Forms, the Form of animal and the Form of quadruped: so there would be no syllable-Forms παρὰ τὰ στοιχεῖα.[38] Plato can preserve the syllable-Forms by multiplying eternal animal-itselves, the same only in species, but then he has no explanation of how these many indiscernible ἀρχαί arise or why (since in each case their essence is just to be animal and nothing else) they are distinct from one another.[39] Worse, if Plato concedes that the στοιχεῖον-Forms are one only in species in the many syllable-Forms, he has undermined his reasons for positing individual syllable-Forms like the horse-itself beside the many horses: all the reasons for positing that the many horses share a numerically single οὐσία, or rather a numerically single common constituent of their οὐσίαι, the horse-itself, would also be reasons why horse and dog and lynx should share a numerically single common constituent of their οὐσίαι, the numerically single στοιχεῖον animal-itself.[40] Indeed, the cases are closely parallel, and the difficulties that arise from positing α as an ἀρχή of βα and γα, existing beside them and prior to them and constituting part of their οὐσία, will also arise from Plato's positing of a horse-itself as an ἀρχή of the many horses, existing beside them and prior to them and constituting all or part of their οὐσία. This is the point of the dilemma Aristotle raises against Plato at the end of B#8: "will there be one οὐσία of them all, e.g. of all men? But this is absurd: for things whose οὐσία is one are one. Or many different οὐσίαι? But this too is unreasonable" (999b20-23). On the one hand, if we posit a numerically single horse-οὐσία beside the many horses, we will get the same contradictions that result from positing a numerically single στοιχεῖον beside the many syllables; on the other hand, if we posit many horse-οὐσίαι existing beside and prior to the many horses, we will have the same difficulty as if we posit many α's, one an ἀρχή of βα and one an ἀρχή of γα: there will be an absurd multiplicity of ἀρχαί existing prior to the things, an infinite number of indiscernible horse-οὐσίαι waiting to be incarnated in yet-to-be-born horses.[41]

The tenth aporia, like the ninth and eleventh, raises difficulties against a "downward way" from the Platonic ἀρχαί back down to the things these ἀρχαί were posited to explain. Like the ninth, it does not make it explicit that the main target is Plato. Indeed, it begins with an objection against Hesiod (1000a9-18) and then at considerable length against Empedocles (1000a18-b21, more than half of the whole aporia); nonetheless, it becomes clear at the end of this discussion

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[38]reference ahead to Part II for much fuller discussion of Z14, defense of the present interpretation, and broader context

[39]thus Z14 1039b14-16: "what will this [genus animal in horse etc.] be from, and how will it arise from the animal-itself? and how is it possible for this animal, whose substance is just this [sc. animal], to exist παρά the animal-itself?"

[40]"They posit that each αὐτὸ ὃ ἔστιν [i.e. each Form] is [numerically] one; but if the syllables are, then so are the things out-of-which they are: for there will not be more than one α or any of the other στοιχεῖα, for the same reason that shows that the same syllable is not several different [individual syllables]" (M10 1086b27-30).

[41]see further discussion below. none of the commentators seem to have seen why it is unreasonable for there to be many οὐσίαι of the many X's; they have treated this as arguing against a theory of Aristotelian individual forms. the crucial missing premiss is that the οὐσία of X exists <u>prior</u> to X, a premiss Aristotle himself does not accept

that the main difficulty does not touch Empedocles at all (so 1000b17-21), but only Plato or other Academics. Aristotle's presentation is also somewhat misleading in the range of possible opinions that it discusses and raises difficulties against. He asks whether the ἀρχαί of corruptible things are corruptible or not, and, if they are incorruptible, whether they are the same as or different from the ἀρχαί of incorruptible things (which are certainly incorruptible). This dilemmatic structure yields three possible views, and Aristotle raises difficulties against all of them, but, as Aristotle eventually admits, "no one has ever proposed different [ἀρχαί],[42] rather they say that the ἀρχαί of all things are the same" (1000b32-1001a1--as we will see, this is slightly exaggerated). Aristotle has argued (following Phaedrus 245d1-e2, see Iα3 above) that the concept of ἀρχή entails that there cannot be corruptible ἀρχαί--if they are corruptible, they must also have arisen, and out of something rather than out of nothing, "so that the ἀρχαί will turn out to have other ἀρχαί prior to them: and this is impossible, either if [the series of ἀρχαί] stops or if it goes to infinity," 1000b24-8)[43]--and indeed precisely for this reason all philosophers have posited as ἀρχαί things which they think are incorruptible. But then the difficulty arises for them, why are some of the things that arise from these incorruptible ἀρχαί corruptible while others are incorruptible? (And it does not seem to help to posit a different set of incorruptible ἀρχαί proper to corruptible things: for why should the things that arise from some incorruptible ἀρχαί be corruptible while the things that arise from other incorruptible ἀρχαί are incorruptible?) Now this difficulty, like the difficulty of B#9 against many-per-type beings arising from one-per-type ἀρχαί, depends heavily on the assumption that these ἀρχαί are στοιχεῖα, that is, constituents of the things that arise from them: there seems no fundamental difficulty in understanding how an incorruptible ἀρχή like the sun could be a cause of corruptible plants, so long as it is not a constituent of them, e.g. by generating them as it approaches northward from winter to summer solstice and corrupting them as it recedes southward from summer to winter solstice. Also, even if we assume that the incorruptible ἀρχαί are στοιχεῖα, there seems no fundamental difficulty in understanding how they could combine to form corruptible compounds, e.g. generating the compounds by approaching each other and becoming interlaced, and corrupting them by becoming disentangled. But Plato, as opposed to possible pre-Socratic targets of Aristotle's critique, will not be able to take these ways out, if his ἀρχαί are not merely incorruptible but also entirely unchangeable, and cannot "approach" or "recede" or become "interlaced." Furthermore, the difficulty about why some combinations of incorruptible στοιχεῖα are corruptible while other combinations are incorruptible will not arise for a philosopher who thinks that all the simple στοιχεῖα are incorruptible while all the combinations are corruptible (since all can be decomposed into their στοιχεῖα); Aristotle says the main difficulty of B#10 does not touch Empedocles, "for he does not make some beings incorruptible and others corruptible, but rather all of them corruptible except for the στοιχεῖα" (1000b18-20), and this would also be true for Democritus. But Plato, unlike the physicists, is investigating

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[42]textual issue: extra λέγειν.

[43]note the additional argument 1000b28-9, again following the Phaedrus model. it isn't immediately evident why the conclusion here is absurd, but if the possibility were realized of the ἀρχαί perishing, nothing would exist, and then nothing could subsequently restart; add if you like a principle of plenitude, so this will sometime happen. this is explicit in the Phaedrus text. B#10 1000b28-9 seems to be in one way or another the model for Thomas' "third way" and for its exemplar in Maimonides (and maybe parallels in Averroes), or rather for the part of it arguing for a necessary = eternal being, not the further part arguing for an uncaused necessary being (frustratingly, the Arabic [secundum Averroem] of this passage simply leaves out b28-9). there is also a connection with the Λ6 passage where if the οὐσία of the ἀρχή is δύναμις, motion will not be eternal, with the implicit consequence that it will not subsequently (re-)start

incorruptible as well as corruptible beings, unchanging as well as changing beings, and trying to discover ἀρχαί for all of them (indeed he was praised for this, against the physicists, in A8-9); and according to the account Aristotle gave in A6, Plato gave the one and the indefinite dyad as common ἀρχαί of all types of being, the one and the dyad being form and matter for the numbers which are the Forms, and then these numbers being form and the same dyad being again matter for sensible things. If that is really what Plato said, he has an extremely acute problem why some of the beings that result from the same material ἀρχή, and at least indirectly from the same formal ἀρχή, should be changeable and corruptible, others incorruptible and unchangeable. It is likely that this problem had been raised by other Academics; it seems akin to the (probably Speusippean) difficulty raised at the end of B#11, why a single formal ἀρχή and a single material ἀρχή should yield both numbers and continuous magnitudes. We might respond, like Speusippus, by positing different pairs of ἀρχαί, or at least different material ἀρχαί, for different domains (and perhaps Plato did not really mean that all things arose from a numerically single indefinite dyad, perhaps that was just an analogical description applying to any matter); but, apart from any objections to positing a radical plurality of ἀρχαί, these ἀρχαί will still all be incorruptible, and it will remain mysterious why some of them should give rise to corruptible and others to incorruptible composites.

For Aristotle, the solution to the tenth as well as the ninth aporia, worked out in Λ, will turn on distinguishing constituent from non-constituent ἀρχαί, and insisting that the one-per-type eternal things that are ἀρχαί in the strictest sense are non-constituent ἀρχαί of corruptible things.[44] Corruptible things do also need constituent ἀρχαί (ἀρχαί in a loose sense, which might not be prior to them either in οὐσία or in time), and for this reason, while the ἀρχαί in the strict sense are <u>necessary</u> ἀρχαί of corruptible things, they are not <u>sufficient</u> ἀρχαί of them, and there is no downward way from these ἀρχαί by themselves to corruptible things. The constituent ἀρχαί or στοιχεῖα will be each many-per-type, and they will not be individually eternal; Aristotle will solve the difficulties against not positing eternal ἀρχαί, partly by positing other eternal ἀρχαί, and partly by explaining how a constituent ἀρχή such as the form of a corruptible thing can exist at one time and not-exist at another time without ever coming-to-be or passing away, and so without forcing a regress to prior ἀρχαί such as a prior matter of the form and a prior form of the form. (This will respond, not just to the general argument in B#10 that generable things presuppose eternal ἀρχαί, but also to the more specific Platonist argument in B#8 999b5-16 that generable things presuppose an eternal matter and an eternal form παρά the composites, see discussion below.) So for Aristotle these difficulties against a downward way from a finite number of individually eternal ἀρχαί to the phenomena will serve to motivate non-eternal individual forms, species-forms that are eternal but not numerically one, and eternal numerically single ἀρχαί that are not constituents. But Plato, who posits universals and especially the highest universals as ἀρχαί, as eternal individuals, and as the στοιχεῖα of other things, cannot accept these solutions and remains liable to the aporiai.

