The Aim and the Argument of Aristotle's Metaphysics

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Iγ3: The argument-structure of MN and their place in the Metaphysics

As with Iota, there is no ideal place for a discussion of MN.[1] Indeed, there is no ideal place for MN themselves within the Metaphysics, and where they are currently transmitted, after Λ, is certainly wrong. But MN are an important part of Aristotle's project in the Metaphysics, and important for us in understanding how Aristotle is thinking about his project: it would be a serious mistake to let these books slip out of sight simply because they are not talking about the senses and causes of being. As we have seen, AB determine wisdom as a science of the ἀρχαί, which will be first causes, in some sense of cause, of some effect, and Γ proposes to seek these ἀρχαί as causes of the most universal effects, being and the attributes coextensive with being. This is a plausible approach but is not the only possibility: Aristotle's Academic contemporaries pursue the ἀρχαί as causes of the highest (rather than the most universal) kind of οὐσία, namely eternally unchanging beings, especially under mathematical descriptions that make them especially amenable to the search for ἀρχαί. (You might think, like Plato, that the ἀρχαί of the highest kind of οὐσία will also be causes of all beings universally, or you might think, like Speusippus, that there are no causes of all things universally, and that the highest causes are only causes of the highest οὐσίαι.) This is the path to the ἀρχαί that Aristotle is examining in MN, of course with negative results; while these books clearly refer back to B and address aporiai from B, they are mostly independent of the investigation of being and its attributes in ΓΕΖΗΘΙ, although (as is natural given their subject-matter) they do seem to draw on the analysis especially of unity in Iota; and Λ will draw on negative results of both Iota and N. Because MN are directed against contemporary Academics, Plato and Speusippus and Xenocrates and perhaps others, it is often hoped that these texts will give a window into Aristotle's motivations at an early stage of his project, when he was first distinguishing himself from his Academic rivals; sometimes it is thought more specifically that N, or N together with the last chapter-and-a-half of M, comes from an earlier stage than the rest of MN, perhaps when Plato has just died and Speusippus (who survived Plato for eight years and was head of the school for that time) is Aristotle's main rival. While I have no particular hopes for dating anything, and see no reason why Aristotle's concerns in MN should not have been his concerns throughout his career, it is true that these books help show us Aristotle's motivations and the way he constructs his own project by demarcation from those of his contemporaries; and Jaeger deserves our gratitude for focussing attention on these books and raising important questions about their argument-structure.

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[1] compare discussion of the status and place of Iota and MN in the first few pages of Iγ2a above. the other possibility would be to treat MN, either by themselves or with Iota, in between Θ and Λ--or to treat MN as an appendix (to the whole treatise, or to Iota): but this is precisely what I'm trying to avoid (the first paragraph of this section should explain why). note also that I'll treat A9 here through its M parallel rather than in Iα with A1-2 or Iβ1 with A3-7; insert a forward reference in treatment of A, perhaps in Iβ1. some readers may well be impatient with some details in this section and want to skip ahead. {note now the problem of integrating the section on Hermodorus and Xenocrates against a relative ἀρχή. presumably incorporate into account of N1-2 below. what was essential for understanding Aristotle's argument against Plato in N1 was already said in Iγ2c and you don't have to repeat it, but there's a new point about Aristotle's embeddedness in Academic discussion, the extent to which he's adapting other Academics' criticisms of Plato, turning their arguments against each other or against themselves; and the extent to which much of his argument against Plato misses fire against more contemporary philosophers}. also: on MN, announce relation to the commentaries of Annas and Crubellier

Too often MN are not considered in their own right, but are torn apart, and their individual pieces used to fill out what is missing in Aristotle's argument elsewhere, or to reconstruct Plato's oral teaching or the theories of Speusippus and Xenocrates.[2] This would be fair if these texts are simply piles of loose notes left over after the composition of the Metaphysics, as is, I think, the case for α and K. It is not fair if these texts work together to fill some function in the idealized argument-structure of the Metaphysics as Aristotle projects it in B and the other programmatic texts we have been studying: in this case, beyond studying the individual arguments of MN, we should also say something about how they are supposed to function together in the overall argument of the Metaphysics, and how the sequence of the arguments within MN is determined by this larger function. But just these are the chief disputed questions about MN--the degree of coherence of the texts internally, and as a part of the Metaphysics. Those scholars who have used MN only to quarry information about Plato's unwritten teachings or about Speusippus and Xenocrates, or to evaluate Aristotle's credibility as a reporter of these people's doctrines, have not been much concerned with these structural questions. But especially Jaeger, both in 1912 and especially in 1923, focussed on structural difficulties of MN (doublets within MN and between M4-5 and A9, apparent discrepancies between Aristotle's internal references and the structure of the text as we have it) as clues to the history of the composition of the Metaphysics; and more recent writers (especially Julia Annas and Michel Crubellier in their commentaries on MN), even if they are less interested in diachronic questions, have had to address Jaeger's structural issues.

There have been two main issues: (i) for the relation of MN to the larger structure of the Metaphysics, the cardinal evidence has come from the partial duplication between the criticisms of Platonic forms in Metaphysics A9 and in M4-5. To be a bit more precise about the relationship between these texts:[3] after the introductory lines M4 1078b7-12, we have a discussion of the Socratic and Heraclitean motivations of the theory of forms, M4 1078b12-32, partly parallel to A6 987a32-b8 but with a long parenthesis inserted; then the major part of M4, 1078b34-1079b3, is closely parallel to A9 990b2-991a8 (loosely for the first two lines, almost verbatim for the rest); the short final paragraph of M4, 1079b3-11, is without parallel in A9. Then the whole of M5, 1079b12-1080a11, is against almost verbatim parallel to the first half of A9, 991a8-b9;[4] the second half of A9, 991b9-993a10, has no close parallel anywhere in M.[5] These duplications are close enough that it seems impossible that it was Aristotle's considered intention that A9 and M4 should stand together in the same treatise. Furthermore, the parallel texts are not entirely identical, and Jaeger called attention to the fact that five times where M4 refers to the Platonists with a third person plural verb (or a passive paraphrase), the A9 parallel puts them in the first person plural instead; Jaeger took this as evidence that the A9 version was from an earlier period when Aristotle still thought of himself as a Platonist addressing an audience of fellow-Platonists, M4-5 from a later period where he saw himself as an outside critic of a rival school.[6] At the same time, Metaphysics M contains back-references to earlier books of

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[2]cite Crubellier on archeology vs. looting. the chief example is Robin; then the Tübingen school. I too have dealt with some individual arguments from MN in the context of discussing arguments in Iota, and I will treat other arguments from MN similarly in the context of discussing other books; there is nothing wrong with this, but it is not sufficient.

[3]perhaps inset or add a table of correspondences

[4]except that the last sentence of M5, 1080a9-11, transitional to M6, has no parallel in A9; see a note below

[5]note to discussion below, and perhaps another table, on parallels between A9β and M6-N6

[6]give Jaeger citation, and full list of the relevant occurrences of "we" in AB, with what the M parallels do, and noting αβ divergences in A, as in Oliver's paper; need, probably when we come to M4-5, discussion of the explanations, developmental or "ethical"/rhetorical as in Alexander, and Plutarch on "the preacher's we," as in my

the Metaphysics, most clearly to B (M2 1076a39-b1 and 1076b39-1077a1 and M10 1086b15-16 all refer to what was said ἐν τοῖς ἀπορήμασιν or διαπορήμασιν), and B in turn unmistakably refers back to A:[7] there is thus a kind of antinomy about whether MN belong to the project of the Metaphysics as defined by AB.

(ii) There is also dispute about the internal structure, or lack of structure, of MN. Some writers (most strongly Crubellier) see all of MN as a treatise unified by a single plan laid out in M1; at the other extreme, some writers see MN as a loosely connected pile of separate short discussions.[8] Other writers, including Jaeger, think that MN is not one treatise but two treatises: not M and N, but rather on the one hand M1-M9α (that is, through M9 1086a21), and on the other hand M9β-10 and N (that is, from M9 1086a21 to the end of the Metaphysics--Syrianus 160,6-11 says that some manuscripts put the book-division between M and N here at M9 1086a21 rather than after M10).[9] Jaeger thinks that M9β-N date from the earliest version of the Metaphysics, when Aristotle is presenting himself as a defender of true Platonism against Speusippus, while M1-9α would be a later replacement, filling the same niche within the argument-structure of the Metaphysics, but written from the perspective of an outside critic of the whole Platonic school including Speusippus and Xenocrates. And Jaeger thinks that while M9β-N were written as part of a version of the Metaphysics that included the earlier (more "internal") critique of the Forms in A9, Aristotle would later, in writing M1-9α, have revised this critique and incorporated it into his new text as M4-5, with the intention of going back to delete the now duplicated passage from A. The whole question of the structure or structurelessness of MN is difficult, and certainly some parts of MN are better structured than others. M1-9α, or more precisely M1-M8 1083b23 together with the conclusion M9 1085b34-1086a21, seem like a single well-structured argument dividing up Academic views of different objects that might exist separately from sensible things, and refuting each of them in turn; in the rest of MN it is much harder to find a single overall plan, although certainly some individual chunks have their own clear argument-structures, most strikingly N4 1091a29-N5 1092a17, on whether and how the good is among the ἀρχαί.

Much of the discussion about the internal structure of MN has turned on the interpretation of Aristotle's prospective division of his argument in M1: having proposed to investigate the unmoved eternal substances which have been claimed to exist beside the sensibles, namely ideas and mathematicals, Aristotle divides the task into three:

> First we must investigate the mathematicals, not adding to them any other nature, such as whether or not they are ideas, and whether or not they are ἀρχαί and οὐσίαι of the things that are, but only investigating about mathematicals, whether they exist or not, and, if they exist, how they exist. Then after this we must investigate separately about the ideas themselves, simply and [only] as far as

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commentary on Oliver, Princeton December 2009): in the meantime, refer to the auxiliary document, which can be presented as an appendix or a chart

[7]at 995b4-6, 996b8-10, and 997b3-5, all cited in Iα5 above

[8]Annas is close to this view, although this is not her official position; cp. p.79 and p.81 on many lecture-courses being no worse. but she treats esp. N as just a grab-bag; the truth is that she is only interested in "philosophy of mathematics" and esp. in criticisms of numbers composed of abstract units, and loses interest in sections devoted to other things … see later Auseinandersetzung with Annas on the role of Aristotle's criticism of numbers composed of abstract units

[9]Berti, however, thinks the division is indeed between M and N; reference to discussion below?

> convention requires [ἁπλῶς καὶ ὅσον νόμου χάριν]:[10] for most things have been bandied about even in the exoteric discussions, and the larger account will also have to confront this investigation when we investigate whether the οὐσίαι and ἀρχαί of the things that are are numbers and ideas[11]--for this remains after the ideas as a third investigation. (M1 1076a22-32)[12]

It is clear that the first investigation here is M2-3. Syrianus (83,36-9 with 160,6-11), followed by Annas and (with a complication) by Crubellier, thinks that the second investigation, of ideas, is M4-9α, while the third investigation, of numbers and ideas and their ἀρχαί as the ἀρχαί of all things, is M9β-N; by contrast, Bonitz and Jaeger and Ross think that the second investigation is only M4-5, that the third investigation is M6-9α, and that M9β-N are not foreseen in the plan announced in M1.[13] If Bonitz-Jaeger-Ross are right here, then our options are to say that M9β-N are simply a pile of scraps left over at the end, or that they are a separate treatise--either, as Jaeger thinks, an earlier attempt to fill the same niche in the argument of the Metaphysics as M1-9α, or a different project altogether. But N2 1090a13-15 ("for the theorems of the arithmeticians will all hold also of the sensibles, as was said") has every appearance of referring back to M3 (as Ross duly notes ad locum), and creates a strong presumption against taking M9β-N as a separate treatise from M1-9α.

Let us begin to address these issues by considering the place of MN within the Metaphysics. Although Annas and Crubellier consider the questions about the structure of MN as if MN were an independent treatise, the text as we have it clearly presents itself as part of the Metaphysics. As I have noted, M2 1076a39-b1 and 1076b39-1077a1 and M10 1086b15-16 cite Metaphysics B as ἐν τοῖς [δι]απορήμασι (the M2 texts are very clearly citing B#5 998a7-15 and 997b14-24), and other texts of MN also clearly pick up from aporiai in B: most strikingly, M3 1078a31-b6 pick up the aporia about whether the good and the καλόν exist in mathematical things from where it was left in B#1 996a29-b1. Furthermore, M1 begins with a μὲν οὖν … δέ transition, and thus marks not the beginning of a new treatise but a new stage within a developing

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[10]Crubellier following Bonitz suggests taking ἁπλῶς analogously to what Aristotle has said about mathematicals: considering the ideas just as such, without worrying about whether they're also numbers or the like. this is attractive, but then I see no way to make sense of the καί. Ross' notes with parallels here are very helpful, both on ἁπλῶς and especially on ὅσον νόμου χάριν, which d cite here (Ross is, at least for the first of these, following Bernays, Dialoge des Aristoteles, p.150). on ὅσον νόμου χάριν, see (cited by Ross) Politics VIII 1341b31 νομικῶς, = giving just the τύποι, as opposed to ἀκριβολογία

[11]the phrasing is obscure, but the sense must be: Aristotle is giving two reasons why we don't have to go into the issue of ideas as such at great length (i) it's been talked about to death elsewhere, and (ii) our third investigation will also en passant have implications for the question of the ideas (i.e., presumably, it will yield arguments against the ideas)

[12]codex M has φύσιν ἄλλην in a23 in the reverse order, which makes no difference, and περὶ μαθηματικοῦ in a25 instead of περὶ μαθηματικῶν, which must be wrong

[13]Berti in the Symposium Aristotelicum volume on MN agrees with Bonitz that the third investigation is M6-9α; his views are in other respects distinctive (he takes M1-9α as responding to B#12-13 [rather than #5], and M9β-10 as responding to #14-15, N as an independent project--see below). Burnyeat in the same volume follows Annas in siding with Syrianus. note to discussion below for Crubellier's "complication" {from below: "Crubellier says that, beside the examinations of the three Platonic or Academic theses mentioned in M1--namely the existence of separate mathematicals, the existence of ideas beyond the sensible things, and that the numbers (or ideas and numbers) are the ἀρχαί and causes of all things--Aristotle is now inserting examinations of two more theses, the existence of ideal numbers beyond the mathematical numbers (examined in M6-9α) and that the στοιχεῖα of ideas and numbers are the στοιχεῖα and ἀρχαί of all things (treated M9β-N2 1090a2, while N2 1090a2-N6 examine whether numbers themselves are causes of all other things; all this Crubellier pp.15-22"}

argument; and Aristotle's references here to what we have already done and what we must now do locate the discussion in a sequence of texts beyond physics, that is, in the Metaphysics:

> About the οὐσία of sensible things, it has been said what it is, about matter in the Physics [ἐν τῇ μεθόδῳ τῇ τῶν φυσικῶν], and afterwards about the [οὐσία] in the sense of ἐνέργεια;[14] but since the investigation is whether there is some unmoved and eternal [οὐσία] beside the sensible οὐσίαι or whether there is not, and if there is, what it is, we should first consider the things that have been said by others, so that if they say something wrong we will not be liable to the same faults, and if there is some doctrine common [κοινόν] to us and to them, we will not face its difficulties on our own [τοῦτ᾽ ἰδίᾳ μὴ καθ᾽ ὑμῶν δυσχεραίνωμεν]: for one must be content [ἀγαπητόν] to say some things better, and others no worse.[15] (M1 1076a8-16)[16]

"The investigation" on which we are here already embarked is the search for an unmoved eternal οὐσία separate from the sensibles, taking us beyond the discipline of physics: this was the project announced in Metaphysics E (E1 1026a10ff). The reference to a discussion, after the physical works, of the οὐσία-in-the-sense-of-ἐνέργεια of sensible things is evidently to some or all of ZHΘ; here in MN Aristotle is positioning himself at the turning-point from the discussion of sensible οὐσία in these books to the discussion of unmoved eternal οὐσία which has been the aim of the Metaphysics. This corresponds to the program stated in H1: we have, in Z, examined the agreed-on sensible οὐσίαι and their ὑποκείμενα, essences, universals and genera, deferring the controversial οὐσίαι, the Forms and the mathematicals; "about the ideas and the mathematicals we must investigate later: for some people say that these exist beside the sensible οὐσίαι" (1042a22-4). But this positioning of MN corresponds only roughly to their transmitted position of MN: it does not place these books after Λ. On the contrary, Aristotle is saying in M1 that we must start by examining the opinions of other people, namely those who posited mathematicals and/or ideas, the two candidates for οὐσίαι beside the sensible ones that he has mentioned in B#5, before we go on to give our positive account of unmoved οὐσία. He is thus projecting an order of discussion like MNΛ, not like ΛMN: MN will raise difficulties, either difficulties peculiar to our opponents' positing of ideas and mathematicals, which can serve as a refutation of their doctrines, or difficulties common to them and to us, which we will have to resolve in stating the positive doctrine of unmoved οὐσία in Λ. MNΛ will thus give both the negative and the positive parts of a solution to B#5, and, as we will see, to a series of related aporiai as well.