The eleventh aporia continues this argument against Plato, raising difficulties that are specific

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[44]see Λ10 1075b13-14 "why some things are corruptible and others are incorruptible, no one says: for they make all the things-that-are out of the same ἀρχαί," where the language of making something <u>out of</u> some ἀρχαί implies that the ἀρχαί are conceived as constituents. Aristotle is listing this as one of the aporiai that he has solved in Λ and that his opponents are unable to solve: see IIIγ3 for discussion. Λ4-5 were an inquiry into whether or in what sense the ἀρχαί of all things are the same (e.g. numerically or merely specifically, generically, analogically), distinguishing non-constituent ἀρχαί such as the first unmoved mover which are numerically the same for all things from constituent ἀρχαί (matter and form) which are not; see IIIβ1

to the highest universals, which must for Plato be the first ἀρχαί, namely being and unity.[45] While the aporia starts by asking whether being and unity are "οὐσίαι of things," the argument immediately turns to focus on the question of whether being and unity have the mode of existence that they would require in order to be οὐσίαι of things, or indeed to be ἀρχαί in any way. In B, Aristotle puts this by asking "whether being and the one are οὐσίαι of things-that-are, and whether each of these is not, being something else, one or being [respectively]," as Plato and the Pythagoreans say,[46] "or whether we must ask what being and the one are, there being some other underlying nature [of which these are predicated]," as the physicists say (1001a5-8). In the K parallel, Aristotle asks, "if someone posits the ἀρχαί that seem most of all to be unmoved, [namely] being and the one, then, first, if these do not signify a this and an οὐσία, how will they be separate and καθ᾽ αὑτάς? But we expect the first and eternal ἀρχαί to be of this kind [sc. separate and καθ᾽ αὑτάς]" (K2 1060a36-b3). In Iβ4, starting from these texts of B#11, I will examine in detail what it means for something to be separate and καθ᾽ αὑτό and a this and an οὐσία and not predicated of an underlying nature, and why the ἀρχαί must exist in this way: for X to exist in this way implies at least that X is numerically one, although it will also imply more than this. My point for now is that the anti-Platonic arguments of the eleventh aporia, like those of the ninth and tenth, are devoted to showing that if the Platonic ἀρχαί exist in this way, then the different kinds of posterior things cannot be generated out of them.

Aristotle argues for the thesis that being and the one are substances by arguing that this is implied by the Platonic projects of wisdom through dialectic and mathematics; thus difficulties against the thesis will be difficulties against these Platonic projects of wisdom. The argument from dialectic is the same argument that Aristotle has been making since the seventh aporia: if the Platonic arguments establish the separate existence of any universals they will also establish the separate existence of being and the one, and if they show that any universals are prior to the things that fall under them, they will show that being and the one are prior to all things (unpacking 1001a19-24). Aristotle now adds that the mathematical project of wisdom also implies that the one is a substance: "if the one is not a substance, it is clear that number too will not be a separate nature of beings [κεχωρισμένη τις φύσις τῶν ὄντων]:[47] for a number is units, and a unit is what is just one [ὅπερ ἕν τι]" (1001a24-7). But Aristotle now argues that, if being and the one are substances, then the posterior things cannot be generated out of them, indeed "if there is a being-itself and one-itself there will be much aporia how there will be anything else beside these, I mean how the things-that-are will be more than one" (1001a29-31): as in B#9, the conclusion is that there will be nothing beside the στοιχεῖα. Aristotle gives several arguments. First, "what is other than being [ἕτερον τοῦ ὄντος] would not be, so it must follow according to Parmenides' λόγος that all the things-that-are [ἅπαντα … τὰ ὄντα] are one, and this is being [τὸ ὄν]" (1001a31-b1). This is Aristotle's reconstruction of what he takes to be Parmenides' argument that there is only one being, namely that there can be nothing other than being-itself, since otherwise, absurdly, what is other-than-being would have to be (he is paraphrasing Parmenides' maxim "οὐ γὰρ μήποτε τοῦτο δαμῇ εἶναι μὴ ἐόντα").[48] We have seen a version of

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[45]see further discussion in Iβ4

[46]presumably the Pythagoreans say this for the one rather than for being; and, as becomes clear further down, Parmenides also said it for being

[47]τῶν ὄντων might be partitive, or "φύσις τῶν ὄντων" might mean something like "type of being" or perhaps "underlying nature of [some] existing things": in any case the phrase amounts to "number will not exist separately"

[48]collect references to this argument in Aristotle (Physics I,2-3, Metaphysics N2, cryptic allusions at Sophistici Elenchi 170b21-4 and 182b22-7). he is thus assimilating Parmenides' being to the Platonic Form of being. Aristotle is interpreting Parmenides through the perspective of different Academic attempts, notably Plato's in the Sophist, to

this argument before, in the argument of B#7 that being cannot be a genus entering into the λόγοι of things (since otherwise the λόγος of X would have to decompose as X = Y + being, and so on pain of infinite regress Y itself must, absurdly, not be a being). But now Aristotle wants the absurdity to follow, not from analyzing the λόγος of something into being and a component other than being, but simply from the assumption that "being" signifies a this: if "Socrates" signifies a this, then everything but one, namely Socrates himself, is not Socrates, and so likewise if "being" signifies a this, then everything but one, namely being itself, is not being, and therefore there is only one existent thing.[49] Plato's positing of a Form of being had led him to conclude at Sophist 256d5-e4 that Parmenides' maxim was wrong, on the ground that the many things which are other than being-itself, and are in that sense "not being," nonetheless participate in being-itself and are thus also beings; for Aristotle, this is a reductio ad absurdum of the Form of being, and the correct solution is rather that the many things are not other-than-being, since "being" does not signify anything beside the many things-that-are.[50]

   To this argument that τὸ ὄν is not a this, we can easily construct a parallel argument that τὸ ἕν is not a this: if it were, then there could be nothing other than the one-itself, since what is other-than-[the]-one [ἕτερον τοῦ ἑνός] is not one, and what is not one does not exist. Or we can avoid the strong premiss that what is not one does not exist, saying merely that everything that exists is either one or many, and that if it is many it is composed of ones. This is what Aristotle does at 1001b4-6: "from what beside the one itself will there be another one? For it [sc. the ἀρχή, other than the one itself, of this other one] must not be one; but all the things that are are either one, or many of which each is one." The reason why the other one would have to come from something which is not one is that, if this other one is one by participating in the one-itself, it must have some underlying nature, which prior (either temporally or logically prior) to coming to participate in the one, must not yet possess unity, either as a whole or in its parts. Aristotle is here taking up an argument that Plato had made in the third Hypothesis of the Parmenides (157b6-159b1), where anything other than the one-itself must arise from an underlying nature of otherness that can contain neither units nor finite multiplicities. For Plato, this conclusion is not absurd, since he takes it as demonstrating that the ἀρχή other than the one must be intrinsically infinite, and receive unity and finite multiplicity by participating in the one-itself; but Aristotle thinks that such an actual separately existing infinity would entail intolerable contradictions, and he takes Plato's argument as a reductio ad absurdum of Plato's hypothesis of a one-itself apart from its participants.[51]

λύειν this argument, i.e. to detect where the fallacy lies. where have I discussed this before? at least briefly in Iβ2b, but perhaps there should be a fuller discussion

[49]another way of putting it: if X is Socrates and Y is Socrates (or, converting, Socrates is X and Socrates is Y), then (some) X is Y: this is an argument by ἔκθεσις, and works only if "Socrates" signifies a this (is there a goood reference in Aristotle for this? this is the kind of argument that the scholastics call a "syllogismus expositorius", where "expositorius" presumably translates ἐκθετικός or the like). If "being" signifies a this, then the same argument-form shows that, if X exists and Y exists, [some] X is Y--thus that all existent things are identical, or that there is only one existent thing

[50]perhaps clarify. although it is in one sense self-contradictory to say that something is not-white and yet participates in the white, in another sense this might be acceptable: for instance, it might first be not-white and then come to participate in the white, or it might be that it is not-white by its own nature but participates in the white. but not even this can be said about being: what is not-being cannot have any predicates, full stop.

[51]see the arguments of Physics III against the actual infinite, which are directed against especially this passage of the Parmenides (note esp. the argument that the infinite would have to be made out of infinites, and so the whole would not be greater than the part); I will discuss these either in Iβ4 or in IIβ or γ. maybe note on potential vs. actual infinities resulting from stripping a thing's form; but Plato accepts a separate material ἀρχή, which will be actually

   However, in B#11, Aristotle embeds this argument in a more specific difficulty about where numbers can come from if the one is a substance. He has said that if the one is not a substance, then "number too will not be a separate nature of beings, for a number is units, and a unit is what is just one [ὅπερ ἕν τι]" (1001a24-7). But "there is a difficulty either way: for both if the one is not a substance, and if there is some one-itself,[52] it is impossible for number to be a substance" (1001b1-3): for if there is a single one-itself, whence are the other pure units within the numbers? From one perspective, this is another development of the aporia of B#11, giving further arguments for and against the existence of a one-itself, but now assuming the existence of numbers-themselves and considering the one as an ἀρχή of numbers rather than as a most universal predicate; from another perspective, turning the argument around, it is an aporia against the existence of numbers-themselves. The difficulty is akin to the dilemma about one-per-type or many-per-type στοιχεῖα in B#9. If, as the Platonists say, there are one-per-type syllable-Forms βα and γα (say biped-animal and quadruped-animal), the same reasons should lead us to believe that these are composed of one-per-type στοιχεῖα (such as a one-per-type animal-itself), but if there is only one α, there is no downward way back to βα and γα; so likewise, if there are one-per-type numbers, the same reasons should lead us to believe in a one-per-type one, but if there is only one one, there is no downward way back to the numbers, both because a single one cannot be part of several different numbers (as α cannot be part both of βα and of γα), and because even within a single number there must be several different ones. If the Platonists try to say that beside the single first animal-itself or one-itself there are also many derivative animal-itselves or one-itselves which enter into different combinations (the animal in man, the animal in horse, the first one in the two-itself, the second one in the two-itself, the first one in the three-itself), then they will be in difficulty about how these many animal-itselves or one-itselves arise, and how they are individuated. And if there are unlimitedly many στοιχεῖα of each type, or unlimitedly many ones, all with the same status, there should also be unlimitedly many syllables or numbers of each type, all with the same status, against the Platonist claim that there is a single first man-himself or three-itself. And, as Aristotle will develop the aporia about species-forms and their constituents in ZH, he will develop the difficulty about numbers and their constituent units in MN: as we will see in Iγ2d, it is very likely that he is starting from an aporia that Speusippus had raised to argue against one-per-type Form-numbers and in favor of many-per-type mathematical numbers.