When Aristotle speaks here in M1 of difficulties facing both himself and his Academic opponents, which he will try to solve better or now worse than they do, he seems to be thinking

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[14]this is what [οὐσία] κατ᾽ ἐνέργειαν must mean here, following a common sense of κατά X [λεγόμενον]; "the substance which has actual existence" (Ross) makes no sense. note also that he's describing matter here as the οὐσία (in one sense) of the sensible things--more support for the claim that in Z3 the ὑποκείμενον, like the other three, is being mentioned as the οὐσία of the things

[15]ref to discussion of δυσχεραίνω and cognates below (as in Nanterre paper): it seems to be esp. Speusippus' word, and is used in a non-ethical sense overwhelmingly more frequently in the Metaphysics, and overwhelmingly more frequently in MN, than elsewhere in Aristotle; but also note that in ethical senses the contrast is δυσχεραίνειν/ἀγαπᾶν, to be discontented or contented with something

[16]M allows us to settle two minor textual issues: in a8 it has τί ἐστιν, agreeing with E, against JA^{b} τίς ἐστιν, so τί is right; at a14 it has εἴ τι δόγμα, again agreeing with E against JA^{b} εἴ τε δόγμα, so again EM are right

especially of the extended aporetic argument N4 1091a29-N5 1092a17, which begins "there is an aporia, and a reproach to anyone who finds it no aporia, about how the στοιχεῖα and the ἀρχαί stand in relation to the good and the καλόν: this aporia, whether some one of them is what we mean by the good-itself [αὐτὸ τὸ ἀγαθόν] and the best, or not, but rather [the good] is generated afterwards" (N4 1091a29-33),[17] and concludes "if it is impossible either not to posit the good among the ἀρχαί [like Speusippus] or to posit it in this way [i.e., as the One, like Plato], then it is clear that the ἀρχαί and the first οὐσίαι have not been given rightly" (N5 1092a9-11). At Λ10 1075a34-b11 Aristotle notes the same difficulty more briefly, and offers his own alternative account of the good ἀρχή as a solution.[18] Λ is thus filling here the role we would expect in a sequence MNΛ: when M1 says that we should "first consider the things that have been said by others" and their difficulties, then give our own account better or no worse, we can most naturally take it as referring forward to Λ's positive account--as always, not necessarily to the text transmitted to us, but to its idealized version.

While the connection between Λ10 and N4 1091a29-N5 1092a17 is the most important, there are also several other examples where MN raises some difficulty against Academic accounts, and Λ (most often Λ10) considers the same difficulty, often to show that Aristotle and only he can escape it, and often stating the difficulty in very compressed form, as if presupposing and reminding the reader of a fuller development elsewhere. Thus N1 1087a29-b4 criticizes "everyone" (a29-30) for making everything out of contrary ἀρχαί, in unmoved as in physical things, and Λ10 1075a28-34, after more briefly criticizing "everyone" (a28) for doing this, also offers a positive solution. Then Λ10 goes on to complain that "no one says why some things are corruptible and others are incorruptible: for they make all beings out of the same ἀρχαί" (1075b13-14),[19] and this seems to summarize N5 1092a21-b8, which in criticizing the generation of numbers out of contraries complains that "nothing is said" about "why the other things that are out of contraries, or which have contraries, are corrupted, even if they are out of the totality [of a contrary], but number is not" (1092b3-5).[20,21] Λ10 continues by complaining that "some people make the things-that-are out of not-being, and others, so as not to be compelled to this, make all things one" (1075b14-16), echoing N2 1088b35-1089a6 (plus critical discussion 1089a7-31) on

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[17]on the interpretation of ὡς βουλόμεθα λέγειν see Jaeger 1923 pp.192-4 {German? English?}. note Christ's bracketing of λέγειν (d check), and any issues it raises. on this whole passage, N4 1091a29-N5 1092a11 (or rather a17), refer to discussion--where exactly?

[18]compare especially Λ10 1075a34-7 with N4 1091b35-1092a1, and Λ10 1075b1-11 with N4 1091b10-12. full discussion of this and all the other Λ10 passages in IIIγ3

[19]NB interesting textual issue 1075b14: JA^b, followed by Ross and Jaeger, read πάντα γὰρ τὰ ὄντα ποιοῦσιν ἐκ τῶν αὐτῶν ἀρχῶν (and a supralinear gloss in E says that this γράφεται), but EM read πάντες for the first word. unless there is contamination--and it seems unlikely, although the δ tradition does get seriously contaminated by β--EM must represent the consensus of αβ and thus the archetype, while JA^b represent an idiosyncratic reading of γ. JA^b might be right anyway (Silvia adopts their reading on the ground that Speusippus didn't agree with what EM are ascribing to πάντες--but that's trouble anyway, because of οὐδείς in b13. the two readings wind up meaning close to the same thing, with different emphases). d decide what you'd print, and do the same thing here and in IIIγ3

[20]note, not here but wherever you cite this: in 1092b6, where I had initially assumed καίτοι καὶ ἐνυπάρχον καὶ μὴ ἐνυπάρχον φθείρει τὸ ἐναντίον, with Ross and Jaeger following A^b and (I think, d check) a supralinear gloss in J, it is not only E and the original J but also M that omit καὶ μὴ ἐνυπάρχον: that almost certainly implies that καὶ μὴ ἐνυπάρχον is wrong (added somewhere in the δ subfamily, I suppose--it wouldn't be surprising if it were in the manuscripts Pantelis Golitsis is collating). Crubellier in fact omits καὶ μὴ ἐνυπάρχον: d check what he says about the implications for the meaning

[21]Annas cites instead the beginning of N2, 1088b14-16, as the relevant N parallel, but this is less close

the archaic Parmenidean aporia which has left people with these two options.[22] Λ10's final criticism of Speusippus for making the world "episodic" (1075b37-1076a4), with each stage contributing nothing to the next by its existence or non-existence, seems to add to N3 1090b13-20 (in a much longer criticism of Speusippus, N2 1090a2-N3 1090b20) just the explicit statement of the plurality of ἀρχαί and the concluding Homeric flourish. But these intertextual relations are not confined either to Λ10 within Λ, or to N within MN. Λ2 1069b26-8, asking what sense of not-being things are generated from, "for not-being [is said] in three ways," is unintelligible apart from N2's discussion of the solutions to Parmenides' aporia (for the three senses of not-being, and the question "out of which kind of not-being and being are the things-that-are?", see N2 1089a15-31). Λ7's criticism of Speusippus for positing that the ἀρχαί are imperfect like seeds (1072b30-1073a3) is equally closely connected with N5 1092a11-17 (the end of the long aporetic discussion of the good and the ἀρχαί, N4 1091a29-N5 1092a17); and Λ8 1073a14-22, where those who say that there are ideas and that these are numbers can give no adequate account of how many separately existing numbers we should posit, seems to summarize the much longer M8 1083b36-1084b2 (in both passages there is a dilemma, infinite or finite, and the opponents are tempted to think the answer is ten, but without an adequate explanation for why).[23]

In each of these cases Λ offers an alternative positive account of the ἀρχαί and of how things are derived from them, while MN are merely critical. Now while the close relation between Λ and especially N has often been noted,[24] it is often taken to indicate merely that both Λ and N express Aristotle's concerns in the period soon after Plato's death, not that they play related and complementary roles in a larger argument. (Thus, assuming that N was an early work later replaced by M, Jaeger explains Λ's elective affinity with N rather than M by saying that Λ is summarizing the earlier rather than the later version of the Metaphysics, pp.231-2. Surely the better explanation is that both Λ and N are more directly concerned than M with ἀρχαί--not an "early" but a permanent interest.)[25] But the relationship is just too close to be explained in this

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[22]this parallel missed by Annas, and by others I have checked, probably due to the widespread but mistaken view, going back to ps-Alexander 719,7-8, that in the Λ passage the people who made the things-that-are out of not-being were Hesiod and other poets. the N2 passage makes clear that they are Academics. I'll come back to this in IIIγ3

[23]Jaeger {ref? it's pp.222-7 in Robinson} notes the first (Λ10/N4), second, fifth and seventh of these eight intertextual relationships, concluding in each case that Λ is giving a shorter summary of the earlier and fuller version in N. in each of these cases, esp. involving Λ10, make sure they're treated in IIIγ3; and you may want a chart

[24]e.g. Jaeger Aristoteles pp.231-6 {warning--this is the first edition, check whether the pagination's the same in 1934}, Annas p.193, Berti in the MN Symposium Aristotelicum pp.29-30. NB all these Jaeger refs are to the first German edition, d standardize how you're citing, perhaps include the pages in Robinson's English translation

[25]people's odd reactions to Metaphysics N, generally leading them to mark it "early," are most striking in N4 1091a29-N5 1092a17, the investigation of the relation of goodness to the ἀρχαί, which is most closely relevant to Λ10. Aristotle asks whether any of the ἀρχαί is "what we mean by the good-itself [αὐτὸ τὸ ἀγαθόν] and the best, or not, but rather [the good] is generated afterwards" (N4 1091a29-33); and the phrase "αὐτὸ τὸ ἀγαθόν", despite the almost verbal parallel at the beginning of Λ10 (which also has "the good and the best," asks whether it exists αὐτὸ καθ᾽ αὑτό, and says yes) and the exact verbal parallel in EE I,8 (ref, cited Iα4), seems to cause great disturbance to many scholars. Jaeger pp.195-6 cites "what we mean by the good-itself" to show that Aristotle is speaking in N as a Platonist, indeed as a defender of true Platonism against Speusippus. Ross II,406-7 broadly follows Jaeger (printing "αὐτὸ τὸ ἀγαθόν" in bold as the incriminating phrase to show that Aristotle here "treats himself as a Platonist"), but says that, in various passages collected by Jaeger where Aristotle says βουλόμεθα λέγειν, even if he means "we Platonists," it may be "an argumentum ad hominem directed against Platonists from a Platonic standpoint," i.e. that he may be assuming a Platonic standpoint merely for purposes of the argument. so far, I suppose, so good: it is indeed true both that Aristotle sometimes uses these phrases for an argumentum ad hominem (and that Jaeger was incautious about this), and that in N4-5 Aristotle is representing himself as a better Platonist then Speusippus.

way, and Jaeger also says that especially Λ10 is "a mosaic of sheer individual sentences and thoughts from N … a bit popularized and simplified," with key claims "in Λ simply asserted, in N justified," indeed with some points in Λ "compressed to unintelligibility."[26] Jaeger concludes that Λ is a lecture summarizing the Urmetaphysik of which N was a part, with the positive theology of Λ summarizing the (lost) positive theology of the Urmetaphysik, and the criticism of Academic metaphysics in Λ summarizing N (p.232). This seems to be admitting in reality, while denying verbally, that Λ gives the positive sequel to N (and why not say MN?), though undoubtedly in more compressed form than we might hope. Λ is not simply a summary of something positive together with a summary of something critical, but a connected argument to show that only Aristotle's approach to the ἀρχαί can resolve the difficulties that MN (and earlier books) have raised against other approaches. And if, in the critical part, Λ merely asserts where N gives justifications, and compresses N to unintelligibility, the best explanation is that Λ presupposes N and is reminding readers of what had already been said there, so that it can now show how Aristotle's own approach resolves the difficulties that N had raised.

{question: where do I talk about the first person plurals, the A-M and α-β differences, and developmental or rhetorical explanations? there should be a single central location, either here--since I'm not treating A9 in Iβ1--or in an appendix}. but both Jaeger and Ross immediately infer from this that Aristotle wrote this passage at Assos, i.e. in the period shortly after Plato's death, which does not follow in the slightest--Aristotle would always have regarded himself as a better Platonist than Speusippus, and there are no passages anywhere where he rejects a good-itself (see Iα4 and IIIγ3 for detailed discussion). presumably Jaeger and Ross would take the Λ10 parallel merely as showing that Λ too dates from the Assos period. but the really strange reaction is Annas' (p.212)--she "defends" N4-5 by separating it from Λ10, and marks L, but not N, as deviant and therefore "early." "Here Aristotle provisionally accepts the idea of good or the good in general, and shows that even on the Academy's own terms neither theory about it current in the Academy [i.e. Plato's or Speusippus'] is adequate"--picking up Ross on argumentum ad hominem, but now with the implication that Plato and Speusippus agree on something about the good-itself that Aristotle himself does not accept, but which he here assumes for purposes of refuting both of its variants (what on earth would they have agreed on about the good that Aristotle would be rejecting?). "He concludes that neither account is satisfactory because both rest on wrong assumptions. We would expect this to be followed by an account of his own designed to supersede the two accounts he finds faulty while preserving what he finds salvageable in them [why? he never does this in MN, except to a limited extent, for special reasons, in M3--SPM]. In fact there is no such account here, and it is impossible to tell whether he would here subscribe to the account he offers in the similar passage Λ chapter 10 …. Elsewhere, however, Aristotle mostly rejects the idea of good in general as vacuous and unhelpful ….": but Aristotle always rejects the idea of the good (as of course did Speusippus), always accepts the good-itself (with Plato and against Speusippus), never identifies them, and never mentions the idea of the good in this passage (or anywhere else in the Metaphysics, except en passant as an example in Z6; on all this see Iα4 above). Annas thus treats an important common theme of N and Λ, and the most important case where Λ builds on an aporia in N and adds a resolution, as a regrettable confusion which Aristotle later outgrew. we should credit Jaeger's perceptiveness in seeing the theme and its importance for Aristotle's perception of his relations to Plato and Speusippus: Jaeger was wrong to confine this to an early period, but perhaps the weight of standard interpretations of Aristotle was such that Jaeger could perceive important aspects of the real Aristotle only by seeing them as not-yet-fully-Aristotelian. Annas, however, manages to blind herself to what Jaeger had seen, by detaching the N text from the Λ parallel, suggesting that the regrettable early confusion is confined to Λ and that Aristotle has overcome it by the time of N. Annas also manages not to discuss the N passage in talking about Aristotle's critique of the Academics in her introduction, presumably because her introduction is about philosophy of mathematics, which she takes to be the only really important part of MN. {perhaps Annas thinks that Plato and Speusippus share the assumption, which Aristotle would reject, that there is a good-itself, and that they differ only about whether this is an ἀρχή or generated afterwards. I think it would be quite surprising if Speusippus thought there was a good-itself at any stage, and in any case (i) Aristotle himself accepts a good-itself, and (ii) when at the end of N4 Aristotle talks about the assumptions that have led the Academics astray, he does not mention the existence of a good-itself, but rather that the ἀρχή is a στοιχεῖον, is an ἀρχή of numbers, and so on}

[26]p.236 (the third quote from p.234); the first quote actually says "from N1," which is an oversimplification given notably the parallel with N4 that Jaeger has just quoted

We have thus seen some reasons for regarding MN as an intended part of the Metaphysics, occupying a determinate place in the overall argument, after the other books but before Λ: MN address aporiai from B, take up topics deferred from ZH, and raise difficulties against Academic accounts of the ἀρχαί that will be resolved by Aristotle's positive account in Λ, and these books are all connected by appropriate references forward and back; also, as we saw in Iγ2, much of Iota's discussion of the one and its alleged contraries seems designed to be used in the arguments against Academic ἀρχαί developed in MN. But the most important reason for taking MN as a part of the Metaphysics is that the Metaphysics would be badly defective without it: the critical discussion of Academic unmoved οὐσίαι and their ἀρχαί, as promised in H1 and clearly required in any case, would never be delivered, and aporiai B#5, #12 and #15 would never be addressed, whereas in the Metaphysics as we have it all of the aporiai receive answers. MN were clearly composed to fill this need in the economy of the argument of the Metaphysics, and as far as possible we should try to explain the inventio and dispositio of the particular arguments in MN in virtue of their function in the Metaphysics as a whole. It is nonetheless perfectly possible that Aristotle has adapted and brought together for this purpose materials that he had originally written independently, and it is also possible that some of this material has not yet been thoroughly adapted to its current role, and that some of it remains "scraps" not yet connected as Aristotle intended, since what we have transmitted is an accidental time-slice of a work in process of revision. Indeed, the M1 reference to the treatment of the ideas in "the exoteric discussions" (1076a28-9, cited above) seems to guarantee that Aristotle is reusing material from elsewhere, apparently from his On Ideas; indeed, he seems to have reused this material twice, both in A9 and in M4-5. The duplication is itself a sign of a work in progress, and this is the only way to resolve the antinomy about whether A, B and M are parts of the same treatise: MN are being assembled and integrated into the Metaphysics, but this assembly and integration have not been completed.

To understand the structure of MN, in particular the question of the relation between M1-9α and M9β-N, and of the "third investigation" of M1 1076a32, it is important to determine more precisely the function of MN in the Metaphysics, and, in particular, which aporiai from B it is addressing. Most obviously, when M1 announces an investigation of mathematicals and ideas as οὐσίαι claimed to exist beside the sensible οὐσίαι, it is addressing B#5 ("whether we should say that there are only the sensible οὐσίαι, or also others besides these, and whether [these others] are all of the same kind or are several genera of οὐσίαι, [as claimed by] those who say that there are the forms and also the intermediates, which they say the mathematical sciences are about" 997a34-b3);[27] and this discussion occupies at least M2-5, maybe also M6-9α, and maybe even more.[28] Also, as we have seen, M10 refers to B#15, whether the ἀρχαί are individual or universal, and it seems to refer also to #9, whether the ἀρχαί are numerically one-per-type or

[27]also cited (with the same wording) IIα2, but weirdly not Iβ3--should it be introduced there?

[28]further notes, which should probably be brought up into the text: (i) also certainly B#12, on whether mathematical boundaries are prior to, οὐσίαι of, etc., the things they bound [in M2-3; also in M9α? probably not, but d check], and aspects of B#11, if there is a one-itself where do the units within the numbers come from, in fact this can be seen as the germ of much of the argument of M6-9; (ii) often it seems that an aporia is partly answered in MN, partly elsewhere, these cases should be discussed and Aristotle's reasons for proceeding this way examined. thus B#11 is answered negatively in Z16 and again (for unity) Iota 2, just by considering whether being and unity exist separately, but the questions about how things, esp. numbers and the units in numbers, could arise from these ἀρχαί are treated in MN (M6-9α in one way, N1-2 in another); the negative parts of the answers to B#1, B#5, and B#9 and/or #15 are given in MN and summarized in Λ, and the positive parts are given in Λ.

many-per-type.[29] But perhaps the most important connection back to B is one that is less explicit, to B#1. B#1 officially asks whether wisdom is a science of efficient, final, formal or material causes, or whether it is a single science of several or all of these kinds of causes at once, and MN are not addressing this question (they do, as noted, take up the argument from B#1 about whether the good or the καλόν exist in mathematical things). But the fundamental argument of B#1 supporting the claim that wisdom is not a science of efficient or final causes is that unmoved and particularly mathematical things do not have efficient or final causes (996a21-b1); I argued in Iβ2c above that this argument comes from Speusippus (not Plato, since the argument maintains that there is no good-itself in unmoved things), and its presupposition is that wisdom will be a knowledge of the ἀρχαί of unmoved things. And indeed, if we think that wisdom is about unmoved ἀρχαί (and Aristotle agrees that it is), then the most obvious way to find such ἀρχαί will be as ἀρχαί of unmoved things, and the most obvious unmoved things from which we might begin would be the objects of mathematics and dialectic, that is, mathematicals and Forms, if these things exist separately and prior to physical things. But such unmoved things (as Speusippus seems to have argued and as Aristotle seems to agree) would not have efficient or final causes, but only formal and material causes, which would be στοιχεῖα or constituent ἀρχαί. By contrast, as an opposing argument in B#1 says, if we want to understand coming-to-be or change we must grasp the ἀρχὴ κινήσεως (996b22-6), and this is the alternative that Aristotle will pursue in Λ: seeking the unmoved ἀρχή as an ἀρχή not of unmoved things but of moved physical things, and specifically of the fact of their motion, not as a material or formal στοιχεῖον but as an extrinsic cause of actualization. A central claim of the Metaphysics will be that the path to the στοιχεῖα of unmoved things, as pursued by Speusippus and by the Plato of the Lecture on the Good, does not reach the ἀρχαί which would be the objects of wisdom, and that the path to extrinsic moving causes of physical things, refining the approach of Anaxagoras and Empedocles and the Timaeus, does reach these ἀρχαί; Aristotle's argument requires a critical confrontation with the Academic methods represented by Speusippus and by the Lecture on the Good. MN give this critical confrontation, before Aristotle turns to show the superiority of his own approach in Λ; and the full solution to B#1 comes only at the end of this process, in Λ10, after Aristotle has examined both of the opposing routes to the ἀρχαί that the arguments of B#1 suggest. The task of examining the special path to the ἀρχαί as στοιχεῖα of unmoved things is what gives MN their semi-independent status within the Metaphysics: while Γ announces a pursuit of the ἀρχαί as causes of the most universal effects, namely being and its per se attributes, and while EZHΘ pursue the ἀρχαί as causes of being in different senses, and Iota as causes of the per se attributes of being, and while in all of these books it is natural to start with the examples of being that are best known to us, namely the sensibles, MN examine a different path, which seeks the highest causes not as causes of the most universal effects, but as causes of the highest effects, the unmoved things.[30]

MN in several places seem to delimit their task or their μέθοδος, not precisely as examining unmoved οὐσίαι, as examining (claims about) the ἀρχαί of unmoved as opposed to physical things: most clearly, N3, having argued that the Pythagorean accounts of numbers are really

[29]M10 seems to be addressing simultaneously B#9, #13, and #15, all dealing with whether the ἀρχαί are each numerically or only universally one, without properly distinguishing these aporiai; this gives rise to some difficulty in interpretation, and possibly to a real confusion on Aristotle's part. see my paper in the B Symposium Aristotelicum volume, and the discussion of M9β-10 below

[30]I've made roughly this point elsewhere, notably in the first paragraph of the present section, also Iα5; d cross-ref and minimize duplication. (in some places noted that Speusippus doesn't think there are causes of all beings)

physics and cosmogony, concludes that "it would be fair to examine them [in talking] about nature [ἐξετάζειν τι περὶ φύσεως],[31] but to dismiss them from the present μέθοδος: for we are seeking the ἀρχαί in things that are unmoved, so that it is also this kind of numbers [sc. unmoved ones, as opposed to Pythagorean physical numbers] whose generation we must investigate" (1091a19-22). Likewise M9β says programmatically,

> About the first ἀρχαί and the first causes and elements, the things that have been said by those who discuss sensible οὐσία alone have partly been discussed in the Physics [ἐν τοῖς περὶ φύσεως] and partly do not belong to the present μέθοδος; but we must next consider the things that have been said by those who say that there are other οὐσίαι beside the sensibles. So since some people say that ideas and numbers are like this, and that their στοιχεῖα are στοιχεῖα and ἀρχαί of the things that are, let us investigate what these people are saying and how [i.e., whether rightly or wrongly]. (1086a21-9)

So too N1, apparently pursuing this program, says that "everyone makes the ἀρχαί contraries, as in natural things, so likewise in the unmoved οὐσίαι" (1087a29-31), and proceeds to examine these alleged ἀρχαί of unmoved οὐσίαι: some of the results are summed up at the end of N4, where Aristotle says that Plato goes wrong "partly because they make every ἀρχή a στοιχεῖον, partly because they make the contraries ἀρχαί, partly because they make the One an ἀρχή, partly because they make numbers the first οὐσίαι and separate and forms" (1092a6-8).

Now the foregoing quotes are all from M9β-N, and it is certainly true that Aristotle talks more about ἀρχαί in these chapters than before; by contrast, at least M2-5 are devoted to answering B#5, a question about οὐσίαι rather than about ἀρχαί. But the question whether mathematicals and ideas are οὐσίαι existing separately from the sensibles seems to be subordinated, both in the argument-structure of MN and in the larger argument-structure governed by AB, to the question about ἀρχαί. We can hope to get to the first ἀρχαί by pursuing the στοιχεῖα of ideas and numbers--rather than, like the majority of philosophers, by pursuing the ἀρχαί of natural things--only if ideas and numbers are οὐσίαι beside the natural things, and so, in examining Academic claims about ἀρχαί, Aristotle will first examine the claims they are presupposing about οὐσίαι. If it turns out that ideas or numbers do not exist at all, or that they exist only dependently on sensible things, then they cannot lead to ἀρχαί that will be prior in οὐσία to other things. And what he says about mathematicals and ideas as οὐσίαι shows that he is examining them in view to their implications for the ἀρχαί. Thus he gives an abbreviated treatment of the ideas considered just as ideas (M4-5), and an expansive treatment of ideas identified with numbers (M6-9α), and this is because only ideas identified with numbers offer a plausible route to the ἀρχαί: "if the ideas are not numbers, they cannot exist at all: for out of what ἀρχαί will the ideas be? For number is out of the one and the indefinite dyad, and these are said to be the ἀρχαί and στοιχεῖα of number,[32] and it is not possible to rank [the ideas] either prior or posterior to number" (M7 1081a12-17). (Ideas as species may be composed of genera and differentiae, and

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[31]note Jaeger's and Ross' notes on the τι problem, citing respectively Schwegler and Bywater. codex M agrees with the other manuscripts; Crubellier has no note on the text

[32]if we accept Jaeger's supplement καὶ <αὗται> αἱ ἀρχαί (the omission by homoeoteleuton would be easy, but the pseudo-Alexander's paraphrase is not much evidence). if, with Ross and Annas and Crubellier, we keep the transmitted text, then "the ἀρχαί and the στοιχεῖα are said to be of number"--but this depends on an assumption about which ἀρχαί and στοιχεῖα are in question, and so depends on implicitly understanding something like Jaeger's <αὗται>

might lead to the one and being as maximally universal ἀρχαί--proposals examined and rejected in Metaphysics Z, see IIδ below--but there are far too many genera and differentiae to be a plausible set of primitives, and there is no way to generate the many species-ideas out of unity and being alone.) Likewise much of the treatment of mathematicals in M2-3 is concerned not with mathematical οὐσίαι in general but with mathematical boundaries, and with whether the boundaries are prior in οὐσία to the things they bound--in other words, with examining the route from solids through surfaces and lines to points as ἀρχαί: mathematical solids seem to be important in M2-3 mainly because mathematical boundaries are in the first instance ἀρχαί of these rather than of sensible bodies. And this is only what we would expect from Metaphysics B: B#12, which developed the issues about the mathematicals far beyond the introductory treatment in B#5, was also chiefly concerned with the claim of boundaries as ἀρχαί (see Iβ3 above). And, more generally, we saw in Iβ that the overall framework of Metaphysics B is concerned with ἀρχαί, and that the aporiai asking whether some X is an οὐσία or whether X exists καθ᾽ αὑτό are subordinated to the larger end (e.g. we ask whether the one exists καθ᾽ αὑτό because this is a necessary condition for its being an ἀρχή); and E1's reason for thinking that wisdom must be concerned with unmoved οὐσίαι if there are any is that wisdom is concerned with the first of all things--that is, with the ἀρχαί--and that unmoved οὐσίαι, if there are any, will be prior to all other things. So it is no surprise that MN too, in taking up aporiai about unmoved οὐσίαι, treat these aporiai as a means to examining the approach to the ἀρχαί as στοιχεῖα of unmoved οὐσία, and specifically of unmoved οὐσίαι mathematically described.[33]

With this said, we can return to the questions of the "third investigation" of M1 1076a32 and of the relation between M1-9α and M9β-N. The "third investigation" or the "larger account" will not be about mathematicals as such or about ideas as such, but about "whether the οὐσίαι and ἀρχαί of the things that are are numbers and ideas" (M1 1076a29-32), or, presumably more precisely, whether "their [ideas' and numbers'] στοιχεῖα are στοιχεῖα and ἀρχαί of the things that are" (M9 1086a26-9, cited above); and we have seen why we should expect this to be the "larger account" to which the investigations of mathematicals and ideas are subordinated. But where does this third investigation begin? There are serious reasons to support both the claim of Bonitz and Jaeger and Ross that it is M6-9α, and the claim of Syrianus and Annas and Crubellier that it is M9β-N. The most obvious argument that the third investigation is M6-9α is simply the fact that M6 begins by saying "since it has been determined about these things, it is well to consider again the things that result about numbers for those who say that they are separate οὐσίαι and first causes of the things that are" (1080a12-14); the language seems to echo closely the text just cited from 1076a29-32, and to be taking up its third branch of the investigation.[34] Another set of considerations comes from M1's program of first treating the ideas in themselves "simply and [only] as far as convention requires [ἁπλῶς καὶ ὅσον νόμου χάριν]"--the second investigation--on the ground that these things have been sufficiently discussed elsewhere, and

[33]I agree here with Burnyeat in the MN Symposium Aristotelicum p.215; this contrasts with what seems to be Jaeger's view (?) that Aristotle moves from an early (M9β-N) interest in ἀρχαί to a mature (M1-9α) interest in οὐσίαι

[34]Bonitz cites this passage as self-sufficient proof that M6-9α are the third investigation. we might also cite M6 1080b6-8, referring to the opponents as "those who say that the one is an ἀρχή and οὐσία and στοιχεῖον of all things, and that number is out of this and something else"--Aristotle does not seem interested in distinguishing the claim that number is an ἀρχή of all things and the claim that the στοιχεῖα of numbers are the ἀρχαί of all things (if the former, then the latter; if the latter, then, as we saw in the passage about the ideas not being orderable either before or after the numbers, the only way that other things could be derived from these στοιχεῖα is if the numbers are derived first, and then the other things are derived from the numbers)

only then pursuing the third investigation, "whether the οὐσίαι and ἀρχαί of the things that are are numbers and ideas" (1076a26-32). It would be absurd to describe the overpoweringly detailed arguments of M6-9α about the numbers and different possible kinds of units they could be composed of as "simple and [only] as far as convention requires": that description of the second investigation can only cover M4-5.[35] Furthermore, the comparison with A9, noted above, shows that M4-5, after an introduction on the motivations of the theory of forms, give a very close repetition of the first half of A9 (990b2-991b9), with nothing corresponding to the second half of A9 (991b9-993a10), which

(i: 991b9-21) asks how forms, if they are numbers, would be causes of things here, even if those things-here are numbers or ratios;
(ii: 991b21-992a10) raises difficulties about the unit-ἀρχαί within the form-numbers, and also within the mathematical numbers, and about the overall unity of each number;
(iii: 992a10-24) raises difficulties about what ἀρχαί the different kinds of continuous magnitude could be derived from, how different kinds of magnitude are related to each other and to number, and where points come from (if there are points);
(iv: 992a24-b18) accuses the opponents of implicitly abandoning all causal connections between intelligibles and sensibles, or even between different kinds of intelligibles, as a consequence of replacing philosophy by mathematics; and
(v: 992b18-993a10) raises difficulties against any claim to have discovered στοιχεῖα of all the things that are.