   To return to B#11: Plato may answer, as in the third Hypothesis of the Parmenides, that the ones other than the first one-itself, and thus the numbers made up of them, emerge from the infinitely divisible material ἀρχή when it comes to participate in the one-itself. Leaving aside the arguments against an infinite ἀρχή (as developed in Physics III), Aristotle develops a different difficulty here (1001b7-25). Aristotle cites Zeno as arguing that an indivisible (e.g. a point) is nothing, because it does not increase the size of a thing when it is added to it; presumably Zeno's aim was not so much to attack the one as to show that bodies cannot be divided into indivisibles (nor can they be divided into ever-divisibles, because of paradoxes of infinity). All this is archaic, even embarrassing, and Aristotle has no trouble disposing of it: adding an indivisible one makes a number more [πλεῖον] rather than making a magnitude greater [μεῖζον] (all 1001b7-16). But Aristotle's reason for recalling this here is to bring out the impossibility of transition from an indivisible one to continuous magnitudes; more generally, the impossibility of generating discrete and continuous quantities from the same ἀρχαί. "Even if one makes

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infinite, also in eternal things the potential/actual distinction won't arise

[52]reading τι αὐτὸ ἕν with A^b, not τὸ αὐτὸ ἕν with EJ (uncontroversial? also, check M)

hypotheses so that number would arise, as some say, from the one-itself and from something which is not one, nonetheless it must be investigated why and how what arises is sometimes number and sometimes magnitude, if the not-one is the same nature, inequality [in both cases]: for it is not clear how magnitudes would arise either out of [the] one and this [other nature], or out of some number and this [other nature]" (1001b19-25). Two difficulties can be distinguished here. First, two radically different genera cannot both be generated from the same formal ἀρχή and the same material ἀρχή, and the Platonist solution reported in A6 of first generating the numbers from the one and the material ἀρχή, and then generating magnitudes from the numbers and the same material ἀρχή, dismally fails to bridge the gap.[53] Second, what arises from part of an infinitely divisible substratum participating in the one will not be an indivisible unit, but rather a whole of parts, and this is indeed Plato's intention in the third Hypothesis of the Parmenides. These considerations seem to have led Speusippus to posit different material ἀρχαί, the numbers arising from discrete "plurality" and magnitudes arising from continuous "extension," and it is very likely that Aristotle in this part of B#11 is drawing his arguments from Speusippus. Speusippus' difficulties against Plato, arguing that different domains of being (numbers, geometricals, presumably also souls and astronomicals and sublunar bodies) must proceed from different ἀρχαί are akin to the difficulties of B#10 arguing that incorruptibles and corruptibles must proceed from different ἀρχαί; both argue that, even if Plato's upward way to his ἀρχαί succeeds, no downward way will be possible.[54] Aristotle will examine the difficulties against any possible generation of numbers and magnitudes in MN, and will conclude that Speusippus' account is also unsatisfactory; here his aim is only to create aporia and to show what would have to be investigated for a satisfactory account of the ἀρχαί. And, as we will see in Iγ3 below, much of the argument of MN, especially M6-9 on numbers and their units, also N1-2 on the origin of things from the one and some contrary ἀρχή, are developments of the aporia sketched here in B#11.

From B#11 to B#12: the dispute with the mathematicians

While B#11 began as a difficulty about being and the one as the most universal predicates and dialectical ἀρχαί, it ended with a difficulty about the one as a mathematical ἀρχή. It also ended with a sympathetic use of Speusippus' difficulties against Plato. Speusippus' alternative is to give up on dialectic as a way to wisdom, to give up on one-per-type Forms, including one-per-type numbers, and instead to seek the highest οὐσίαι in the different kinds of mathematical objects, and the highest ἀρχαί in the ἀρχαί of those mathematical domains. And both Plato and Speusippus think that mathematical objects exist independently of natural things and give an independent route to the ἀρχαί, whatever those may be. It is thus natural that Aristotle turns in B#12 to examine the mathematical path to the ἀρχαί. We can say that B#6, and B#7-11 as a

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[53]and parallels. from A6 you might think it's just sensibles that are generated from the numbers and the material ἀρχή, but parallels make clear that magnitudes are also (or primarily) generated this way. the idea would be that line is extension determined by two (points), triangle is extension determined by three (points), and tetrahedron is extension determined by four (points). but why would we get continuous magnitudes in these cases, and discrete numbers from the one and the same material ἀρχή? Speusippus' solution is to make the material ἀρχή in one case continuous "extension," and in the other case discrete "plurality." a Platonist option is to derive indivisible lines, triangles and tetrahedra in this way, and then derive continuous magnitudes from these as wholes from parts: Aristotle thinks this is nonsense that would destroy the foundations of mathematics. more on all this in MN

[54]it is thus because of Speusippus that, as noted above, Aristotle is exaggerating in saying that no one has posited different ἀρχαί for corruptibles and incorruptibles

prolongation of B#6, had pursued two of the possible answers to B#5--that wisdom is physics, about natural substances, or that it is dialectic, about Forms--and that B#12 is now taking up the third possible answer, that wisdom is mathematics, about a realm of mathematical substances. But whereas B#5 had asked what οὐσίαι there are to be the objects of wisdom, B#12 (like B#6) is asking what are the οὐσίαι and ἀρχαί <u>of</u> the manifest things.[55] So Aristotle is not here starting from the fact of the mathematical sciences and asking whether their objects form an independent realm of beings, but rather pursuing mathematics because, like physics and dialectic, it claims to offer a chain leading up from a manifest thing X to things that are prior to X, and ultimately to an absolute ἀρχή. Perhaps surprisingly, Aristotle thinks that the mathematicians, like the physicists and the dialecticians, claim to be giving the οὐσίαι of the manifest things, and he treats them as disputing with the physicists, in particular, about what the real οὐσίαι of things are. Without trying here to give a full discussion of Aristotle's treatment of the claims of the mathematicians about the ἀρχαί and the οὐσίαι of things, I want to bring out the basic parallel with his treatment of the claims of the dialecticians. In both cases, Aristotle concedes that the things his opponents are positing as ἀρχαί are prior in λόγος to the manifest things, and are also prior by Plato's test (at least on its most straightforward construal); but he insists that the alleged ἀρχαί do not exist separately, and are therefore not prior in οὐσία to the manifest things, so that they cannot be ἀρχαί or οὐσίαι of the manifest things. In both cases, Aristotle asks "ontological" questions, about the separate or inseparable existence of the things his opponents posit as ἀρχαί, in order to raise difficulties about the claims of the existing disciplines to reach wisdom, and thus in order to motivate a new project of wisdom, which will look for a different kind of ἀρχή.

  Aristotle opens the aporia by asking "whether numbers and bodies and surfaces and points are οὐσίαι or not" (1001b26-8)--where the placing of "bodies" amidst "numbers" and "surfaces and points" seems to show that he means <u>mathematical</u> solids--but he immediately treats the thesis that these things are οὐσίαι as interchangeable with the thesis that they are "the οὐσίαι <u>of</u> the things that are" (1001b29).[56] The old physicists think that particular bodies such as fire and earth are the underlying οὐσίαι of things (and are the ἀρχαί of composite bodies), but the moderns argue that body-as-such is prior to these, and then that boundaries, and ultimately numbers, are prior to any kind of body: "the majority, and the earlier [thinkers], thought that οὐσία and being were body, and that the other things were affections of this, so that the ἀρχαί of bodies would be ἀρχαί of [all] beings; whereas the more recent, and those who have seemed to be wiser, thought that numbers [were οὐσίαι]" (1002a8-11).[57] The moderns argue for their position by eliminating

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[55]B#12 doesn't explicit speak of ἀρχαί of the manifest things, but does speak about οὐσίαι of these things, and about what is <u>prior</u> to these things (ref.)

[56]τῶν ὄντων cannot be partitive genitive, cp. οὐθενός … οὐσίαν in b30-31. the gloss of "bodies" here as mathematical solids, and the idea that the people Aristotle is considering pass through mathematical bodies as an intermediate stage on their way from physical bodies to boundaries, are controversial, and are disputed in particular by Ian Mueller in his chapter on this aporia in the Beta Symposium Aristotelicum volume; see below

[57]see above on crude ancients vs. refined moderns … note, if not noted enough already, connection with passages in Λ1 and elsewhere where Democritus seems to take body, rather than fire or air, as an οὐσία or as the οὐσία [also ἀρχή?] of things; the Λ1 passage has an ancients/moderns contrast, where Democritus seems to be a "modern" … Democritus seems like a middle position, accepting the priority of body-as-such, i.e. mathematical body, but not the priority of boundaries or numbers; thus passage from "body" alongside number etc. in 1001b26-8 to body contrasted with number at 1002a8-11 … some minor text-issues {in a11 ὕστερον/ὕστεροι, καὶ οἱ, how close to a8}… note Mueller in Crubellier-Laks pp.191-2 and n2 on the dispute about whether at the end we should supply "[were οὐσίαι]" or "[were ἀρχαί]": it seems to me clear that one group thinks that bodies are οὐσίαι and the ἀρχαί of bodies are the ἀρχαί of all things, and the other group thinks that numbers are οὐσίαι and the ἀρχαί of numbers are the ἀρχαί of all things

other candidates for οὐσία (or for the οὐσία of things). More precisely, they work up a chain from posterior to prior things, arguing at each stage that X is less an οὐσία than Y: they argue first to mathematical bodies, then to lower-dimensional geometrical objects, and then from points to numbers and units.