None of these difficulties are taken up in M4-5;[36] but difficulties (ii) and (iii) are developed at great length in M6-9α, while difficulties (i) and (iv) and (v) seem to be taken up rather, alongside others, in Metaphysics N.[37] Most of the arguments in A9, and in M4-5, are presented in a compressed shorthand; by contrast, at least the main argument of M6-9α (that is, M6-M8 1083b23 together with M9 1085b34-1086a21) is rather elaborately developed, starting with an exhaustive διαίρεσις of possible theories of numbers and their units. So it seems that when Aristotle says that we will treat ideas in themselves ἁπλῶς καὶ ὅσον νόμου χάριν, and give a "larger account" of whether the οὐσίαι and ἀρχαί of the things that are are numbers and ideas,

[35]also, this description is picked up in the transitional last sentence in M5, 1080a9-11 (i.e. the μέν clause picked up by the δέ clause at the beginning of M6, and added to make this transition; we could equally well print 1080a9-11 as part of M6, but, as often, the chapter-divide has been between a transitional μέν [or μὲν οὖν] clause and the corresponding δέ clause; there is no parallel in A9, which goes on to the further series of arguments that I describe next): "about the ideas [by contrast with the numbers, M6 1080a13] it is possible to collect many [arguments] similar to those that have been considered, both in this way and in λογικώτερα and more precise arguments"--where "in this way" would be something like "ἁπλῶς"

[36]except that some things loosely overlapping (i) and (iv) can be found in M5--d cite precisely. but in fact these are almost verbatim parallel to things in the first half of A9, not the second half. the place where M breaks off following A9 is precisely at the juncture from the argument that Forms are not causes to the argument that Forms, if they are numbers, are not causes of sensible numbers. none of the arguments of M5 mention any mathematical description of the Forms

[37]either list the corresponding M6-9α and N passages here, or refer to the supplemental document, to be presented as an appendix or a chart, where I currently have these things worked out. also NB be sure to discuss the relations with the passages in the second half of A9 when you come to the corresponding passages in M6-9α and N in the course of the present section. by contrast, because the relation between the first half of A9 and M4-5 is so simple (usually, identity) there will be no need to stop to discuss it. an exception will be the "motivational" passage at the beginning of M4, which is similar but not identical to passages in A6 and M9β, and we should discuss the differences and the reasons for them

he means that, whereas in A9 he had given a compressed account of the difficulties both against the ideas as such and against the ideas as numbers and their ἀρχαί, he will now once again give a compressed account of the difficulties against the ideas as such, M4-5, repeating the first half of A9, but an expanded account of the difficulties against the ideas as numbers and their ἀρχαί, corresponding more loosely to the second half of A9--presumably because this second half, the "third investigation" of M1, is more important for what MN are trying to accomplish, within the larger argument of the Metaphysics, and so deserves a more detailed treatment.[38]

The overwhelming difficulty, however, against taking M6-9α as the promised "third investigation," is that while M6 says we will raise difficulties for "those who say that [numbers] are separate οὐσίαι and first causes of the things that are" (1080a12-14, cited above), in fact all of the objections of M6-9α are against numbers as separate οὐσίαι, and have nothing to do with whether numbers are also causes of other things. And the elaborate conclusion at the end of M9α (1085b34-1086a21), summarizing the results of M6-9α, says nothing about numbers as causes, but only about the ontological status of numbers as forms or separate mathematicals.[39] Furthermore, M9β seems to be promising to take up, apparently for the first time, an investigation of the ἀρχαί of the οὐσίαι said to exist beside the sensibles, and specifically of whether these ἀρχαί are the ἀρχαί of all things ("since some people say that ideas and numbers are like this [sc. other οὐσίαι beside the sensibles], and that their στοιχεῖα are στοιχεῖα and ἀρχαί of the things that are, let us investigate what these people are saying and how," 1086a26-9, cited above). And, unlike M6-9α, M9β-10 actually delivers on this promise; and so does Metaphysics N.

But if M9β-N are the promised third investigation, what is the role of M6-9α in the plan of MN? As we have seen, it is very difficult to take these chapters along with M4-5 as part of the second investigation, the treatment of ideas "simply and [only] as far as convention requires." Annas and Crubellier regard M6-9α, instead, as in some sense an excursus from the plan laid down in M1. Annas describes M6-9α as a pile of "minor" arguments against platonist theories of number,[40] arguing not, like M2, against the shared commitments of all such theories, but against specific versions; she speaks of M9β as "return[ing us] to the theme of M1" (pp.79-80), so that M6-9α would be a digression, but applying principles from M2-5. Crubellier says that, beside the

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[38]Jaeger gave two other arguments, weak in my view, for identifying "third investigation" with M6-9α: (i) that the elaborate formal conclusion M9α 1085b34-1086a21 marks the intended end of the treatise begun in M1, so that M1's "third investigation" cannot be something beyond that, and (ii) that M9β is an introduction to a treatise parallel to the treatise beginning in M1 (this based on some verbal parallels between M9β and M1), so that it cannot be part of M1's "third investigation". argument (i) does not work: while 1085b34-1086a21 is certainly a formal end to something, it is only an end to a section of a treatise, not to a whole treatise, since the μέν at 1086a18 is unanswered (it is not answered by the δέ in 1086a20), and is clearly supposed to form a transition to a following section: from what we have, the only options are that it is supposed to be picked up by the δέ at M9β 1086a21 or possibly by the δέ of N1 1087a30, if we assume that both M9β-10 and the transitional first line of N, 1087a29, were added later. as for argument (ii), again there is no doubt that M9β is the beginning of something, but since it is the beginning of an investigation of ἀρχαί, and M1 is the beginning of an investigation of unmoved οὐσίαι, the two really cannot be parallel, and, in particular, Aristotle cannot have intended one to replace the other as filling the same spot in the argumentative economy of the Metaphysics. I'll try to say something below about the verbal parallels between M1 and M9β, which are indeed interesting, but I don't think they can undermine this point

[39]this point cited by Burnyeat from an oral comment of Annas, in the MN Symposium Aristotelicum p.216 n8

[40]where "platonism" is a technical term for Annas, meaning "the belief that mathematical objects such as numbers literally exist, independent of us and of our thoughts about them" (p.3) and presumably also independent of physical objects; she supplements this by saying that Plato's (and presumably other Academics') versions of platonism do not clearly distinguish numbers from numbered groups (p.3), so that independently existing numbers would be groups of independently existing units

examinations of the three Platonic or Academic theses mentioned in M1--namely the existence of separate mathematicals, the existence of ideas beyond the sensible things, and that the numbers (or ideas and numbers) are the ἀρχαί and causes of all things--Aristotle is now inserting examinations of two more theses, the existence of ideal numbers beyond the mathematical numbers (examined in M6-9α) and that the στοιχεῖα of ideas and numbers are the στοιχεῖα and ἀρχαί of all things (treated M9β-N2 1090a2, while N2 1090a2-N6 examine whether numbers themselves are causes of all other things; all this Crubellier pp.15-22). So on this account too M6-9α would be an excursus from the plan laid down in M1, but belonging fundamentally with M2-5: for Crubellier the fundamental division is between M1-9α, examining the claim that the intelligible objects grasped by the sciences exist separately from the physical world, and M9β-N, examining the causal claim that the physical world is governed by these separate intelligible objects. But against both Crubellier's and Annas' accounts of the structure of MN is M6's announced plan "to consider again the things that result about numbers for those who say that they are separate οὐσίαι and first causes of the things that are," echoing M1 on the "third investigation" (1080a12-14, cited above); since M6-9α do not in fact discuss numbers as causes, this must be looking ahead to M9β-N.

The solution, then, is to take M6-N as a whole as the "third investigation."[41] This is supported by the fact that the first half of A9 is repeated in M4-5, while some themes of the second half of A9 are treated in M6-9α and others in N (along with new considerations), since, as I have argued above, the "second investigation" is supposed to correspond to the first half of A9 and the "third investigation" to themes of the second half more expansively treated. And while it is true that M6-9α have not been perfectly integrated into a continuous argument M6-N (other sections of M6-N have not been integrated perfectly either),[42] the arguments of M6-9α are not digressive or "minor," but are a crucial link in the examination of the ἀρχαί of unmoved things in M6-N--it was M4-5, not M6-9α, that Aristotle wanted to get over with quickly! As noted above, it is only when ideas are identified with numbers that they offer a plausible route to the ἀρχαί; and M6-9α are above all examining, not numbers as such, but the constituent ἀρχαί of numbers, namely the ones or units out of which they are composed, and raising dilemmas about how the numbers can arise from these ἀρχαί. These ἀρχαί are different from the ἀρχαί of numbers that N will be concerned with, namely the one and a contrary ἀρχή such as the indefinite dyad or plurality;[43] but it is above all the difficulties, mercilessly exposed in M6-9α, of explaining where the different constituent units of the numbers would come from, that would lead the Academics to posit a continuous pluralizing ἀρχή such as the indefinite dyad or plurality-itself, and it is natural for Aristotle to examine first the units, the most obvious ἀρχαί of numbers, and only then these more obscure ἀρχαί.[44]

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[41]this is in accord with something I have heard Michel Crubellier suggest in conversation; my disagreements with his dissertation are not necessarily disagreements with his present position

[42]it seems quite possible that a version of M6-9α was originally independent, or rather M6-M8 1083b23 and M9 1085b34-1086a21, with the more scattered arguments M8 1083b23-M9 1085b34 added when it was incorporated into MN

[43]although M6-9α do more briefly discuss these too, the indefinite dyad at M8 1083b23-36 and quickly at 1084a3-7, ἀρχαί of magnitudes analogous to the dyad at M9 1085a7-23, plurality and analogous ἀρχαί of magnitudes at M9 1085a31-b34

[44](i) note (and cite discussion elsewhere?) B#11 on the difficulty about where the units other than the one-itself would come from, leading some to posit that number arises from the one and from something else that is not one, thus a turning from M6-9α to N; (ii) might also note against Crubellier that M6-9α is not just against idea-numbers but also against other versions of separately existing numbers and their unit constituents; but I agree with Crubellier that idea-numbers are the main target, see discussion below

Following Aristotle's order, I will first briefly discuss his strategies of argument against mathematicals in M2-3 and against the ideas in M4-5, the sections that he subordinates to the "larger account"; then I will say something about the strategies of argument in M6-N, and how the different sections of this text may function together. These different sections do not in general fit together very smoothly, but the most problematic is M9β-10, the section which Bonitz, Ross and Jaeger took as the beginning of the "third investigation." M9β-10 is internally quite coherent[45] but, as has often been noted, has a very rough transition to N1. This section has therefore often been suspected of being either a later addition or a survival of an earlier version; I think it is probably right that it is in some sense a later addition, but I will try to explain why Aristotle would have added it. What is clearer, however, is that the promised examination of the στοιχεῖα of unmoved things and of whether they are the ἀρχαί of all things has not yet been completed either in M6-9α or in M9β-10. M9β-10 are concerned with the στοιχεῖα of separately existing universals, presumably their constituent genera and differentiae, and these chapters raise difficulties that will be important for the critique of στοιχεῖα of unmoved things in general, as it is developed throughout M6-N, but Aristotle's main target will be what the Academics propose as the first ἀρχαί of all things, namely the one and some contrary ἀρχή, and these he examines only in N. So it does not make sense to say, with Jaeger and Ross, that M9β-10 and N are survivors of an earlier stage of the Metaphysics, which Aristotle intended to replace with M1-9α: N accomplishes an essential part of the task which M does not, and whether or not the material in N is "early," Aristotle would have intended something corresponding to N to be part of the Metaphysics at any stage.[46],[47]

Rather than speak generally here about Aristotle's strategies of argument in MN, I will integrate my discussion with accounts of the particular sections of MN, concentrating on the functions of these sections in MN and in the Metaphysics as a whole. But a few themes are worth flagging here. Aristotle is not necessarily trying to refute all the Academic theses he examines in MN. He has importantly different attitudes to different Academic theses, and also to different individual Academics; we will not be able to understand his approach if we assume that all the Academics (that is, all the Academics other than Aristotle) agree on the essentials, and that what he is attacking is just their lowest common denominator. He does not think all the Academic theses are impossible, and, in M2-5 in particular, his critique often focusses not on the thesis itself but on a particular Academic argument for it, showing either that the argument establishes less than what its proponents want, or that, if it succeeded, it would establish more than they want. These arguments might be either arguments for the separate existence of some object (mathematical objects, or universals, if ideas are separately existing universals), or for its priority

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[45]this has been disputed by Annas, but wrongly, see below

[46]also, as argued above, when M1 implies that the discussion will be used in Λ to motivate better solutions than the Academics gave, the reference seems to be especially to N4-5, and, in general, to texts of N rather than M; so it's hard to doubt that M1 means to include N in what it introduces

[47]points like this are made against Jaeger by Annas pp.86-8. pretty much the same points hold against the suggestion of Berti in the MN Symposium Aristotelicum, pp.28-31, that M9β-10 goes with M1-9α, and is part of a main series ABΓEZHΘIM, but that N along with α is a survivor of an earlier project (of which Λ would be a resumé) on the ἀρχαί of sensible and intelligible things (according to Berti not yet distinguished into physics and metaphysics--this depends on Berti's reading of Λ [including of the conditional at Λ1 1069a36-b2] and of the Protrepticus, and of early Aristotle in general, which {I hope} I'll deal with elsewhere). but the Metaphysics beginning in AB is concerned with ἀρχαί, one path to the ἀρχαί that it has to examine is as the στοιχεῖα of intelligible things, and M9β-10 is just not enough to be that examination, having nothing to say about, for instance, the one and a contrary ἀρχή. (Berti suggests that there might be a lost continuation of M9β-10, but if so it would have to cover much of the same ground as N)

to other things: Aristotle will generally concede the claims of existence, but not of separate existence, and will concede that these alleged ἀρχαί are prior in λόγος, but not that they are prior in οὐσία. But while Aristotle concedes in a weak sense the Academics' "upward ways" toward their ἀρχαί, he entirely rejects their "downward ways," their generation of other things from their ἀρχαί. He will also raise questions about where their ἀρχαί themselves come from, arguing that if the Academics posit ἀρχαί sufficient to generate the effects, they will have an implausible radical plurality of ἀρχαί (i.e. that positing so many things is implausible unless they can derive these things from something yet prior), and that if they avoid such a radical plurality of ἀρχαί they will be unable to generate the effects.

Aristotle will also (in M6-N far more than in M2-5) draw distinctions between the views of different Academics, or of thinkers admired by the Academics, such as the Pythagoreans. By far the most important distinction is between Speusippus on the one hand, and all other Academics on the other. While Aristotle sometimes distinguishes between other Academic thinkers, he seems to take them all as remaining close to Plato, trying to reformulate Platonism and defend it in response to criticisms from Speusippus and others; MN do not allow us to systematically distinguish the voice of Plato and the voices of other individual anti-Speusippeans in the Academy, although occasionally it will be possible to note significant differences within the anti-Speusippean side. (I will always use "Platonist" specifically for the anti-Speusippean side in the Academy, who defend the Forms and the priority of the Good and the derivation of all things from a single set of ἀρχαί; so "Platonist" is more specific than "Academic.") While Aristotle typically thinks that Plato's or the Platonists' accounts of ἀρχαί and unmoved οὐσίαι either are impossible or involve arbitrary "fictions" [πλάσεις], he often thinks that Speusippus' accounts are consistent and possible; however, he thinks that Speusippus' improvements on Platonism have the side-effect of eliminating most or all of the motivation for positing such οὐσίαι or ἀρχαί in the first place.[48] This is part of Aristotle's general confrontation with Speusippus in the Metaphysics, which we have discussed especially in Iα4 and Iβ2c above, and will discuss more in IIIγ3 below: Aristotle thinks that Speusippus has correctly seen the basic contradictions of Plato's project, but has made exactly the wrong choices of which parts of Platonism to keep and which to reject. But we should not conclude that Aristotle has no positive debt to Speusippus. The fact that Aristotle agrees with Speusippus' criticisms of Plato suggests that his aporiai against Plato may often be adaptations of Speusippean arguments.[49] But Aristotle tries to turn them into aporiai that will be systematically effective against all Academic theories of ideas and numbers and their ἀρχαί, sometimes by adding to a long argument against Plato what seems like a rather perfunctory appendix against Speusippus: typically, either Speusippus in eliminating the causality that Plato's οὐσίαι and ἀρχαί were supposed to exercise has eliminated Plato's motivation for positing them, so that we no longer have any reason to believe that these things exist, or else Speusippus has misdiagnosed the real source of Plato's difficulty, so that his own argument tells against his own account as well as against Plato's. Aristotle probably also draws on objections of more conservative Academics against Speusippus, particularly against his radical plurality of ἀρχαί. In examining Aristotle's different responses to Speusippus and to

[48]the mention of the Pythagoreans, or Eudoxus, tends to serve a similar goal: we point out the crudeness and impossibility of what they were doing (doubtless against Academic charitable interpretations, at least of the Pythagoreans), but then we say that at least then the motivating force would be clear, whereas it has been eliminated from the more modern and sophisticated versions. for the difference between Aristotle's attitude to Plato and to Speusippus (on πλάσις and so on) d cite Crubellier (Crubellier where exactly?)

[49]maybe promissory note on δυσχέρεια

other Academics, we will also be able to see what is right and wrong in Jaeger's claims that in N Aristotle's main target is Speusippus, while in M (supposedly later, after Speusippus' death, when Aristotle and Xenocrates are leading competing schools in Athens) the target has shifted to Xenocrates, and that in N Aristotle was writing as an internal reformer of Platonism, in M as an external critic. However, we do not have to worry much about these issues in discussing M2-5, which do not usually distinguish different Academic targets.

The argument-strategies of M2-3[50] and M4-5

M2-3 and M4-5 are clearly separate, M2-3 handling objects of mathematics without asking whether they are ideas, and M4-5 handling ideas without asking whether they can also be described in mathematical terms. Neither says much about the ἀρχαί of numbers or magnitudes or ideas, which are reserved for M6-N: as we will see, it is only once ideas and numbers are identified that the issue of their ἀρχαί really becomes acute. Another sign that Aristotle deliberately keeps the investigations complementary is that M2-3, which is supposed to be about objects of mathematics in general, in fact confines itself to continuous magnitudes and avoids talking about numbers, which are reserved for M6-N.[51] But although M2-3 and M4-5 are separate investigations, coming out of the two branches of B#5 (mathematicals and ideas), their procedure is very similar. Both in M2-3 and in M4-5, Aristotle is mainly interested in arguments for the separate existence of the objects of mathematics or dialectic (and, connected with these, arguments that mathematical boundaries are prior to and causes of the things they bound, and that more universal things are prior to and causes of less universal things). He tries to show by constructing parallel sophisms[52] that, if these arguments succeeded, they would also show the existence of further separate mathematicals or ideas which the opponents would be unwilling to admit. He also tries to show that what the opponents' arguments legitimately demand can be satisfied without positing anything existing separately from, or prior in οὐσία to, the sensible things, and that positing further separately existing causes will not help. Both in M2-3 and in M4-5 Aristotle also discusses a crude theory on which the mathematicals or ideas would exist "separately" (i.e. not as predicates of some other underlying nature) but not separately <u>from the sensibles</u>, being rather <u>in</u> the sensibles; in both cases, he mentions and refutes this theory not just because he is trying to be logically exhaustive and refute every possible variant of the thesis that objects of mathematics or dialectic are οὐσίαι καθ᾽ αὑτάς, but also to say that the crude objects posited would at least have a causal-explanatory function that their more sophisticated replacements do not. Both in M2-3 and in M4-5, while Aristotle is trying to impose a systematic plan of argument, it is also clear that he has a large supply of particular arguments at his disposal, some of which are alluded to rather than properly developed, and some of which are not very well integrated into the overall argument (perhaps most strikingly the reply to Aristippus from B#1 on whether the good and the καλόν exist in the objects of mathematics, left freestanding at the end of M3, 1078a31-b6). I will not discuss all of these arguments in detail.

The structure of M2-3 is somewhat distorted by the artificial framing question: "if the mathematicals exist, they must be either in the sensibles, as some people say, or separated from

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[50] I am counting M1 1076a32-7 as part of M2

[51] two exceptions, M2 1076b36-9, M3 1078a21-5, where Aristotle has mainly been talking about something that happens with magnitudes, but says that something similar happens with numbers

[52] discussed in Iβ4c above; except that I think I there say always "parallel arguments" rather than "parallel sophisms" (the latter formulation is probably better). d harmonize

the sensibles (some people also say this way), or, if neither, either they do not exist or they exist in some other way: so that our dispute is not about their existence but about their way of existing" (M1 1076a32-7).[53] Following this diairesis of possible views, Aristotle starts by arguing against the view that the mathematicals exist as things existing καθ᾽ αὐτά but in the sensibles (M2 1076a38-b11), then against the view that they exist separately from the sensibles (M2 1076b11-1077b14), then, taking these views as refuted, he asks whether the mathematicals do not exist at all, or exist in some special non-separate way (M2 1077b14-17). Then, in all of M3 except the appendix against Aristippus (main body M3 1077b17-1078a31, appendix M3 1078a31-b6), he explains the non-separate mode of existence that mathematical objects do have, and tries to show that this is sufficient for the truth of what the mathematicians say about their objects, both their existence and their predicates.

However, this framing scheme, about the existence or the mode of existence of the mathematicals and their presence in or separation from sensible things, oversimplifies what Aristotle actually does in these sections of the argument. It is more adequate to say that he is examining and rejecting a series of arguments either for the separate or for the prior existence of mathematicals (where separateness is a necessary condition for priority); and the priority at stake is not only the priority of mathematical solids or bodies over sensible bodies, but also and especially the priority of mathematical boundaries over the things they bound. Aristotle is thus following out, not just the general aporia of B#5 about mathematical οὐσίαι, but also the more specific aporia of B#12 about the path to the ἀρχαί from sensible bodies through mathematical bodies to mathematical boundaries, and challenging the claims of priority and separate existence which this path presupposes.[54] (The question of the existence of mathematical bodies in the sensible bodies is also largely a question about boundaries, namely whether the boundaries of mathematical things, which may not coincide with the boundaries of actual sensible things, are present in the sensibles: if Hermes is present in the stone or the half-cube in the cube, then Hermes' surface or the extra face of the half-cube are also present in these solids [so B#12 1002a20-24]--and are infinitely many such internal surfaces simultaneously present in the solid?)

The framing scheme of M2-3 is also misleading if it suggests that Aristotle first refutes the claims that mathematicals exist καθ᾽ αὐτά either in or apart from the sensibles; then concludes that, since they must exist, they must exist not καθ᾽ αὐτά; and then tries to explain this peculiar mode of existence. His procedure is much more reactive. M2 1076a38-b11 does try to refute outright the claim that mathematicals exist in the sensibles, but the much longer and more important section examining mathematicals existing separately from the sensibles, M2 1076b11-1077b14, proceeds not by refuting the opponent's theses but by responding to his arguments. This section M2 1076b11-1077b14 can be divided into a subsection on the alleged separateness of the mathematicals, 1076b11-1077a14, and a subsection on the alleged priority, of mathematicals to sensibles and, among mathematicals, of boundaries to what they bound, 1077a14-b14. (But even in the subsection on separateness there are also some considerations about priority.) In the subsection on separateness he considers the opponents' arguments for their claim, and in each case constructs a parallel sophism for the separate existence of something else that the opponents will find unacceptable, without pretending to refute the claim of separate

[53]the beginning of M2-3, since I am counting M1 1076a32-7 as part of M2

[54]Mueller in Crubellier-Laks, esp. pp.190-91 and pp.197-9, says that M2 is addressing only B#5 and not B#12, but I can't see his reasons. he thinks B#12's mathematical boundaries are immanent in sensibles, but B#12 doesn't take that for granted. the questions of priority of boundaries seem very close in B#12 and M2; B#5 just considers mathematical objects in general, with nothing about whether e.g. lines or surfaces are prior

existence. Only in the subsection on priority does he argue in his own voice that the priorities are the opposite of what his opponents claim, and even here he is equally concerned to examine the opponents' arguments and to show that they do not establish priority in οὐσία but only in γένεσις or in λόγος. And when in M3 he explains the non-separate mode of existence that the mathematicals do have, and argues that this is enough to make the mathematicians' assertions true, he is not setting out a positive theory for its own sake, but rather showing that the opponents' argument from the truth of the mathematical sciences to the separate existence of their objects is non-conclusive.

In M2-3 Aristotle is examining objects of mathematics in themselves, without asking whether they are ideas. This means that he sets aside any reasons for believing in the separate existence of these objects that would turn on arguing first that there are ideas, and then that these ideas satisfy mathematical descriptions. However, as Aristotle argues especially in N, if mathematicals are not ideas (because there are no ideas, or because mathematicals and ideas are two distinct οὐσίαι), there are not many reasons left for believing in mathematicals' separate existence.[55] There are basically two strategies of argument, one given in B#5 (needing a supplement from B#13) and the other in B#12. (Speusippus thought there was a third reason, namely that mathematicals, rather than Forms, are παραδείγματα of natural things; Aristotle does his best in N to ridicule any such causal-paradigmatic connection, but does not mention it in M2-3.)[56] The first strategy, from B#5, gives what we can call the "argument from the sciences," by analogy to the argument from the sciences to the ideas (mentioned M4 1079a7-9 = A9 990b11-13): namely, that since the theorems of mathematics--B#5 specifically mentions not just geometry but also astronomy (997b34-998a6)--are not precisely true of sensible things, and since they are precisely true, they must be true of some other domain of objects. This much we could equally get out of Republic VII; what the argument specifically for separate mathematicals adds (as becomes clearer in B#13 1002b12-16) is that these objects cannot be ideas, since they must be many-per-type. ("Two added to two is four" cannot be referring twice to a single two-itself, since nothing can be added to itself, and the Pythagorean theorem concerns the relations between three squares, which cannot all be a single square-itself.)[57] The other argument strategy, from B#12, would establish not just that there are mathematical οὐσίαι, but that they are the οὐσίαι of the sensible bodies, and therefore also that they are prior to them. This would proceed in two stages. First, when we analyze the constituents of sensible bodies, earth and water and air and fire, to their ὑποκειμένη οὐσία, setting aside the πάθη hot and cold and wet and dry, nothing remains except three-dimensional extension. Next, the bounding surfaces of a mathematical solid are the (partial) οὐσία of the solid, as things present in the λόγος of the solid, such that the solid cannot exist without them (the λόγος of cube is "solid figure contained by six equal squares," Euclid XIdef25), and for the same reason they are prior to the solid; and similar arguments will show that lines are οὐσίαι of and prior to surfaces, and that points are οὐσίαι of and prior to lines.[58]

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[55]cite N3 giving a list of possible arguments

[56]references: in Speusippus, the fragment of On Pythagorean Numbers, then in N5-6

[57]note on what "add" means in Greek mathematics, so that nothing can properly be added to itself, by contrast with modern understandings of numbers, addition, and equality

[58]see Iβ3 for discussion, and some controversies about B#12. for the first part of the argument, see B#12 1001b32-1002a4 (echoing the Timaeus argument to the receptacle); for the second part, B#12 1002a4-8 (this also mentions a priority of units or numbers to points, which can be spelled out in a similar way, e.g. if six faces, or eight vertices, are in the λόγος of cube, then so are six and eight, and there could be no cubes if there were no sixes or eights). for the relevant sense of οὐσία, see Δ8#3 and my discussions of it, probably esp. in IIα; a bit on this also further down in the present subsection

Aristotle's response to these arguments in M2-3 is similar to his response in M4-5: the opponents' arguments establish that mathematicals or universals exist, that they are prior in λόγος to the sensibles (or to the objects they bound), and that they are prior by Plato's test on the most straightforward interpretation, but the arguments do not establish that these objects are prior in οὐσία, because they do not establish that the objects exist separately; if the arguments did establish that the objects exist separately, similar arguments would establish unacceptable conclusions. Unfortunately, Aristotle is not explicit in M2-3 about exactly what arguments he is responding to. Apparently he assumes that we will know this from reading B, which he cites at 1076a39-b1 and 1076b39-1077a1--both references are to B#5, but he is also addressing B#12 arguments for priority, and especially for the priority of boundaries to what they bound. But the B arguments are not fully determinate: notably, is the B#12 argument for the priority of mathematical boundaries supposed to establish planes and lines and points within sensible things, or separate from sensible things? But Aristotle thinks that, in whatever way the arguments are filled in, they will be unacceptable.

If the opponents' arguments result in mathematicals (mathematical solids, and thus also mathematical boundaries) that are present in sensible things, then, Aristotle says, this will be impossible for the reasons given in B#5, to which he adds a similar reason, apparently as follows: if we assume that not only the boundary surfaces of sensible bodies, but also surfaces internal to sensible bodies, already actually exist within the bodies, then when a body is divided, the surface along which it is divided will itself be divided into the two boundary surfaces of the two part-bodies, and in like manner boundary lines and points will be divided, and it is absurd for a point to be divided (1076b4-11).[59] If, on the other hand, mathematical solids exist separately from, and prior to, sensible bodies, then there will also be mathematical boundaries separate from and prior to sensible boundaries, and "by the same argument," prior to the planes and lines in the mathematical solids themselves there will be separate planes-themselves and lines-themselves (b12-28). The "same argument" is an argument that "the uncompounded is prior to the compounded" (b18-19), i.e. that the simple α is prior to the composite βα, and α detached from β is prior to α united with β. This can be developed by saying that α is a partial οὐσία, a part in the λόγος, of βα, as square is of cube, or by saying that α is prior to βα by Plato's test, that α can exist without βα existing but not vice versa; either or both of these can be used to explain the B#12 argument that boundaries are prior to (and οὐσίαι of) the things they bound. Or it can be developed into an "argument from the sciences," that since there are truths about α that are not specifically truths about βα or γα, about a united with β or with γ, there must be a corresponding object α which is no more united to β than to γ. If this reasoning is implicit in the B#5 argument that there must be objects with only solid-geometrical attributes (things that have three-

[59]the alternative, presumably, is that there is a single bounding surface when AB are joined (and only a potential surface when they are a single thing), and that when A and B are separated, there are two bounding surfaces, without a process of coming-to-be and without their coming-to-be out of the previous single bounding surface, because what is for there to be a surface is just for some body to be bounded or for two bodies to touch. if so, the surface will not be an οὐσία: B#12 1002a28-b11 (the relationship between this and M2 1076b4-8 is closer than some commentators recognize) … Mueller understates the case, Annas completely misses what's going on (maybe a quote from her p.139, she's missing precisely the B#12 argt that then they can't be οὐσίαι) … note in the neighborhood her confusions (i) "this argument works only against intermediates," as if Aristotle was distinguishing these from other possible kinds of mathematicals; (ii) against "treating the ideal solid as if it were a solid" (!) … note Aristotle is assuming that, if the mathematicals are immanent in sensible bodies, they are moved, divided etc. when the sensibles are moved or divided; as in a B#5 argument that he doesn't repeat here … note throughout Ar's construction of parallel argts, "by the same λόγος," and contraposition, if A, then (in parallel, but absurdly) B; but if not B, then not A

dimensional extension without motion prior to things that have three-dimensional extension with motion, etc.), then it should equally show that there will be objects with only plane-geometrical attributes prior to the objects with solid-geometrical attributes. The B#12 argument that mathematical solids are prior to sensible bodies can similarly be construed as an argument that extension without heat and moisture is prior to extension with heat and moisture, and then the B#12 argument that mathematical boundaries are prior to mathematical solids can be regarded as parallel. But, Aristotle now says, if these are arguments for separate existence they will produce an unacceptable plurality of points by themselves, points on lines, points on lines in polygons, points on lines in polygons in polyhedra, lines in themselves, lines in polygons, and so on.[60] If, however, the kind of priority that simples have over composites is not enough to infer separate existence, then we have no basis to infer the separate existence of mathematical solids.