To begin with, if we take the descriptions of things as (say) hot or cold, or moving or configured in particular ways,[58] these "do not seem to signify the οὐσία of anything: for they are all said of some underlying thing, and none of them is a this" (1001b30-32); to know <u>what it is</u> that is hot or dense or falling, we would turn rather to the underlying body of which these are predicated. Bodies, however, are either composites or simples, and it is the simple bodies, earth and water and air and fire, that are prior to the others and are the underlying οὐσία, the answer to <u>what</u> the others are (they will be the στοιχεῖα of a physical λόγος as described in B#6). But earth and water and so on are still not a satisfactory stopping place, for they are subject to further analysis: "the things which would most seem to signify οὐσία, water and earth and fire and air, out of which the composite bodies are composed--their heats and coldnesses and the like are affections [πάθη], not οὐσίαι, and the body which suffers [πεπονθός] these things alone remains as a being and an οὐσία" (1001b32-1002a4).[59] Aristotle is here saying more than might immediately appear. It is not simply that fire, as a certain kind of body, has to be distinguished from heat as a quality of that body. Rather, in investigating fire, we must ask for the underlying οὐσία of which heat is predicated, and to say that it is just this kind of body, fire, is unsatisfactory and risks circularity, since our ordinary concept of what distinguishes fire from air seems to involve the concept of heat. If we remove their heat and coldness and other qualities, we seem to have removed everything that distinguishes the different kinds of simple bodies from each other; what is left over as the οὐσία of these things is just body, that is, three-dimensional extension, which they all have in common.[60] Aristotle is here thinking of the argument of the

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[58]Aristotle says: τὰ πάθη καὶ αἱ κινήσεις καὶ τὰ πρός τι καὶ αἱ διαθέσεις καὶ οἱ λόγοι. I am not sure exactly what λόγοι are (Ross' "ratios" is plausible, but ratios are πρός τι; maybe ratios between different dimensions within a thing)--but note the passage early in Theophrastus' <u>Metaphysics</u> about mathematicals, mentioning λόγοι.

[59]there are several important grammatical issues, which need some discussion. contrast Mueller's translation, in Crubellier-Laks p.192 (d check Madigan): "but heat and cold and such properties belong to the things which are thought most to signify substance, water, earth, fire, and air, from which composite bodies are composed, and are not substance": this takes τὰ τοιαῦτα πάθη together as the subject, and τούτων, referring back to water etc., as predicate--I think it is very difficult to take τούτων by itself as predicate (and anyway why should heat belong more to the simple bodies than to the composites?), and it seems obvious to me that there is a contrast "πάθη, οὐκ οὐσίαι", which means πάθη must be predicative. it would be possible to construe "are πάθη of these and not οὐσίαι [of these]," as Ross does, but it seems much more natural to take τούτων as governed by θερμότητες etc., "their heats etc.", which might be either subjective genitive or perhaps partitive genitive, "within this domain, heat etc. are πάθη and only the body that suffers them is an οὐσία." there is also a less important issue about whether ὑπομένει means "persists through change, since it is a substance" or "remains for consideration as a substance." {Mueller's "endures as a being and a substance" is maybe ambiguous, but his discussion shows that he takes it the first way}

[60]so Alexander: "he first posits as clear that the simple bodies are most of all οὐσίαι, then having separated the qualities of these {or 'having separated from these the qualities'} and the other affections as being accidents of bodies, he takes the body that underlies these (I mean the affections), that is, the three-dimensionally extended, to be the οὐσία" (229,11-15). cf. Bonitz <u>ad locum</u>: "si a rebus sensibilibus ea separaverimus, quae manifesto accidentia sunt neque affectare omnino possunt substantiae dignitatem, ipsa remanet magnitudo extensa, corpus mathematicum, in quo insint et de quo praedicentur accidentia." note that on Mueller's construal, where "the body that suffers these things" is just fire or the like, Aristotle's argument is not <u>progressing</u>: that is, he is not going from accidents to complex bodies to simple bodies to three-dimensional extension, but simply saying again that accidents are not substances--why would he be doing this? and how, on this construal, would it help to restrict from all bodies

Timaeus, that because fire and earth and so on can be changed into one another, the correct answer to "what is it," asked when pointing to sensible fire, is not what perishes when the fire becomes air, but the underlying subject that survives the change, and is common to the different kinds of bodies: what we call fire and what we call air is a single οὐσία suffering different affections.[61] (Thus the claim is not that heat is an accidental affection of fire, but that it is an accidental affection of body, which when added to body constitutes fire.) As the Timaeus stresses, it is hard to describe this underlying nature, since in itself it has none of the qualities that distinguish earth and water and air and fire; but what these all have in common is that "they are bodies ... and every kind of body also has depth [βάθος]" (53c4-6), that is, is three-dimensionally extended. Indeed, the Timaeus describes the underlying nature as χώρα, space ("Plato says in the Timaeus that matter and space are the same," Physics IV,2 209b11-12), so that it is reasonable to describe Plato as concluding that the οὐσία underlying fire and air and so on is just three-dimensional geometrical extension.[62]

However, Plato does not remain with three-dimensional extension as an ἀρχή. The argument might proceed from here in two different directions. In Metaphysics Z3, in a passage which runs parallel to the present one for a while and then diverges, Aristotle suggests, as a Platonist argument whose conclusion he himself rejects, that within bodies "the other things are affections and actions and powers of bodies; and length and breadth and depth are quantities [ποσότητες] and not οὐσίαι (for the so-much [ποσόν] is not οὐσία)--rather, the primary thing that these belong to is οὐσία. But when length and breadth and depth are stripped away we do not see anything left over, unless what is determined [ὁριζόμενον] by these is something: so that to those who investigate in this way, necessarily the matter alone will seem to be οὐσία" (1029a12-19, see IIβ for discussion). In B#12, however, Aristotle considers an argument from the dimensions of body not to the matter they determine or bound, but rather to the lower-dimensional quantities that determine or bound them. "Body is less οὐσία than the surface, and this than the line, and this than the unit and the point; for body is bounded [ὥρισται] by these, and it seems possible for them to exist without body, but it is impossible for body to exist without them" (1002a4-8). Aristotle is thinking here of the kind of argument that the Timaeus makes, after reducing the nature of things to body and thus to "depth": "depth is always necessarily circumscribed by surface, and the plane base-surface is constituted out of triangles" (53c6-8), and so on. Aristotle does not refer here to the details of Plato's reasoning about the triangles (and clearly there were many different Academic paths to mathematical ἀρχαί), but Aristotle is calling attention to one important feature of Plato's strategy of argument, namely that it argues that the boundaries of things are prior to the things. This strategy allows us to argue not only that surfaces are prior to bodies, but that lines are prior to surfaces, and points to lines; we would need a different argument that units are prior to points, presumably that points are "units having position," and that units as such must be prior.[63]

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to the simple bodies? note Ross' summary ad locum (AM I,246-7) shows that he too takes the text this way, as non-progressive, so the objection applies to him too (d check Madigan)

[61]references, to the text and to a fuller discussion of it. the receptacle is not itself earth or air or water or fire, 51a5-6, but appears to be fire when it is πεπυρωμένον (etc.), 51b4-6: this is just to πάσχειν different πάθη, 52d4-e1 … also ὑπομένει looks like a reference to the Timaeus … for the record, I am the "at least one person" Mueller is targeting bottom of p.192

[62]NB throughout this passage, and also on Z3, need more discussion of this Physics IV,2 passage in context; perhaps a parallel with passing from sensible to geometrical body, certainly a parallel with passing from geometrical body either to its form = shape = boundary or to the matter or indefinite extension contained by that boundary

[63]references for "unit having position" (and "point without position"). note also Academic dispute about points, and

From the perspective of B#12, the crucial issue is whether the boundaries of things are indeed prior to the things. There are several different arguments that they are prior, and perhaps several different senses in which they can be argued to be prior. Most obviously, it can be argued (1002a6-8) that they are prior by Plato's test: there cannot be a body without a bounding surface, but there is no reason why there could not be a surface without a body; to take a specific example, there cannot be a cube without six squares, but there can be six squares (especially if they do not touch each other) without there being a cube. Aristotle also thinks that the boundaries are prior in λόγος to the thing, at least in the case of mathematicals: for the definition of triangle is "figure bounded [περιεχόμενον] by three straight lines" (cf. Euclid Elements Idef19), and Aristotle says that line belongs to triangle, and point to line, in the τί ἐστι, "since the οὐσία of the latter is out of the former, and they are present [ἐνυπάρχει] in the λόγος that says τί ἐστιν" (Posterior Analytics I,4 73a34-7). The way Aristotle describes the relation of line to triangle here is, deliberately, very close to the way he describes the relation of a genus to its species. The mathematician is choosing a different path to the ἀρχαί than the dialectician, but they are both going up from a thing to some kind of constituent in its λόγος. Line cannot be the genus of triangle (lines are one-dimensional quantities and triangles are two-dimensional quantities), nor is it the differentia of triangle ("bounded by three straight lines" is), but it is nonetheless a constituent in the geometer's definition of triangle: this definition is more complicated than a simple genus-differentia formula, but it is the only scientifically usable way to explain what a triangle is, and it presupposes lines, just as an account of what dog is presupposes animal, and an account of what βα is presupposes β and α, and an account of what snub is presupposes nose. Indeed line, as a constituent in the λόγος of triangle, can be said to be οὐσία of triangle: Metaphysics Δ8 says that "οὐσία" is said, in one of its senses, of "whatever parts are present [ἐνυπάρχοντα] in [things not said of a ὑποκείμενον], defining/delimiting them [ὁρίζοντα] and signifying a this, such that when they are destroyed the whole is destroyed, as the body is destroyed when the surface is destroyed, as some people say, and the surface when the line is; and number in general seems to some people to be of this kind (for [they think that] when it is destroyed nothing exists, and it defines/delimits all things)" (1017b17-21). Both the dialectician in investigating a thing's genera, and the mathematician in investigating its boundaries, are conceiving their ἀρχαί as the οὐσία of the thing, not as its ὑποκείμενον or as its full essence, but as this kind of constituent of the essence, and they both use Plato's test to argue that their ἀρχαί are prior to the thing, because the thing could not exist without them.[64]