Aristotle also adds parallel arguments against arguments from the sciences to the separate existence of their objects, with no mention of priority (1076b9-1077a14). As in B#5 997b12-24 (cited 1076b39-1077a1), the same reasons which require separate arithmeticals and geometricals would also require separate objects of the other mathematical disciplines, astronomy (and can there be moving objects separate from the sensibles?) and harmonics and optics, optics being the science of sight [ὄψις] and of the correlative visibles; so the other senses and their correlative objects should also exist beside the physical things, and, since a sense is not without an animal, there would also be separate animals. (The K parallel to B#5 puts this by saying that there will be a "third man" beside physical humans and the idea, K1 1059b8, which nicely brings out the similarity of Aristotle's approach here and in M4-5.)[61] To these arguments from B#5 Aristotle now adds (1077a9-14) that since there are propositions of universal mathematics (such as those of Eudoxus' theory of proportions), which apply equally to numbers and magnitudes, the same inference would yield the absurd conclusion that there are separate universal mathematicals, which are neither infinitely divisible like continuous quantities, nor made out of indivisibles like numbers. This argument, in another context, gives Aristotle a response to Platonic one-over-many arguments, since it shows that there can be universal propositions and sciences without separate universal objects; but it is equally effective against Speusippus, who does not posit Forms or separate universals but only mathematicals, but who must explain why his argument

[60]see the discussions in Ross, Annas, and especially Crubellier (and Crubellier's discussion of Oskar Becker's proposed emendation). some people think either that Aristotle is allowing, or that his opponents could reasonably reply, that the surfaces παρά the sensible surfaces are identical either with the boundaries of mathematical solids, or with the surfaces παρά such solids. the second identification seems more likely to me, but Aristotle just does not say enough about the reasons for admitting surfaces παρά. also note: when Aristotle speaks here of X existing παρά Y, he probably means, not just that X exists καθ᾽ αὑτό rather than as an attribute of Y, but also that X is not in Y (as in the rejected theory of mathematicals in sensible things), thus that it is in a different place from Y. when Aristotle says that this multiplication of entities is ἄτοπος (1076b28) probably some of what he means is that there will be many spatially unconnected extended realms

[61]Annas seems to think that harmonics and optics would be non-mathematical sciences, and that, insofar as they study idealized rather than straightforwardly physical objects, these objects will be things like people's "ideal competence" at sound-production, which will not itself be a sound. in fact Greek writers always regard optics and harmonics as branches of mathematics, and Greek optics does indeed study an idealized mathematical ὄψις, taking the form of lines or a cone, which is indeed supposed to be itself perceptive; Aristotle's descriptions are on the mark, although the opponent might be able to resist the inference from sight and hearing to the other senses, or from "senses" like ὄψις to animals. Annas in general seems convinced that it is a silly mistake to e.g. "think of the ideal circle as a circle," and that Aristotle's arguments turn on attributing such mistakes to his opponents

from the sciences leads to separate numbers and geometricals but not separate universal mathematicals.[62]

Aristotle then turns to arguments framed in terms of priority rather than separation: either he tries to show that the opponents' arguments, even if they prove the priority in λόγος of mathematical to sensible bodies or of boundaries to bodies, cannot prove priority in οὐσία; or else he tries directly to prove that the priorities in οὐσία are the reverse of what the opponents claim. He concedes to the opponents that points and lines and planes are prior to solids, not only in λόγος, but also in the order of coming-to-be, but he turns the concession to his advantage by citing the maxim that what is prior in coming-to-be, because it is ἄτελες, is posterior in οὐσία to the final result of coming-to-be, which is τέλειον (M2 1077a18-20, 24-8). Aristotle can thus rhetorically assimilate his Academic mathematician opponents to physicists like Anaxagoras and Democritus, who take as their ἀρχαί the ἀτέλη seedlike things that were chronologically prior to the ordered cosmos; and so he reminds his reader that Speusippus had compared the One to an ἄτελες seed from which the τέλειον decad arises. This allows Aristotle to position himself as a defender of Platonic teleology and the perfection of the ἀρχαί, against Speusippus' relapse to pre-Socratic physics.[63] But it is hard to call all this an argument; what Aristotle adds, that might allow him to develop it into a real argument, is that only what is one and whole can be τέλειον, or can be an οὐσία, and there can be no unifying cause of a mathematical magnitude in the way that a soul can be a unifying cause of a natural body (M2 1077a20-24, 28-31). This would show not only that three-dimensional magnitudes are prior to boundaries, but also that physical bodies are prior to mathematical solids. And this argument is a major step in Aristotle's overall argument against the path to the ἀρχαί as στοιχεῖα of mathematical things: it develops his challenge to the Platonists (notably at H3 1043b32-1044a14, see IIε below) to explain why each number is internally one, and it leads to the argument of N2 that no eternal thing can consist of στοιχεῖα, since unless something is a simple unity without parts or στοιχεῖα, it can be a unified whole only if it is actually one and potentially many. And all this builds up to the conclusion of Λ10 (esp. 1075b34-7, drawing on H6) that the unity of a whole can be explained only by an actualizing efficient cause: unchangeably eternal things, such as Academic mathematicals and form-numbers are supposed to be, do not have efficient causes but only στοιχεῖα, and Λ10 concludes that we cannot reach the ἀρχαί as causes of such things, but only as actualizing efficient causes of changeable natural things.

However, in the immediate context of M2-3, Aristotle's main aim is just to show that his opponents, in proving priority in λόγος, or priority by a naïve version of Plato's test (e.g. there can be squares without cubes but not cubes without squares), have not thereby proved priority in

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[62]cross-refs to related discussions, of Plato one-many, of universal math against Speusippus. think about whether there is a particular point in response to Speusippus, if DCMS c4 comes from him; also cp DCMS c3, on limit and the unlimited as ἀρχαί of quantities in general

[63]for Speusippus on the one and imperfection and seeds, see N5 1092a11-17 (where he is not named) and Λ7 1072b30-1073a3 (where he is); on the perfection of the decad, see the fragment of On Pythagorean Numbers, where the decad replaces the animal-itself as the model of the sensible world, and takes over its attributes of perfection. the idea that points and lower-dimensional magnitudes precede solids in coming-to-be sounds a bit strange, but presumably begins from practices of geometrical construction (to construct the triangle ABC, first draw the points, then the lines), and seems to be asserted by Plato in the annoyingly cryptic text at Laws X 894a. note that Aristotle himself in Protrepticus B33 had been perfectly to assert the priority of mathematical boundaries and numbers, on Plato's test grounds and because the boundaries are partial οὐσίαι and parts in the λόγος of the things they bound, without drawing any distinction between priority in λόγος, in οὐσίαι, in coming-to-be

οὐσία. This is in fact one of the main contexts in which Aristotle feels called on to refine the formulation of Plato's test:

> Those things are prior in οὐσία which, when they are separated [from other things], extend beyond them in existence [i.e. survive them], but those things are prior in λόγος whose λόγοι are out of [i.e. components of] the λόγοι [of other things], and these do not [always] go together. For if πάθη--for instance, something moved or white--do not exist apart from [παρά] substances, then white would be prior to white man in λόγος but not in οὐσία: for it cannot exist separated, but is always together [or simultaneous] with the composite (I am calling white man a composite). So it is clear that the result of abstraction [τὸ ἐξ ἀφαιρέσεως, e.g. white] is not prior, nor the result of addition [τὸ ἐκ προσθέσεως, e.g. white man] posterior: for white man is said by addition to white. So that they [sc. mathematical boundaries] are not οὐσίαι more than bodies are, and are not prior in being [τῷ εἶναι = τῇ οὐσίᾳ], but only in λόγος, to the sensibles, nor are they capable of existing when separated, has been said sufficiently. (M2 1077b2-14)[64]

White can exist without white man, but, Aristotle argues, that is not enough to show that it is prior in οὐσία by Plato's test rightly understood, since white does not exist separately, but always bound up with some composite; likewise, if there can be body without fire but not without some sensible element, and man without Socrates but not without some individual human being, then this will not be enough to show that body is prior in οὐσία to fire or man to Socrates. It will also not be enough to show that square is prior to οὐσία to cube, if a square is always a boundary of some solid, that is, if for a surface to exist is for a body to be bounded (or for two bodies to touch there, or for one body to be divided there), as for a color to exist is for a body to be colored. Plato would surely accept Aristotle's formulation that "those things are prior in οὐσία which, when they are separated [from other things], extend beyond them in existence [i.e. survive them]," but he would think that if X can exist without Y but not vice versa, that is sufficient to show that X can continue to exist when separated from Y; Aristotle is saying that unless X exists καθ᾽ αὐτό, not merely by "abstraction" from some underlying nature, this is not sufficient.[65]

The example of white and white man shows that there must be something wrong with the opponents' arguments for the priority in οὐσία, and the separation, of mathematical boundaries: if these arguments showed the priority and separateness of boundaries, then similar arguments would show the priority and separateness of whiteness, which the opponents are unlikely to accept. But Aristotle wants to do more than answer the opponents' arguments with parallel arguments: he wants to give solutions to the opponents' arguments, and especially to the argument from the sciences. Thus he must show how mathematics can be true and scientific without separately existing mathematical objects, that is, with mathematical objects existing in some other way; and this is the task of M3. M2's parallel arguments help in finding solutions, because whatever makes it possible for the premisses of the parallel arguments to be true and their absurd conclusions false should also allow the premisses of the Academic arguments to be

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[64] mostly cited and discussed in Iβ4 above. as there, note Δ11 parallel 1018b34-7, the accident being prior in λόγος (as a part of a λόγος always is), although the musical can't exist unless something which is musical exists: the M2 text expands on this. should the present discussion be cut in favor of the Iβ4 discussion?

[65] see B#12 for these characterizations of surfaces and so on; Iβ4 for Plato's test and how it must be modified

true and the separate existence of mathematicals to be false: the ways that the objects of universal mathematics and of astronomy and optics and harmonics exist suggest ways that the objects of arithmetic and geometry might also exist. Reflection on the parallel argument about universal mathematics shows that there are theorems applying not to "universal mathematicals" but just to discrete and continuous quantities, not quâ discrete or continuous but quâ quantities; so likewise, Aristotle will say, there can be theorems applying just to sensible quantities, not quâ sensible but quâ quantities (1077b17-22, the first sentence of M3). Reflection on the parallel argument about astronomy shows that, if we are unwilling to posit either moving astronomicals separate from sensible bodies, or moving astronomicals in sensible bodies, we must admit theorems that are just about sensible bodies, not quâ sensible bodies but only quâ moving (1077b22-7); so likewise, Aristotle says, there can be theorems that are just about sensible moved bodies, "not quâ moved but only quâ bodies, and again only quâ surfaces, and only quâ lengths; and quâ divisibles [i.e. just as continuous quantities]; and quâ indivisibles having position [i.e. as points];[66] and quâ indivisibles alone [i.e. as units]" (1077b28-30). The case of astronomicals is particularly important in establishing this conclusion, because the Greek mathematical astronomy of Aristotle's time (as he describes it B#5 998a4-6) treats the stars as if they were points, although in physical fact they are not. Thus astronomical theorems will be true of sensible bodies, not just not quâ sensible, but also not quâ bodies, rather only "quâ indivisibles having position [and also motion]." Presumably we can also have theorems true of sensible bodies only quâ long, or only quâ long and broad (thus quâ indivisible in some dimensions but divisible in others), or only quâ long, broad and deep but not moving, without having to posit separate lines, separate surfaces, or separate unmoved bodies to make these theorems true.

Thus "since it is true to say without qualification [ἁπλῶς] not only that separate things are but also inseparable things (for instance, that moved things are),[67] it is also true to say without qualification that the mathematicals are, and that they are such as [the mathematicians] say" (1077b31-4). Each science will have some appropriate object X, and it will truly assert both the existence of X and the per se attributes of X, that is, the things that are true of X quâ X, whether X exists separately or not. If X exists non-separately merely as an attribute of Y, then the science, in considering attributes of the thing that is X, is also considering attributes of the thing that is Y, but the science is considers its attributes quâ X and not quâ Y, and so the science will correctly be called the science of X, not the science of Y.[68] If X is simpler than Y and prior to it in λόγος, then the science of X will be more precise than the science of Y (positing fewer things, and logically independent of the science of Y, while the science of Y will depend on the science of X), without any need for X to be separate from Y or prior to it in οὐσία. Taking it as agreed that there are no intermediate opticals or harmonicals, so that ὄψις is a natural thing correlative with the visibles, Aristotle says that optics treats this natural thing, not quâ natural thing (not

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[66]M agrees with A^bJ (thus with hyparchetype γ) in reading ἀδιαίρετα ἔχοντα θέσιν, rather than E's ἀδιαίρετα ἔχοντα δὲ θέσιν, adopted by at least Ross and Jaeger

[67]construal dispute: some people (e.g. Crubellier) take κινούμενα εἶναι as the subject of another implied εἶναι (sounds funny, and why not just say κινεῖσθαι), others (e.g. Bonitz, Ross, Annas) take κινούμενα as the subject of εἶναι (Bonitz suggests reading τὰ κινούμενα with some late manuscripts), others take εἶναι to be filled out by adding κινούμενα as predicate complement (but then are we predicating εἶναι ἁπλῶς?)

[68]note on the quite complicated textual situation around 1077b34-1078a4, with readings from codex M, which notably confirms some conjectures at 1077b35-1078a1 (the relevant readings are in the margin of my OCT), and note M τῶν αἰσθητῶν ἢ αἰσθητῶν at 1078a3. discussion with Crubellier; something like Jaeger's deletion of οὐ at a3 seems necessary

"quâ ὄψις", 1078a14-15) but just quâ line, which is an attribute of this natural thing;[69] the science treats this line as if it were something separate and not an attribute of a natural thing, and no harm will come to the science if the scientist believes that this line is something separate.[70] But if this is agreed about opticals and harmonicals, it may also be the case about arithmeticals and geometricals. As we saw in Iota 1-2 (Iγ2a above), a one is always some measure, and a number is always some measures, and a measure always belongs to the same genus as the things it measures, being (say) one man, but the arithmetician considers some man or some men not as man or men but just as a one or as a plurality measured by a one: "man quâ man is one and indivisible, and [the arithmetician] posited one indivisible, and then considered whether something belongs to man quâ indivisible" (1087a23-5)--or, rather, presumably, to some men quâ plurality of indivisibles. This is certainly no surprise given what we have seen in Iota, although Iota was not much concerned with the science of arithmetic and its relation to its objects. Much more interesting is what Aristotle now says about geometricals, by comparison and contrast with what he says about arithmeticals, and this seems to be his main aim in context (there is a division of labor between M2-3, concerned chiefly with geometricals, and M6-9α, concerned chiefly with numbers). Assuming Ross' apparently necessary bracketing of one phrase as a gloss, Aristotle says:

> But the geometer [considers man] neither quâ man nor quâ indivisible, but rather quâ solid. For the things which would belong to him even if he were not indivisible--clearly these can [ἐνδέχεται] also belong to him even without these [i.e. without being man and without being indivisible].[71] So the geometers are speaking rightly, and they are talking about things-that-are, and they are things-that-are, for what-is is twofold, [what is] in actuality and what is materially [i.e. potentially]. (1078a25-31)

A human being presumably has attributes, such as being three-dimensionally extended, or particular ways of being three-dimensionally extended, which do not depend on his being human, or on his being indivisible in the sense in which he is indivisible, which is a consequence of his being human. The crucial point, however, comes with the transition to what can belong--to τὸ δυνατόν, as the gloss here remarks. It is possible for the form of man to be removed, and for his matter to remain, and remain extended. It is therefore also possible for him to have attributes

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[69] do you want to say something about the conflict with Physics II,2? (note Crubellier on this)

[70] as no harm in positing as a foot long which is not a foot long (maybe note, following Henry Mendell, on use in theory of irrationals, N parallel, although the Iota parallel doesn't support this too well; note text-issue, the reading of M, maybe my two alternative suggestions--but note also the Analytics parallels Bonitz cites, Post I,10 76b41-2 and Pr I,40 49b35-6--the latter text is verbally not so close but very interesting in content, on ἔκθεσις and τόδε τι and where the falsehood lies, d pursue, maybe check Ross/Robin/Gisela--also note the N parallel has τὴν μὴ ποδιαίαν, which seemed linguistically dubious in the emendation); this will be important in justifying the claim that the mathematicians talk about ὄντα, not about μὴ ὄντα

[71] note on the problems of this sentence (i) Ross' bracketing of "τὸ δυνατόν" (so that the subject of the verb will be not τὸ δυνατόν but rather the ἅ of the previous clause); (ii) the antecedent of τούτων, which looks as if it should be the ἅ of the previous clause, but which becomes something like the ᾗ ἄνθρωπος and the ᾗ ἀδιαίρετος of the previous sentence (this I think already in ps-Alex, d check him and Syrianus). I spent quite a while trying to save the transmitted text (and expedients such as turning κἂν in a27 into οὐκ ἂν), but nothing seems to work: d discuss. also note (iii) that for μή που in a27 codex M has μή πω or μήπω, and (iv) that while both Ross and Jaeger say that the Latin omits "τὸ δυνατόν", which would be an important support for bracketing the phrase, in fact both the Anonyma and (the in books MN entirely independent) Moerbeke do have the phrase [I'm not sure what went wrong here]

such as three-dimensional extension and a particular shape without his form. He would also in such a state be infinitely divisible without qualification--that is, his matter, which is all that would remain of him, would be infinitely divisible without qualification --whereas as he in fact is, with his form, he is divisible only in a qualified way, since his form makes him in one way indivisible. In particular, he would in such a state be divisible--his matter would be divisible--into any three-dimensional shape, such as a sphere or a tetrahedron, in the sense that his matter could be divided along any internal bounding surfaces, such as the face-planes of a tetrahedron, so that the solid they bound would be cut out of him. Whenever there is an actual solid, the surfaces internal to it, and the solids they bound, exist only in potentiality, since if the actual solid were actually divided along these surfaces it would cease to exist; but the actual solid can be so divided, and so the surfaces and the solid they bound can exist.[72] This is what Aristotle means by saying that the objects the geometers talk about do exist, not actually, but "materially"--that is, potentially, as the contrast with "actually" makes clear. The objects that the geometers talk about are not just general attributes such as "three-dimensionally extended," or the particular shape that a particular actual human being happens to have (which will quite certainly not be one of the figures that geometers discuss), but spheres and tetrahedra and so on. Three-dimensional extension, and the particular shape that Socrates has at the present moment, exist actually and not merely potentially. They exist, of course, only as particular attributes of actual substances which may be considered apart from those substances and the other attributes of those substances--the same status that whiteness has in the white man, and that unity and indivisibility have as attributes of Socrates. But Aristotle does not introduce a potentiality-actuality opposition in talking about the white or about unity, but only in talking about geometricals such as tetrahedron, which are not attributes of any actual substance, since no actual substance is perfectly tetrahedral. Whiteness and unity exist non-separately, but they do not have the particular kind (the particularly weak kind) of non-separate existence that geometricals have, which is potential existence in the matter of some substance or of some substances (since the tetrahedron might be cut, not out of the matter of Socrates alone, but out of some of the matter of Socrates and some of the matter of the surrounding air, or some of the matter of Socrates and some of the matter of Xanthippe). The "matter" of which Aristotle speaks here is not Socrates' flesh and blood, but what he in some texts calls "intelligible matter," the matter of geometrical things ("some matter is sensible, some intelligible, sensible like bronze and wood and whatever matter is movable, intelligible what is present in the sensibles not quâ sensibles, like the mathematicals," Z10 1036a9-12).[73] This will be bare extension--in the present case, three-dimensional extension--

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[72]references, perhaps mainly in the Physics, on internal boundaries and the parts into which they divide the whole existing only in potentiality; note the examples of Hermes in the stone and the half-line in the line existing only potentially, Δ7 1017b6-8 and Θ6 1048a32-3 and cf. B#12 1002a20-24. maybe also Z13, where if the whole is actual its many parts are not, and "actuality divides"

[73]Reading the text of EJ with Bonitz and Ross and Jaeger and Frede-Patzig; M agrees with A^b (there is no major difference in sense). So too Z11 1036b35-1037a5, which in the EJ text says "some things have matter even though they are not sensible, and of everything which is not an essence. So the universal circle will not have these parts, but the individual [circles] will, as has been said before: for some matter is sensible and some is intelligible," and in the A^bM text says "some things have matter even though they are not sensibles. For everything which is not an essence and a form itself-by-itself, but a this, has some matter. So the universal circle will not have universal parts, but the individual [circles] will have these parts, as has been said before: for some matter is sensible and some is intelligible" (see IIδ or ε for discussion). K1 1059b14-16 speaks simply of "the matter of mathematical things." how "intelligible matter" in H6 1045a33-b4, and "the matter of the form" contrasted with "sensible matter" at Δ24 1023a35-b2 (and cf. Δ25 1023 b19-22), are related to "intelligible matter" in Z10-11 is controversial: see IIε for the H6 text, and IIδ for the Δ24-5 texts {check these references}

existing not separately from the sensibles, like the matter of Platonic or Speusippean mathematicals, but "in the sensibles not quâ sensibles"; and this matter (unlike the matter of Platonic or Speusippean mathematicals, which is not potentially anything) is potentially divided along planes, spherical surfaces, or any other possible bounding surfaces.

Geometricals thus have a non-separate potential existence dependent on the matter of sensible things, contrasting with the non-separate actual existence of units and numbers, dependent on the forms of sensible things. This quite specially dependent mode of existence is not needed simply to explain how geometry can be a science without separately existing geometricals (since otherwise we would also need it for units and numbers). Rather, it is needed to explain how geometry can be a science without separately existing geometricals given that geometrical attributes do not apply perfectly to sensible things, and thus to respond to the argument for intermediate geometricals at B#5 997b35-998a4, "sensible lines are not such as those the geometer speaks of, for none of the sensibles is in this way straight or round: for the circle touches the straightedge not at a point, but rather in the way Protagoras said in his refutation of the geometers."[74] If no actual bodies are bounded by perfectly flat planes, then the potentiality for being divided along a perfectly flat plane will never be actualized, but this does not disqualify it from counting as a potentiality: it will be like the potentialities for the void and for the infinite which Aristotle discusses at Θ6 1048b9-17, which can never be entirely actualized, but which can come progressively closer to being actualized, beyond any given limit, and this is enough to say that "this ἐνέργεια [sc. the void or the infinite] exists δυνάμει, but is not separated" (1048b16-17). Presumably some very large numbers also exist only in potentiality, and a never-entirely-actualized potentiality will be needed to account for the truth of propositions like Euclid IX,20, "prime numbers are more than any plurality of prime numbers that has been set forth."[75] Aristotle does not think , as a modern logician might, that the truth and scientific character of a branch of mathematics can be preserved, without any domain of objects to which it applies, by rephrasing its assertions as conditionals, "for all x, if x is an isosceles triangle, then x has equal base angles": a science must be about things that are, and a science about triangles must be about triangles that are. But being is said in many ways, and being-in-potentiality is sufficient to preserve the truth and scientific character of geometry: there are potential isosceles triangles, and they all have equal base angles. These objects, existing potentially within the matter of sensible things not quâ sensible, are, as potentialities, as eternal and unchanging as a Platonist could wish, without any need for separate existence.[76] But it needs to be stressed that Aristotle does not lay

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[74]see Iβ3 above for discussion (though apparently not a full quotation)--Aristotle, in context, is also talking about astronomy. perhaps the heavenly spheres are perfectly round and their motions are uniform rotations, but, as noted above, mathematical astronomy treats the stars as points, which the physical stars are not

[75]also note Physics III on infinities by addition and division, in what sense they exist potentiality, numbers arising either way

[7676]I thus agree with Ian Mueller, "Aristotle on Geometrical Objects" (in Articles on Aristotle v.3), that Aristotle thinks, not that geometrical objects are physical objects with some of their properties abstracted away (since at least sublunar physical objects are not perfectly straight, circular etc.), but rather that the matter of geometrical objects is the matter of physical objects with some of its properties abstracted away (and only extension left). Mueller speaks of geometrical objects arising when geometrical shapes are "imposed" on intelligible matter: I am not sure what he means by this, but if the imposition is supposed to be a mental act, then I think this is wrong and unwarranted (and in tension with the mathematical realism that Mueller rightly attributes to Aristotle). but the difficulty can be solved by saying that geometrical objects exist potentially in the matter, and are imperfectly actualized by acts of bodily construction (perhaps such constructions can also be carried out, not in wax or sand, but in phantasmata in the central sense-organ, but Aristotle gives us very little to go on here, and it is no more likely that a perfect myriagon could be constructed in the central sense-organ than on a wax tablet). I think, but am no longer sure, that this was

out a theory of such objects in M3, or anywhere else. Rather, he mentions them quickly in solving an aporia raised by his opponents. His aim is not to lay out a theory of mathematicals in M2-3, or of universals in M4-5, but only to show that the opponents' arguments to separate mathematicals and Form do not work; and even this is subordinated to the aim of showing that mathematicals and Forms do not give a path to the ἀρχαί.

M4-5[77]

M4-5 proceed in much the same way as M2-3, entirely parasitic on the opponents' arguments, and compressed enough that both these arguments and Aristotle's responses are alluded to rather than fully explained. The compression is relaxed only when we come to M6-9α. As we have seen, M4-5 are a repetition of the same material that was also presented in compressed form in the first half of A9 (A9 991a8-b9), with no expansion except for the introductory M4 1078b7-32 (partly paralleling A6) and the short added argument M4 1079b3-11; M6-9α, or indeed M6-N, can be seen as a very much expanded loose parallel to the second half of A9 (A9 991b9-993a10). Aristotle gives the material of M6-9α, chiefly on ideas as numbers, a fuller exposition than M4-

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Mueller's view too. the interpretive tradition on M3 1078a26-31, going back at least to Syrianus, and apparently to a text of the authentic Alexander that Syrianus is using, takes Aristotle to mean that mathematical objects (whether geometrical or arithmetical) are potentially in sensible things, and are made actual by the intellect's act of contemplating them. evidently this is connected with Alexander's theory of the νοῦς ποιητικός as abstracting from matter, and making what is potentially intelligible in a sensible thing (or in a phantasma) actually intelligible, whether as a universal form or as a mathematical, each of which would exist in the potential intellect; universals and mathematicals would thus have a foundation in bodies, but formally exist and be completed only in a soul. it is extremely unlikely that Aristotle believed this, and a reaction set in, starting with Jonathan Barnes' article "Aristotelian Arithmetic" (Revue de philosophie ancienne 3 [1985] 97-133), a deliberately wild exercise in reconstruction that touches base only very occasionally with Aristotle's text. on p.110 Barnes says that when in our passage Aristotle says that mathematical objects [really, just geometricals] exist ὑλικῶς, and not in actuality, he means not that they exist δυνάμει, but that "squares (say) exist in the same way that bronze (say) exists: bronze exists insofar as there are bronze statues, squares exist insofar as there are square areas. Bronze, evidently, is not an abstract stuff whose existence depends in some way on the mental exertions of the bronze-smith. Nor surely is there any implication in Aristotle's text that squares depend on geometers, or upon the mental activities of geometers, for their existence." This is the sum total of Barnes' discussion of the passage, and while his comments against mentalist interpretations are right, he has done nothing to get rid of the obvious implication of the text that when something is said to exist ὑλικῶς as opposed to ἐντελεχείᾳ, this means that it exists only δυνάμει. it is true that for Aristotle bronze, like whiteness, exists only in dependence on the things which are named paronymously from it (in my terminology, it exists "not καθ᾽ αὑτό and abstractly"), but that gives no warrant at all for saying that these things do not exist ἐντελεχείᾳ. apparently because people saw this as the only alternative to Alexander's mentalism, it was eagerly taken up (without being made any more plausible) by several contributors to the Symposium Aristotelicum volume on Metaphysics MN, including Julia Annas, who on this occasion recanted the broadly Alexandrist interpretation that she had given in her earlier commentary on MN. nonetheless, Aristotle is obviously saying that geometricals exist only δυνάμει in the sensibles, and stripped of the mentalist interpretation this is unobjectionable (maybe develop a Platonist objection along Syrianus' lines, how can we have actual and perfect knowledge of triangle when there are only imperfect actual triangles or potential perfect triangles in the objects? this might lead to a theory of the agent intellect acting to fill the gap, but there is no sign that Aristotle himself was led along any such path.) cross-references to what I said in Iβ3 on B#5 and B#12 and what I will say in IIIα3 on Θ9β; footnote to treatment elsewhere of the appendix to M3, replying to B#1 on Aristippus?

[77]on textual issues refer to Primavesi's edition of M4-5 in parallel with his edition of A9. add note that this is where I am going to treat A9, which was not properly treated in Iβ1 where it might have been expected; but also add there a reference ahead to this section, and also have, probably there (do I do this already?) some brief discussion of the sequence of predecessors for whom Aristotle raises aporiai in A8-9 (monists, then pluralist physicists, then Pythagoreans, then Plato), and the function of this sequence in motivating his own new pragmateia

5, on ideas considered apart from any connection with numbers, because it is only ideas as numbers that seem to give a path to the ἀρχαί, and it is this path that Aristotle mainly wants to argue against. M4-5 are apparently not worth expanding.

After the introductory sentence M4 1078b7-12 setting out the project, M4-5 divide into three sections: M4 1078b12-32 sets out the motivations for the theory of ideas "as those who first said there were ideas originally believed" (1078b11-12) without the later additions connecting ideas to numbers; M4 1078b32-1079b11 runs through a series of Platonic or Academic arguments for the existence of ideas (or, in one case, for the priority of more universal to less universal things), and indicates parallel sophisms that would lead to further unwanted ideas;[78] finally, M5 collects arguments that ideas will not be causally connected with sensible things and will not contribute to knowing them, and therefore that we have no reason to posit ideas (except perhaps reasons which argue upward from mathematicals or downward from the ἀρχαί, and which do not belong in this section). M4-5 give no arguments against the existence of ideas, and they do not claim that the theory is inconsistent. Rather, they aim to systematically undermine every reason for positing the ideas, whether a formal argument for their existence or a causal-explanatory need that they would satisfy. Thus, to begin with M5, on the conception that initially motivates the ideas, they would be connected with the sensibles, for instance by being the οὐσίαι of the sensibles, but Aristotle argues that this conception cannot be rationally sustained (except merely verbally, by being allegorized away), and that without it the motivating force is lost. (The ideas can be the οὐσίαι of the sensibles only if they are <u>in</u> the sensibles, as on Eudoxus' account, which Aristotle, with polemical intent, traces back to Anaxagoras' picture of S "participating" in F by having a piece of F bodily present in it, M5 1079b18-23 = A9 991a14-19; if, rejecting this, we make the ideas separate from the sensibles, they can be further οὐσίαι, but they cannot be the οὐσίαι <u>of</u> the sensibles. Anaxagoras and Eudoxus function here in the same way that Pythagorean number-cosmologies do in Aristotle's review of Academic theories of numbers: these views are shown to be unacceptably crude--against any Academic attempts to whitewash them--but it is also shown that, once they are replaced with something more sophisticated, the motivating force is lost. And at a higher level, if Plato's theories of intelligible οὐσίαι, numbers, and ἀρχαί are unacceptable, Speusippus' more sophisticated replacements, while consistent and possible, have lost the motivating force.) It remains a consistent possibility that the ideas are further οὐσίαι beyond the sensibles, but then the attempts to restore a motivating connection, for instance by making the ideas παραδείγματα of the sensibles, do not give any precise sense or any sufficient reason for positing the ideas (thus a παράδειγμα is not sufficient for something to come-to-be unless the ordinary kinds of cause are also present, and if the ordinary causes are present, a παράδειγμα is superfluous, as the Platonists must admit, since there is also coming-to-be in cases where the Platonists do not posit παραδείγματα, M5 1079b24-30 = A9 991a20-27 and M5 1080a2-8 = A9 991b2-9). I will not say more than this about M5, whose arguments and structure are generally clear enough;[79] but I want to explore how the fundamental argument-strategy is worked out in the more complicated and controversial M4.