Although Aristotle concedes that mathematical boundaries are prior in λόγος and by (the straightforward construal of) Plato's test, he challenges the inference that they are prior in οὐσία (and are thus properly ἀρχαί of bodies) by denying that they exist separately or are οὐσίαι in their own right: his dispute with the mathematicians is thus closely parallel to his dispute with the dialecticians about whether genera exist separately.[65] In B#12 1002a15-b11 he gives a series of challenges against the claim that mathematical boundaries are οὐσίαι; together with the arguments that the boundaries are more οὐσίαι than the bodies, these yield an aporia against their being any οὐσία at all (as he notes, 1001b28-9 and 1002a12-18). In the first place, "if it is agreed that lengths and points are more οὐσία than bodies, but we do not see what kind of bodies these would be [boundaries] of (for they cannot be in the sensibles), there would be no οὐσία"

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the mad proposal of FP II,30 that "point" and "unit" here are equivalent

[64]reference back to B#6 treated above, and forward to full discussion of Δ8 on ways of being the οὐσία of something, and the role of genera and mathematical boundaries, in IIα3 and IIδε below

[65]see detailed discussion of separation in Iβ4 below

(1002a15-18). We can paraphrase this by posing the dilemma: do the surfaces and lines of which the mathematicians speak exist within the same space as natural bodies, or in some other purely mathematical space, separate from natural bodies?[66] If the latter, then the arguments that mathematical boundaries are οὐσίαι and ἀρχαί of natural things seem to collapse. (For example, Plato's test no longer works: why should this bronze cube cease to exist when the six faces of some other cube, situated in another, purely mathematical, space, cease to exist?) Aristotle is not fully explicit about why mathematical surfaces and lines cannot exist "in the sensibles," in the same space as natural bodies, but his arguments at 1002a18-24 show the difficulties that mathematical boundaries in the sensibles would encounter.[67] The argument seems to turn fundamentally on a dilemma: are the only surfaces and lines that exist the external boundaries of sensible bodies (such as the boundary-surfaces between a bronze cube and the surrounding air, and the boundary-lines between the different boundary-surfaces of the bronze cube), or are there, beside the external boundaries, also internal surfaces (intersecting in lines and points) within the sensible bodies? Indisputably there are internal surfaces that could exist within this bronze cube, namely the different surfaces along which the cube could be divided; if (as at Δ7 1017b5-7) Hermes exists in the stone potentially, and the half-line in the line, then their boundaries also exist potentially. But there are infinitely many surfaces along which the cube could possibly be divided, and there is no reason why some of these surfaces should already exist within the cube and others should not; but if they all already exist, then there is an actual infinity of surfaces within a finite body; and, apart from the paradoxes of infinity, if the surfaces actually exist, then so do the bodies they bound, and so Hermes is already actually in the stone (paraphrasing 1002a20-24).[68] Aristotle thinks these consequences are impossible; his own way to avoid them is to say that the surfaces internal to sensible bodies, and the mathematical solids bounded by these surfaces, exist only potentially, becoming actual only when the body is physically divided: this implies that these surfaces and mathematical solids do not exist separately, and are not prior in οὐσία to the sensible bodies in which they are potentially present.

The possibility remains that the separately existing mathematicals, which are the ἀρχαί of sensible bodies, are only the external boundaries of the bodies. But, as Aristotle says, "all of these are evidently divisions of body" (1002a18-19), or more carefully "all are alike either limits or divisions" (1002b10-11), where he takes these descriptions to contradict their being οὐσίαι or ἀρχαί. Several thoughts can be unpacked from this. First, the external boundaries of sensible bodies are causally dependent on the bodies, so that what surfaces there are will depend on what sensible bodies there are and where they are located at any given time; this implies that the surfaces will not be eternal (contrary to what we might expect of mathematicals), and therefore cannot be ἀρχαί. Second, and more fundamentally, Aristotle thinks that the external boundaries of sensible bodies are not just causally dependent on the bodies, but ontologically dependent, being something like attributes of the bodies: if surfaces are limits or divisions of bodies, then for them to exist is just for some body to be limited or divided, as for whiteness to exist is just for some body to be white; and then surfaces and lines and points do not exist separately (as whiteness does not exist separately), and so again cannot be ἀρχαί. (At 1002a28-b11 Aristotle argues for this conclusion from the facts of coming-to-be. Surfaces and other boundaries do not

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[66]give references, including N3 1090b11-13
[67]contrast Mueller in Crubellier-Laks p.197, who thinks Aristotle means that if the lines etc. are οὐσίαι, they cannot be in the sensibles. Alexander 230,21-5, thinks the problem is that we don't find in sensibles e.g. length and breadth without depth, but this wouldn't be an argument against the boundary of a sensible solid being a plane
[68]d quote this passage in full--better to incorporate in the text above

properly come-to-be or pass away--they do not come-to-be out of any preexisting matter--but rather exist or fail to exist parasitically on bodies, so that when a body is divided, there are two bounding surfaces, and when two bodies touch, there is a single common boundary. Aristotle argues that this kind of incidental coming-to-be cannot happen with οὐσίαι, but only with things that exist, and come-to-be, parasitically on οὐσίαι.)[69] Finally, although Aristotle does not make this explicit here, the assertion that mathematical boundaries "cannot be in the sensibles" (1002a17-18) seems to rest implicitly on another consideration: the surfaces and lines and points of which mathematicians speak cannot be the external boundaries of sensible bodies, since sensible bodies are never bounded by precisely flat planes or precisely straight lines or perfect circles, or by anything else that a mathematician can prove theorems about, except that perhaps the heavenly bodies are bounded by perfect spheres.[70] Thus Plato's argument that the existence of bodies presupposes the existence of surfaces cannot be used to prove that <u>plane</u> surfaces (or any other mathematical objects) exist even in the inseparable way that whiteness does: if plane surfaces do exist, even in the way that whiteness exists, it must be in some other, purely mathematical, space, as boundaries of purely mathematical solids and not of sensible bodies. And while perhaps mathematical surfaces do exist in this way (although then the difficulties about actual infinities will recur), they would not then be ἀρχαί or οὐσίαι of sensible bodies, and the arguments purporting to prove them from sensible bodies would not work. When Aristotle takes up the aporia in M2-3, chiefly to argue against the Academics, his own solution will apparently be that mathematical surfaces exist only as surfaces <u>internal</u> to sensible bodies. That is, the bodies are potentially divisible along these surfaces but are not yet actually divided there, and indeed will never be actually divided along precisely these surfaces (as also the bodies are potentially infinitely divisible but will never be actually infinitely divided); and Aristotle takes this to imply that mathematical surfaces, and the mathematical solids they bound, exist only in potentiality. A mathematical object of this kind will be eternal, but it does not exist separately (nor even as an actual attribute of a separately existing thing), and so it cannot be an ἀρχή.[71]

   Of course, as we saw in B#5, one Academic argument for positing mathematicals, whether or not the boundaries are ἀρχαί of the things they bound, is that mathematical theorems cannot be true of sensibles, and yet must be true of something. Aristotle, while granting the premises, will try to show that the problem can be solved without positing anything beside the mathematicals potentially present within sensible bodies. But, as he also points out in the "thirteenth aporia" (1002b12-32, an appendix to B#12, cited above), if we accept the argument and grant separate mathematicals, we undermine the Platonist argument from the sciences to separate Forms as the objects of those sciences: if there are, e.g. mathematical triads, why posit a Form of three beside them? Undoubtedly Speusippus had made this point against Plato, and Aristotle is happy to adopt it. Plato's response is presumably, as Aristotle now says (1002b12-25), that if we posit nothing beside the mathematicals, their ἀρχαί or στοιχεῖα will be, like the στοιχεῖα of sensible syllables, many-per-type. The issue then turns on whether the ἀρχαί are one-per-type or many-per-type, and Aristotle refers back (at 1002b30-32) to the difficulties he had raised in B#9 against the Platonist thesis that the ἀρχαί are one-per-type: so the arguments that B#9 had given

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[69]cross-ref to other discussions of things that are and are-not without coming-to-be; there needs to be some central discussion (obvious possibilities are Iγ1c on E2-3 and IIγ2 on Z7-9)

[70]cp. B#5 997b34-998a6, discussed above. also a consideration from B#5 998a14-15, that we can't have unmoved mathematical solids (or their unmoved boundaries) present in moved sensible things--even if by some chance the boundary between sensible A and sensible B were a perfectly flat plane at a moment, it wouldn't remain one

[71]reference to Iγ3 on M3 on mathematical objects existing ὑλικῶς. warning--my interpretation here is controversial

for the physicists and against the dialecticians on the ἀρχαί also turn out to be arguments for the mathematicians and against the dialecticians, and likewise B#9's arguments for the dialecticians and against the physicists are also arguments for the dialecticians and against the mathematicians.

Nonetheless, many of Aristotle's criticisms of the claims of the mathematicians will be parallel to his criticisms of the claims of the dialecticians. One basic point of Aristotle's criticism of both dialecticians and mathematicians is that not every eternally true statement is a truth about eternal separately existing things: eternally true statements about the species "horse" are true about an eternally existing species, but the species does not exist separately from individual horses, none of whom are eternal; and even if an eternally true statement about the triangle ABC is true about an eternal individual triangle, this triangle is only a potential being, and does not exist separately from the sensible bodies that occupy its place. At a deeper level, Aristotle's criticisms of both the dialectical and the mathematical projects of wisdom turn on questions about the criteria for priority: the test of priority in λόγος, and also Plato's test for priority in οὐσία, seem to show that boundaries and genera are prior to the things, but Aristotle argues that boundaries and genera are not really prior in οὐσία to the things, because they do not exist separately from the things. However, it is not simply that Aristotle has rejected Plato's test of priority in οὐσία in favor of some other test which for some reason he prefers: indeed, Aristotle endorses Plato's test suitably interpreted. The deeper point is that Plato's test leads to antinomies: we can use Plato's test to argue that surfaces are prior to bodies, but we can equally use it to argue that bodies are prior to surfaces, since a surface cannot exist except when a body exists, since for a surface to exist is just for a body to be limited or divided in a certain way. Similar antinomies will also arise in the case of the dialectical ἀρχαί; as we will see in Iβ4, the notion of separation will allow Aristotle to resolve these antinomies about the ἀρχαί, since on the correctly formulated version of Plato's test X will be prior to Y in οὐσία only if it also exists separately. Since Aristotle concedes that mathematical and dialectical ἀρχαί are eternal, his disputes with the Academics will often turn on whether these things exist separately, and in Metaphysics E1 he will ask whether there is something separate and eternally unmoved which can be the object of first philosophy, i.e. of a wisdom beyond physics. Existing "separately" here means, roughly, existing as an οὐσία rather than dependently on some other οὐσία; it does not mean existing separately from the matter of sensible things, since Aristotle can also challenge matter's claim to be an ἀρχή by asking whether it exists separately (details in Iβ4, and for matter IIβ). So the question is not only about separate eternally unchanging things; nonetheless, since Aristotle has argued that, if there are separate unchanging things, the ἀρχαί are separate unchanging things, and since he thinks that there are in fact separate unchanging things, he is more interested in questions about separate unchanging things than in questions about a separate material ἀρχή.

B#8 and B#14: difficulties against the physicists, and the need for further ἀρχαί

In Metaphysics B Aristotle presents not only difficulties against positing the separate unchanging ἀρχαί proposed by the Academics, but also, in the eighth aporia, difficulties against not positing such ἀρχαί: these difficulties give arguments for positing some unchanging ἀρχαί, and also more specific arguments for positing Platonic Forms. B#8 frames its question as whether "there is something beside [παρά, i.e. separate from] the individuals" (999a26), where the argument assumes that the individuals are sensible (999b1-2) and also that they are corruptible (999b4-5); it also assumes that anything that exists beside these individuals is a

"genus," that is, a universal (999a29-32). The arguments for positing something παρά the individuals give rise to an aporia, because Aristotle has argued in B#7 that the genera cannot exist παρά the individuals, as he recalls here at 999a29-32 (and he adds some new arguments at 999b17-24, partly discussed above). To the extent that the arguments of B#8 show only that there must be something beside <u>sensible</u> or <u>corruptible</u> individuals, Aristotle can simply endorse the arguments, and resolve the difficulties by showing that the non-sensible incorruptible οὐσίαι that there really are are not universals, and so are not liable to the objections against separate universals raised in B#7.[72] But to the extent that the arguments of B#8 argue specifically for positing <u>forms</u> separate from (and prior to) corruptible individuals, Aristotle will have to reject the arguments and try to show where they go wrong.

B#8 gives two main arguments on the Platonist side, one from the possibility of knowledge and one from the possibility of coming-to-be. The argument from knowledge is first presented as a one-over-many argument: "if there is nothing beside the individuals, and the individuals are infinite, how would it be possible to grasp knowledge [ἐπιστήμη] of infinitely many things? For we know all things in so far as there is some one and the same thing [present in the many things], and in so far as something universal belongs [to the many things]" (999a26-9). Further down, Aristotle adds, "if there is nothing beside the individuals, nothing would be intelligible, but all things would be sensible, and there would not be knowledge [ἐπιστήμη] of anything, unless someone says that sensation is knowledge" (999b1-4). Why couldn't sensation be knowledge? We might think of the various absurdities that the <u>Theaetetus</u> tries to derive from this thesis, but Aristotle seems to think that calling sensation ἐπιστήμη is <u>obviously</u> absurd, or obviously an abuse of language. His point is likely to be that the sensory perception of an object is an occurrent event, which ceases to be when the object ceases to be, or when it ceases to be present to us, whereas ἐπιστήμη is a ἕξις, a persisting dispositional state; since a cognitive state and its object are correlative, and the state cannot continue to exist when its object ceases to exist, the object of my persisting ἐπιστήμη cannot be the single perishable individual, but must be some persisting universal through which I recognize the individuals that fall under it when they become present to me. Aristotle will develop arguments of this kind later in the <u>Metaphysics</u> (Z10 1036a2-9, M10 1087a10-25), and we will deal with them in their proper places.[73] To the brief argument presented in B#8, the obvious response is that while this argument shows that the object of ἐπιστήμη must be universal and other than the individuals that fall under it, it does not show that this universal exists <u>separately</u> from the individuals; but this response will require, and help to motivate, the development of the concept of separate existence.

Harder to deal with will be the argument from coming-to-be:

> If there is nothing eternal, then neither can there be coming-to-be. For there must
> be something which comes-to-be and out-of-which [something] comes-to-be
> [ἀνάγκη γὰρ εἶναι τι τὸ γιγνόμενον καὶ ἐξ οὗ γίγνεται], and the last of these is
> ungenerated, if there is a stopping-point [i.e. if there is no infinite regress] and if
> there cannot be coming-to-be out of non-being. Again, if there is coming-to-be
> and change, there must also be a limit (for no change is endless, but each has an
> end; and what cannot <u>have</u> come-to-be cannot come-to-be, and what has come-to-

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[72]this is most obviously the case with the argument from the K parallel to #8, K2 1060a26-7, "πῶς γὰρ ἔσται τάξις μή τινος ὄντος ἀϊδίου καὶ χωριστοῦ καὶ μένοντος;" Aristotle repeats this on his own authority, in criticism of others, at Λ10 1075b24-7

[73]note also connection with νοεῖν τι φθαρέντος: discussed?

be must <u>be</u> once it has come-to-be). Again, if the matter <u>is</u> [ἔστι] on account of its being ungenerated, it is much more reasonable that the οὐσία, i.e. what [the matter] is coming-to-be,[74] should be; for if neither the matter nor the οὐσία are, nothing at all will be; and if this is impossible, there must be something beside [παρά] the composite, namely the shape and the form. (999b5-16)

Here there are a number of interpretive issues. The Platonist starts by arguing that, if nothing comes-to-be out of nothing and if there is no infinite regress, the fact of coming-to-be requires a material ἀρχή which has existed from eternity. Then, somehow there is a transition (or several transitions) to the conclusion that coming-to-be also requires a <u>formal</u> ἀρχή which has existed from eternity. It is possible that this transition is already made in the first sentence: it is easiest to take τὸ γιγνόμενον καὶ ἐξ οὗ γίγνεται as epexegetic, so that he would be arguing only to a pre-existing (and eternal) material ἀρχή. But it is also possible, as Alexander suggests, that τὸ γιγνόμενον is the thing that arises, so that if some matter S comes-to-be F, F is what comes-to-be: the argument would say that any such instance of coming-to-be presupposes both the matter S and the form F, and that even if this matter and this form may have in turn come-to-be from some prior matter and form, the last in any of these chains of material or formal causality must have existed from eternity.[75] This seems linguistically unlikely ("τὸ γιγνόμενον" might mean the persisting subject or the composite, but can it mean the form?), but is supported by the fact that Aristotle does in fact consider this Platonist argument for the eternity of the form in Z8 and Λ3, to be discussed in IIγ2 and IIIβ1 respectively, although without using "τὸ γιγνόμενον" in the peculiar way that this reading of B#8 would require. However, Z8 and Λ3 might be drawing here, not on this sentence of B#8, but on the following sentences. When S comes-to-be F, the "limit" of coming-to-be in the next sentence is the form F; when S comes-to-be F, there must be some F that it is coming-to-be, and if this F in turn is in process of coming-to-be, and so <u>ad infinitum</u>, then the process of coming-to-be-F will never reach a limit, and so will not in fact be a process of coming-to-be-F (Plato may be arguing in roughly this way at <u>Theaetetus</u> 182a3-d7, against opponents who say there is only coming-to-be and no stable being).[76] The Platonist then argues that if the matter <u>is</u>, on account of its being ungenerated, then <u>a fortiori</u> the form must <u>be</u>. The sense may be "if the matter exists, sc. before the composite comes-to-be, because it cannot itself be generated in the process, then <u>a fortiori</u> the form exists, sc. before the composite comes-to-be, since if they do not exist, neither will the composite," with the implication understood that if the matter and form exist before the composite, the ultimate matter and form must have existed

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[74]note text issue: ὅ ποτε ἐκείνη γίγνεται [E Bonitz Christ Ross Jaeger] vs. ὅποτε ἐκείνη γίγνεται [J Aᵇ Bekker]--d check other sources. if the latter, then "that the οὐσία should exist <u>when</u> it [presumably the matter] is coming-to-be"

[75]Bonitz and Ross take the passage in the obvious way; Madigan contests it, see esp. his note p.161, but I'm not sure whether Madigan takes the γιγνόμενον to be the form (useful for the argument but linguistically difficult) or the composite (linguistically possible but making, as far as I can see, no contribution to the argument). Alexander pp.212-13 apparently takes τὸ γιγνόμενον to be the form, but he then goes through the argument as if "the last of these" referred only to the matter; then he notes that it could also be taken to refer to the form as well, but reinterprets the form in such a way that it would be the efficient cause, the form in the conspecific generator (or presumably in the artisan) rather than properly the formal cause. Alexander may be trying as much as possible to have the argument in Aristotle's own voice rather than a Platonist's

[76]perhaps also compare <u>Phaedo</u> 101c2-6: if you follow the method of investigation through λόγοι, "you would cry out that you do not know any other way for each thing to come-to-be than by coming-to-participate [μετασχεῖν, ingressive aorist] in the particular οὐσία of that thing which it comes-to-participate in, so that ... you have no other explanation [αἰτία] of becoming two than coming-to-participate in the dyad, and that things that are going to be two [τὰ μέλλοντα δύο ἔσεσθαι] must come-to-participate in this"

from eternity. Or it might be, as Alexander suggests, "if the matter is [eternal],[77] because the ultimate matter must be ungenerated, then a fortiori the form must be [eternal]; if the form is not [eternal], and a fortiori the matter is not [eternal], then there is nothing [eternal], which is [for some reason to be supplied] impossible":[78] this would be close to the K2 parallel, which gives arguments that matter is only potential and that form is corruptible, "so that there will not be any eternal οὐσία at all which is separate and καθ᾽ αὑτήν," and then complains "how will there be order if there is not something eternal and separate and persisting?" (1060a19-27). But why, if matter exists before the composite or from eternity, should it follow a fortiori that form does? Perhaps for the reason given in the K2 parallel, that the matter is merely potential; or perhaps because of the infinite regress argument about the form, analogous to the infinite regress argument about the matter, as sketched above; or perhaps because, as in the "limit" argument, if S is coming-to-be F there must be some F that it is coming-to-be. This argument might be filled out semantically: if it is true to say that the thing is becoming an F (or that it will be an F), then the word "F" must mean something even before this particular F exists, and the form of F is just the meaning of this word. It might also be filled out teleologically: unless S is coming-to-be F merely by chance (which is not credible if the product, whether an artifact or an animal or the world-order, is manifestly the work of reason), the maker of the F must be "looking at" some model in producing it. This model must already exist, and it must be an F if it is to guide the maker in producing an F, and it must be an eternal F if it is to guide the maker in producing a good F: Plato argues this way at Timaeus 28a6-b2 in proving that, among the ἀρχαί existing before the sensible world, there is an eternal model of the world.[79]

Aristotle may well be thinking of all these different arguments at once; in any case, they are all Platonic arguments for an eternal form of F existing before any particular F comes-to-be, and he will need to defuse all of them if he does not want to posit the forms of things as ἀρχαί existing παρά the individuals. Aristotle's solution will be closely connected with his solution, discussed above, to the arguments of B#10 that corruptible things must proceed from incorruptible ἀρχαί. He will distinguish constituent from non-constituent ἀρχαί, and grant that coming-to-be depends on a separate eternal non-constituent ἀρχή which is a cause of order to the sensible world, and which, since it is not a universal, is immune to the anti-Platonist arguments of B#7 (Aristotle will say, in arguing that only the Metaphysics Λ account of the ἀρχαί can solve the aporiai, "if there are not other things beside the sensibles, there will not be an ἀρχή and order and coming-to-be and the heavenly things," Λ10 1075b24-6, closely echoing the K2 parallel to B#8, 1060a26-7, cited above). And he will try to answer the narrower arguments that the form of F must have existed before this composite F came-to-be, resolving the infinite regress argument by saying that the form, like the boundaries of B#12, does not properly come-to-be but exists when the composite has come-to-be, and resolving the other arguments and by saying that the form of F preexisting in the generator or the artisan is sufficient, without numerically the same form of this composite F needing to preexist (so Z7-9, discussed IIγ2 below, and Λ3, discussed IIIβ1 below).

Here in B#8, although Aristotle does not defuse these arguments, he does note difficulties that the arguments would involve if they succeeded. I have already cited the dilemma that Aristotle raises against the thesis that the form of a thing exists prior to the thing: "will there be one οὐσία

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[77]Christ even suggested emending "ἔστι" to "ἐστὶν ἀίδιος"

[78]actually Alexander takes the end to be "then there is nothing at all, i.e. the composite would not come to be"--but this would involve a drastic shift in the meaning of "ἔσται" within b15

[79]note also the Phaedo on seeing something wanting-to-be-X. my guess now is that Aristotle intends the argument here to come in three stages, (i) the matter is eternal, (ii) the form does exist in the matter at the end of the process, (iii) the form must have preexisted from eternity

[i.e. form] of them all, e.g. of all men? But this is absurd: for things whose οὐσία is one are one. Or many different οὐσίαι? But this too is unreasonable" (999b20-23). It is obvious that there cannot be a single οὐσία of many things, since a thing's οὐσία is proper to the thing (as the <u>Topics</u> says, the definition of a thing, the formula that states the thing's οὐσία, must be an ἴδιον of the thing). But if we posit a <u>different</u> horse-form existing from eternity prior to each individual horse, then there is at the present moment an infinity of indiscernible horse-forms waiting to be incarnated in horses yet to be born; and this is absurd. And besides (Aristotle adds), "how will the matter become each of these, and how will the composite be both of these" (999b23-4)? That is: when Bucephalus is generated, how will the matter <u>become</u> something that already exists (the previously unemployed Bucephalus-form, or the single species-form), and how will the composite <u>be</u> both of these previously existing things at once? These are all varieties of the "hard one-many problems" that arise for those who posit the forms, related to the difficulties raised against the Platonist position on genera in B#9, and they will be developed against the Platonists in <u>Metaphysics</u> Z. We can avoid the absurdity if the form of horse that persists through the generation and corruption of sensible horses is a type, a <u>such</u> rather than a <u>this</u>, so that it is not the οὐσία of the many horses and so that something does not need to become an already-existing <u>this</u>;[80] and there is no absurdity in their being many forms or οὐσίαι of the many horses if the forms do not exist before the horses. But if a form is a such, or if it does not exist prior to the thing, then it cannot be an ἀρχή; if the matter also cannot be an ἀρχή, then we need to look for an ἀρχή other than matter and form.[81]

In <u>Metaphysics</u> B itself, Aristotle does not consider arguments for any ἀρχαί other than material and formal causes (except the mathematical ἀρχαί, however these are to be taken); this is because his concern here is to examine, and raise difficulties for, the claims of the physicists and the dialecticians (and the mathematicians), and these were the chief kinds of ἀρχαί that these people posited. The physicists believe in an eternal matter, or a plurality of eternal matters, existing before the world came to be; Plato, in the <u>Timaeus</u>, accepts the thesis of an eternally preexisting matter, but of course he also believes in eternally preexisting forms. While Aristotle also believes, in a sense, that both matter and (species-)forms are eternal, he denies that either matter or universals exist separately, and so denies that they can be in the proper sense ἀρχαί. But Plato and the physicists have another candidate for an ἀρχή, which is not refuted by these considerations. The <u>Timaeus</u>, following Anaxagoras, posits νοῦς as an ἀρχή existing prior to the world, for Plato a third independent ἀρχή alongside form and matter. While Aristotle is silent in B about νοῦς as an ἀρχή, and about the causal route that leads from generated things to νοῦς as an efficient cause of motion and order, this is what he himself thinks is the true path to the ἀρχή, and he will pursue it in the <u>Metaphysics</u> after he has examined and rejected the false paths. Still, he does not think that either Anaxagoras or Plato have an adequate conception of νοῦς and its causality; and here too a development of the difficulties in earlier conceptions of the ἀρχή will help to motivate and to justify the true conception.

While none of the aporiai of B deals with νοῦς as such, one very briefly sketched aporia, #14,[82] will be important for Aristotle's criticisms of his predecessors' conceptions of νοῦς as well as of other ἀρχαί. In B1 Aristotle lists the question as "whether the ἀρχαί ... [are] δυνάμει or

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[80]see Aristotle's treatment of the aporia in Z7-9, IIγ2 below; and see Iβ4 on "this" and "such"

[81]d eliminate the very heavy duplication with IIγ2, which should be revised in the light of the recent (summer 2009) revisions to the present section; also check on non-duplication and cross-references with IIIβ1 (and IIIγ3)

[82]d supplement this account of #14 from what you say in the <u>Symposium Aristotelicum</u> volume pp.248-53--esp. on text and construal issues and on the history of interpretation (at least Alexander, Bonitz, Ross)

ἐνεργείᾳ, and [if the latter] whether with regard to κίνησις or in some other way" (996a9-11).[83] In the main body of B he avoid the concept of ἐνέργεια and the question whether the relevant ἐνέργεια is a κίνησις, or not (presumably because these concepts and the grounds for arguing about them would require an elaborate introduction, as in Metaphysics Θ), and asks instead

> whether the στοιχεῖα are δυνάμει or in some other manner: for if in some other way,[84] then there will be something else prior to the ἀρχαί (for the δύναμις is prior to that cause, and it is not necessary for everything that is δυνατόν to be in that way [ἐκείνως ἔχειν]); but if the στοιχεῖα are δυνάμει, it is possible [ἐνδέχεται] for none of the things-that-are to be. For even what-is-not-yet is δυνατόν to be, since what-is-not comes-to-be, and nothing that is ἀδύνατον to be comes-to-be. (1002b32-1003a5)

Aristotle's extreme compression here leaves several ambiguities, notably between existential and predicative senses of "is" and between δυνατόν as "capable" and "possible," and can make it hard to see where he thinks the difficulty lies. Ross takes the "is" of the initial question to be existential, "do the elements exist potentially or in some other fashion" (AM I,249), and so he takes the argument "if the στοιχεῖα are δυνάμει, it is possible for none of the things-that-are to be" to mean that if even the ἀρχαί are only potentially and not actually existent, a fortiori everything else will be only potentially existent (and so Alexander 235,24-8). This is, however, very unlikely: no one had maintained, or would be likely to maintain, that the ἀρχαί are only potentially existent, and when Aristotle resolves the aporia in Θ8 and Λ6 he does not seem to address such concerns. Rather, the issue is whether the ἀρχαί are actual or potential causes-- which is why Aristotle says "the δύναμις is prior to that cause", i.e. the actual cause. Aristotle distinguishes these kinds of causes in Physics II,3 and Metaphysics Δ2, contrasting the "ἐνεργοῦν cause" with the "δυνάμενον cause" or the "cause κατὰ δύναμιν": the art of housebuilding, which is itself a δύναμις, and the housebuilder, as the possessor of that δύναμις, are potential causes of a house, while the "housebuilder housebuilding," the person exercising the δύναμις, is an actual cause of a house (Physics II,3 195b3-6 and b16-21 = Metaphysics Δ2 1014a8-10 and a19-25).

Almost all the pre-Socratic physicists, if the question were explained to them, would answer the ἀρχαί are only potential causes. This is implied in the common comparison of the ἀρχαί to seeds: a seed is what has the capacity (in the appropriate circumstances) to become a plant or

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[83]Ross interprets without the supplement "if the latter," which is possible but, I think, unlikely. if the ἀρχαί are acting, the problem whether they are in motion is quite acute, since there is a prima facie appearance that everything that acts is in motion, and this might lead someone to conclude (wrongly, on Aristotle's view) either that the ἀρχαί are not acting but are only potential causes, or that the ἀρχαί are in motion. it is much harder to see what the difficulty about motion would be if the ἀρχαί are potential. in any case, the arguments of #14 as he develops them in B do not bear on the issue of motion at all; he will have things to say in Θ and Λ that bear on the question of motion if the ἀρχαί are acting. (Alexander 180,18ff seems to make the question "with regard to κίνησις or in some other way" entirely independent of the question "δυνάμει or ἐνεργείᾳ": for the κίνησις question, he offers first the obviously wrong interpretation that Aristotle is acting whether the ἀρχαί are moving, i.e. efficient, causes, and then the correct interpretation that Aristotle is asking whether the ἀρχαί are themselves in motion, but he doesn't connect this with the question of ἐνέργεια)

[84]reading εἰ μὲν γὰρ ἄλλως πως with J and Alexander and all editions after Bekker; E and A^b, followed by Bekker, have πῶς, thus εἰ μὲν γὰρ ἄλλως, πῶς πρότερόν τι ἔσται τῶν ἀρχῶν ἄλλο;, "if otherwise, how will there be something else prior to the ἀρχαί?". πως seems clearly preferable, and is printed even by Bonitz and Christ, without J

animal, but is not yet exercising that capacity. The flesh and bone and so that existed before the world for Anaxagoras, which are not yet actually functioning as parts of animals, would be potential material ἀρχαί, but also Anaxagoras' νοῦς, before it began to stir up the cosmic rotation, and the demiurge of the Timaeus, before he began to impose order on the matter, would be potential efficient ἀρχαί. Indeed, if the ἀρχαί are what existed before the world came to be, it seems that they would have to be potential causes: before the world came to be, there were already material ἀρχαί capable of becoming a world, and efficient ἀρχαί capable of producing a world, but they were not yet exercising these capacities, or there would already be a world. More generally, even without assuming a time before the world came to be, we can use Plato's test to argue that potential causes are prior to actual causes, and therefore that the ἀρχαί, as the first of all things, must be potential causes rather than actual causes. This is the implicit argument of the first half of B#14: if the ἀρχαί are actual causes, then (absurdly) there will be something else prior to the ἀρχαί, "for the δύναμις is prior to that cause," since "it is not necessary for everything that is δυνατόν to be in that way," i.e. by Plato's test housebuilder is prior to housebuilder housebuilding, since it is necessary for every housebuilder housebuilding to be a housebuilder, but it is not necessary for every housebuilder to be a housebuilder housebuilding. (Thus "δυνατόν" here seems to mean "capable," "possessing a δυναμις," rather than "possible.") Aristotle's restatement of the aporia in Λ6 makes the argument more explicit: "it seems that everything that acts [ἐνεργεῖν] is capable [δύνασθαι], but not everything that is capable acts, so that δύναμις would be prior" (1071b23-4, discussed below IIIβ2a).

However, Aristotle thinks that the other side of the aporia is right, and that the ἀρχαί must be actual causes; he thinks that the brief argument given in B#14 ("if the στοιχεῖα are δυνάμει, it is possible for none of the things-that-are to be. For even what-is-not-yet is δυνατόν to be, since what-is-not comes-to-be, and nothing that is ἀδύνατον to be comes-to-be"), when properly developed, is a decisive proof that at least one of the ἀρχαί has to be an actual cause. Indeed, in Λ6 he puts the point even more strongly: "[if δύναμις is prior], then none of the things-that-are will be"--not just that they might not be--"for it is possible for something to be δυνατόν to be, but not yet be" (1071b25-6). The thought is not "if the ἀρχαί exist only potentially a fortiori everything else will exist only potentially," but rather that, as Aristotle says at Physics II,3 195b27-8, δυνάμεις (or potential causes as the possessors of δυνάμεις) are the appropriate causes of δυνατά effects: if there is something with the active power to produce a house, and something with the passive power to be made into a house, that is sufficient to explain that there can be a house, that a house is "δυνατόν to be," but not that there actually is a house. And, as he says here, it follows from the fact of coming-to-be that there is a gap between explaining that X is δυνατόν to be and explaining that X is: some things come-to-be, but only what is not comes-to-be, and what is ἀδύνατον to be does not come-to-be, so there must be some things which are not and yet are δυνατά to be. Strictly speaking, the conclusion is not that it is possible for nothing to be, but that it is possible for nothing beside the ἀρχαί to be. And, as he adds in the Λ passage, then nothing beside the ἀρχαί will be, because there will be no sufficient reason for them to be. Or, to put the thought concretely against Anaxagoras or the Timaeus, we can ask why νοῦς began at some moment to set the matter in order after an eternity of inactivity. Anaxagoras and Plato simply narrate that νοῦς did this, but if we are not satisfied with narrative, and demand a cause for what happened, then the cause will have to be some kind of ἐνέργεια, thus an actual cause to stir νοῦς into activity. The first actual cause that is responsible for νοῦς's actually acting on matter will be an ἀρχή, thus an ἐνέργεια that has existed from eternity; and it is preferable, rather than positing such an ἀρχή in ἐνέργεια prior to νοῦς, to say that the ἀρχή is just νοῦς, but

a νοῦς actually thinking and actually acting on the world from all eternity, with no merely potential νοῦς existing prior to it. One reason why earlier philosophers had been reluctant to posit actual causes as ἀρχαί is that, if the ἀρχαί are what existed prior to the world, and if they were already actual causes, then the world would already have existed; but Aristotle simply accepts the consequence, and concludes that the world has existed from eternity beside its ἀρχαί, and that the priority of the ἀρχαί to their effects cannot be a priority in time.

Ross strangely says that this aporia "is not expressly answered, but Aristotle's answer may be inferred from his doctrine that actuality is prior to potentiality (Θ8)" (AM I,xxiv). In fact, as we will see in Part III, Metaphysics Λ6 restates and answers the aporia, drawing on Θ8's investigation of the priority-relations between δύναμις and ἐνέργεια, and more generality on Θ's investigation of the concepts of δύναμις and ἐνέργεια and the relations between δυνάμεις and their δυνατά effects. The aporia thus plays a very important role in the overall architecture of the Metaphysics. The physicists' arguments to the material cause, and the dialecticians' arguments to the formal cause, do not succeed in bringing us from sensible things to a separately existing eternal ἀρχή, as Aristotle concludes in ZH; nor do the mathematicians' arguments succeed in bringing us from eternally unmoved mathematical things to such an ἀρχή, as he concludes in MN. But Anaxagoras and Empedocles and the Timaeus also have another line of argument, from the physical world to something like νοῦς as a first efficient cause, and this argument fundamentally succeeds, although it needs to be refined and supported by an investigation of the concepts of potential and actual existence and their causes, leading to a refined conception of νοῦς as a single separately existing eternally unchanging good ἀρχή, without a contrary evil ἀρχή, acting from eternity in the same way and so eternally producing an ordered world. And Aristotle will thus be able to accept the conclusion of the Platonist side of B#8 that there must be an eternally unchanging ἀρχή separate from sensible composites, without falling into the difficulties that result from positing a separate formal ἀρχή. After rejecting the Platonic path to a formal ἀρχή in ZH, Aristotle will turn to this quite different path, carrying out the fundmental investigation in Θ, and drawing the positive results for the ἀρχαί, alongside all the negative results, in Λ.[85]

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[85] {problem about #15, where to integrate? to some extent that can be postponed to Iβ4, since it arises out of 1-many sophisms [which should perhaps be given a greater emphasis in Iβ4--d think about replanning Iβ4 this way--or postpone to II?] and also turns heavily on the notions of separation and τόδε vs. τοιόνδε} {also, conn/ B#15, think about what to do w/ B#13, make the pt that this comes out of internal Acad quarrels, using Sp. vs. P, and conn use of originally Megarian argts vs. P in B#15; note conn #13 with #9, motivation for positing Forms vs. maths is wanting one-per-type ἀρχαί, which we won't get from constituent ἀρχαί either of physical or of mathematical things, but then if the P-ists are right refback to difficulties, primarily #9 but perhaps also #7, NB #13 makes explicit as #9 itself does not that the argts of #9 target the P-ists, perhaps incorporate that in acct of #9 if you haven't already}