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[78]for the last two arguments this description is controversial, see below

[79]but maybe note some contrasts with Annas' brief treatment (and also d compare Crubellier): (i) not picking up what I see as the overall rhetorical structure, so making it look more scrappy than it is (it is indeed rather scrappy); (ii) her suggestion that M5 really should go under the "third inquiry"--well, not if you think the third inquiry is essentially about ἀρχαί {this may deserve more detailed comment}; (iii) on whether separate forms can be οὐσίαι/formal causes of sensibles, she says this is just a doctrinal confrontation, missing that Aristotle takes this to be conceded by the Platonists when they start speaking of παραδείγματα instead of presence etc [it is, I think, true that the <u>Timaeus</u> never speaks of the forms as οὐσίαι of the things here {if anything, that would be the receptacle},

Why should Aristotle begin M4-5 with a "historical" excursus on the origins of the theory of ideas? Partly because the original motivations he describes, which have nothing to do with numbers or ἀρχαί, help to distinguish the original version of the theory from the later developments he will discuss in M6-9α; but mostly because his intention in this section is to criticize not the ideas but only the reasons for positing them, and these reasons come out of the original motivations of the theory. The account of the motivations repeats some of the material from A6 (where Aristotle sets out Plato's theories of forms and ἀρχαί, before raising aporiai against them A9), but the emphasis is different. In A3-7 the main concern is with each thinker's account of what the ultimate ἀρχαί are and how they are causes, thus for Plato with the One and the indefinite dyad as causes of numbers. So in A6 Plato is presented mainly as continuing Pythagoreanism, whereas in M4 Pythagoras and numbers are suppressed in favor of Socrates and dialectic. But A6 brings in Socrates to explain the more precise concern with essences and formal causes, and Heraclitus to explain the separation from sensible things, both of which distinguish Plato from the Pythagoreans; M4 picks up these comments about Socrates and Heraclitus, and uses them to explain Plato's reasons for positing the ideas.[80]

So when Aristotle says that the doctrine of forms arose because its proponents "were persuaded about the truth by the Heraclitean doctrines that all sensible things are always flowing, so that if there is going to be any science and prudence about anything, there must be other natures abiding beside the sensible ones, since it is impossible for there to be science of things that flow" (M4 1078b12-17),[81] this must be intended to motivate the "arguments from the sciences" (1079a8) for positing separate forms. And when he speaks of Socrates looking for universal definitions (1078b17-19, b23-5), "but Socrates did not make the universals or the definitions separate, whereas they [the Platonists] did separate them, and they called this kind of existing thing ideas" (b30-32),[82] this must be intended to explain "the one over many" argument for separate forms (1079a9), i.e. the argument that, if there is a universal λόγος applying to many

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but does speak of them as παραδείγματα {perhaps this goes against the Owenite presumption that paradeigmatism is an relatively early way of speaking about the forms, later abandoned}; they could, I suppose, still be partial οὐσίαι of the things in the sense that the λόγος of the thing could make reference to them, as the λόγος of "reflection of Socrates" makes reference to Socrates, see my comment at the end of M4]; (iv) Annas, following I suppose Cherniss, thinks Aristotle is making a big deal about Plato not having clear conceptual distinctions between the four kinds of cause. in general, I suppose, what she is missing is the imagined back-and-forth between Aristotle and his opponents, coming from Aristotle inserting himself into, and polemically exploiting, tensions and developments within the Platonist position. by contrast Crubellier (pp.191-205) tries too hard to make the chapter systematic, with Aristotle going through all of the kinds of cause (and he too doesn't see much back-and-forth between Aristotle and his opponents, doesn't see paradeigmatism as a Platonic alternative when they concede the ideas can't be the οὐσίαι of the sensibles). in talking of back-and-forth, important both (i) that the Platonists concede that ideas aren't a sufficient explanation, we also need an efficient cause, (ii) that the Platonists concede that there aren't ideas of everything (e.g. not of artifacts), which Aristotle uses to show ideas also aren't necessary. this resembles the parallel-sophist strategy: if this were enough to conclude to ideas in the favored cases, it would also be enough to conclude to ideas in the embarrassing cases. note also "and it's the same even if the paradigm is eternal" is a common Aristotelian move

[80]also compare the treatment in M9β: there brought in as a "historical" explanation of why the Platonists treated universals as individuals (combining Socratic and Heraclitean motivations), and thus why they wound up in the aporia about whether the στοιχεῖα of these one-per-type individuals (e.g. the animal in man-himself and the biped in man-himself) are themselves one-per-type: more on this, I think, below

[81]the περὶ τὴς ἀληθείας is funny but must connect with the use of ἀληθεία in α1 and the Protrepticus (also used in Γ in the same way); see Ross ad loc for refs, though his paraphrase doesn't help much (Annas' comment is eccentric but she sees the problem; Crubellier's "la verité des arguments héraclitéens" doesn't do it). cite A6 parallel

[82]Crubellier suggests "they called such things ideas of the things that are". I would guess rather that positing ὄντα goes with χωρίζειν.

things, there must also be beside these some one thing that the λόγος signifies. (As M9β puts it, Socrates "thought rightly in not separating" the universals [1086b4-5]. Here Aristotle plays Socrates against Plato, to suggest that Plato had no reason genuinely emerging from Socratic dialectic for separating the universals; rather, the Heraclitean argument from the sciences gave him a reason to posit some separate οὐσίαι beside the sensibles, and, not knowing the real ones, and having only the universals to hand, he separated those, yielding a duplicate of the sensible world masquerading as a supersensible world [1086b7-13].)[83] The argument from "thinking of what has perished [νοεῖν τι φθαρέντος]" (1079a10)[84] would presumably also emerge from the same Socratic and Heraclitean motives. I can continue to think [νοεῖν] X after this sensible X has perished; since thinking is always thinking something, and always thinking something that exists, there must be some other X that I am thinking. Furthermore, since cognitive states are individuated by their objects, as long as I am in the same state of thinking X, there must be a single object X that I am thinking, and not simply a succession of different sensible X's; and this single object will be a Form of X. [85] This argument resembles the argument from the sciences, but here what disqualifies the sensibles is not their imperfection or instability, but simply their perishing; the argument also resembles the one over many argument in inferring from a single (linguistic or cognitive) intention to a single object, but here the objection is not to having too many objects but to having no presently existing object, or to having too many objects in succession and not to having too many objects simultaneously. (If we take the argument to be assuming merely that νοεῖν is an intentional state, and arguing that it must be about a [single] existing object in order to have intentional content, then it is more akin to the one over many; if we take νοεῖν to be intellectual perception of an object, and take the argument to be that νοεῖν must have an existing object in order to be true, then it is more akin to the argument from the sciences.)[86]

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[83]similar criticisms in B#5 and Z16, refer to discussions. M4 1078b31-4 make a similar point, but steers it in a different direction, not against the suspicious similarity of the alleged supersensible world to the familiar sensible one, but that the same reasoning will lead to an absurd multiplication of the ideas; which is also the tack this chapter takes in discussing all the other arguments. also, for praising the "naïve" Socrates against the "sophisticated" Plato, d note M4 1078b25-7--amazingly, none of the commentators seem to have noticed the irony of the passage

[84]the syntax is not clear. it might be taken as "thinking/knowing something about what has perished" (but such a ternary construction of νοεῖν, even if possible, plays no role in the argument) or "thinking something [e.g. some part or aspect] belonging to one of the things that have perished" (this last is a suggestion of Michel Crubellier's, per litteras; it seems to me that this would be easier with an articular participle); these are perhaps equivalent to each other, if both taken in the sense of "thinking/knowing some predicate or attribute of the thing." however, φθαρέντος might also be taken as genitive absolute, "thinking something, the thing having perished" {this too is a suggestion of Michel's, and of Claire Louguet's, and had been my inclination}: this breaks the rule that something should not to be put in the genitive absolute if it refers to the subject or object of the sentence--we would expect. νοεῖν τι φθαρέν. but this would not be the only time the rule is broken, and, as Claire suggests, Aristotle would have a reason to adopt the absolute construction, namely that νοεῖν τι φθαρέν would mean simply "thinking/knowing something that has perished," while νοεῖν τι φθαρέντος can add an adversative nuance, "thinking/knowing something although it has perished." Alexander in his commentary on A9 seems to be taking the phrase in the latter way

[85]the first part of this argument is clearly in Alexander, the second less so, but note his "the same ἔννοια remains"

[86]Aristotle gives a similar argument that assimilates νόησις and ἐπιστήμη at B#8 999b1-4: "if there is nothing beside the sensibles, then nothing would be νοητόν, but rather all things would be sensible, and there will not be ἐπιστήμη of anything, unless someone calls sensation ἐπιστήμη": here the force seems to come from the fact that, while sensation is occurrent and needs only an occurrent object, ἐπιστήμη is a persistent ἕξις and requires an object that persists at least as long as it does. Likewise Z15 1040a2-5 {and cp. parallel Z10 1036a5-9, both discussed in IIδ}, which seems to mean: when something has perished, or even when a perishable thing is no longer in contact with our senses, so that we do not know whether it has perished, then, although our ἐπιστήμη remains the same, we no longer have knowledge of it, since we do not know that it exists: and so what our ἐπιστήμη is then of--which is

Aristotle's reason for bringing out these motives for positing the ideas, and the arguments which make them explicit, is to show that the arguments can give us no genuinely good reasons for positing ideas, since, if these arguments succeeded, parallel arguments would also establish the existence of ideas which the Platonists find unacceptable. "For according to the arguments from the sciences there will be forms of all the things of which there are sciences [not immediately obvious why this is objectionable, but this will include non-οὐσίαι, see below]; according to the one over many [argument, there will be forms] even of negations; and according to [the argument from] thinking of what has perished [there will be forms] of perishable things, since there is a φάντασμα of these" (M4 1079a7-11): that is, there will be forms not only of types of perishable things, but also of each perishable token, since when any given token has perished we can retain not only an intellectual representation of the type but also an imaginative representation of the token, and if we can infer that the universal intellectual representation must have a persisting object, we should be able to infer that the individual imaginative representation must also have a persisting object.[87] Also, although Aristotle does not make this explicit in M4, he will argue elsewhere that the underlying Socratic and Heraclitean motivations, to the extent that they are legitimate, can be satisfied without positing the ideas. Thus in the parallel M9 1086a35-b13 (noted above), where Socrates "thought rightly in not separating" the universals (b4-5), non-separate universals are enough for science. Or, if Plato is right that there must be "other οὐσίαι besides the sensible and flowing ones" (b8-9), then the need will be satisfied not by separating the universals, but presumably by the movers of the heavens, or by the heavenly bodies themselves. Thus Γ5 argues that the Heraclitean judgments are unfair even about sensible things, because even if things are always changing in quantity they may remain the same in quality or form (1010a22-5), but also because the large majority of the sensible world is the heavenly part, free from generation and corruption and growth and alteration, "so that it would be more just to acquit these [sublunar] things on account of those [heavenly] things than to condemn those on account of these" (a31-2); and anyway there is also something entirely unmoved (a32-5).

The Platonists, of course, do not simply accept these answers as resolving all of their concerns. When Aristotle at this stage of M4/A9 introduces "the more precise arguments," by implicit contrast with the arguments from the sciences, from the one over many, and from thinking of what has perished, this seems to reflect a dissatisfaction from the Platonist side with these less "precise," excessively general arguments. Probably this dissatisfaction arose from earlier stages of the same discussion between the Platonists and their opponents that we now see in M4/A9: someone constructs sophisms in parallel with these earlier arguments, trying to show that, if these arguments succeeded, similar arguments would establish unacceptable conclusions; and Plato or some Platonists, instead of trying to defend the old arguments, respond by constructing new arguments which, because they draw on more specific premisses about F in concluding that there is an idea of F, cannot be "paralleled" in this way. Alexander's commentary on A9, drawing on the On Ideas, shows that in some cases the Platonist side devoted considerable care to the formal construction of such arguments. Aristotle claims--and this was probably the main point of

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presumably what our ἐπιστήμη had been of all along--must be something other than the perishable thing. {d coordinate with discussion (or two discussions) in IIδ; perhaps something should be added on the B#8 argt in Iβ3. also: to what extent are there arguments of this type in the Theaetetus or Cratylus, which might have led Aristotle to the biographical speculation about Plato's original motives? Michel suggests Cratylus 389b for νοεῖν τι φθαρέντος: I'm not sure how close this is}

[87] whether this is fair will depend on how exactly the argument from νοεῖν τι φθαρέντος works. if it just turns on intentionality, then the parallel seems good: if it depends on truth of present-tense judgments about the thing, not

On Ideas--that all this effort is in vain, that the more sophisticated arguments are no more successful than the original crude arguments emerging directly from the Socratic and Heraclitean motivations of the ideas, and that they can be shown to be unsuccessful by the same method, that is, by constructing further parallel sophisms. "Of the more precise arguments, some produce ideas of relatives [τῶν πρός τι], of which they say that there is no καθ᾽ αὐτό γένος, and others entail [λέγουσιν] the third man" (M4 1079a11-13).[88] What makes these arguments "more precise" might be that they show more precisely that there are ideas, by showing the existence of παραδείγματα and not simply of universals (so Alexander 83,17-22). If so, the attempt would be not so much to make the arguments immune to parallel sophisms, as to make them immune to responses of the type "to the extent that the motivations are legitimate, they can be satisfied by positing not ideas but merely, e.g., non-separate universals"; but if an argument is to show that sensible F's are images of a further παράδειγμα of F, it must also turn on more specific premisses about F, and so will also be harder to "parallel" with an argument for, e.g., ideas of negations. But Aristotle claims that we can still construct "parallels" that will conclude not just to ideas of οὐσίαι but equally to ideas of relations, or not just to an idea of man besides individual sensible humans but equally to a third man beyond that.[89]

Aristotle does not tell us here either what these Platonist arguments are, or what the parallel arguments are. Alexander, as a dutiful commentator, tries to fill in the references, using whatever documents he could find (not only Aristotle's On Ideas, but also, for instance, works of the early Peripatetics Eudemus and Phanias). But, for our present purposes, we should not let the one sentence M4 1079a11-13 take on its own life independently of the larger argument of M4/A9; and we should not assume that there was some one argument that Aristotle was referring to in each case, and that identifying that argument is the key to understanding M4/A9. (In particular, it is a mistake to take "the third man" as a proper name for some one argument; rather, it is a complaint about a range of Platonist arguments that they admit parallels that would equally show

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[88]the parallel A9 990b15-17 has "we say" instead of "they say"; I follow A9, "more precise," against M4, "most precise" {I think some editors import the A9 reading into M4, d survey who--Oliver should have discussion}

[89]producing ideas of relations is parallel to entailing a third man: both are embarrassing consequences of some Platonist argument-strategy. there is nothing to be said for the view, going back apparently to Owen's "A Proof in the Περὶ Ἰδεῶν," that this Platonist argument especially establishes ideas of relations, i.e. that the argument that there is an idea of F would turn on the premiss that F is relational: the argument plainly does nothing of the kind. Owen's attempt to take it in this way depends on an extended sense of "πρός τι" which would apply e.g. to καλόν, because X can be καλὸν πρός (= in comparison to) Y but not πρός Z (if there is such a sense of πρός τι, it has nothing to do with the present text; note Owen's attempt to find an extended sense of πρός τι in A9/M4 by taking καί 990b20/1079a17 as epexegetic, I've got a note on this question in Iγ2c); Owen's suggestion that the argument turns on the equal's being equal only to some things and not to others is mad. notes on Alexander, ἐκ τῶν πρός τι at 82,11 (note, against Hayduck in the CAG, Harlfinger in Leszl, cited by Fine, on the textual situation: it's ἐκ in all manuscripts {Michel warns: don't take Fine's word for this, check to make sure Harlfinger is explicit here, or check the manuscripts}) but καὶ τῶν πρός τι at 83,17-18 and again 83,23-4 … useful criticisms of Owen in Crubellier, "Deux arguments de la Métaphysique à propos du statut catégorial des formes platoniciennes," Kairos no.9, 1997, pp.57-78 (but still too ready to admit a sense in which the argument turns on τὰ πρός τι) … Owen may be right that the argument was intended to establish only ideas of things like equal and καλόν, not of things like man, but this is not clear to me (the three possibilities of how "man" may be predicated non-homonymously of a plurality of sensible humans may be intended as a neutral way to list the options before showing that none of them applies to "equal," without a commitment as to how "man" actually works); but even if Owen is right about this, that has nothing to do with τὰ πρός τι. also figure out what Fine is thinking about this. she takes the reason why the sensible equals (for her not individual object but properties like being three inches long) can't be primarily equal to be "narrow compresence" (i.e. the fact that being-three-inches-long is, πρός five inches, unequal). this then depends on the same hopeless presupposition as Owen's, that the argument turns on X being equal to Y but not to Z: her differences with Owen (not all of which I have my mind around yet) don't seem to make any difference to this

the existence of a third man besides the sensible individuals and besides the idea, and it was a standard sport among the opponents of Platonism to construct such parallel arguments; as we saw above, Aristotle even constructs an argument introducing a third man parallel to a Platonic argument for separate mathematicals rather then for ideas.)[90] Rather, the impression that Aristotle leaves us with, and deliberately so, is of an ongoing process in which the Platonists are constantly responding to objections and repairing their arguments, but in which each argument produces new unwanted consequences, and none of them succeed in pointing to any genuine need that the ideas would satisfy; and this ongoing development is supposed to bring out the underlying weakness and confusion of the Platonist case more effectively than any single snapshot would.[91] And M4 1079a11-13 is only a stage in the larger argument of M4/A9, which goes on to consider other Platonist arguments, all of which, if they worked, would prove too much.

It is thus a mistake to put too firm a break (as Crubellier seems to do) between 1079a4-13, "deficiencies of the arguments in favor of the thesis [of ideas]," and 1079a13-b11, "internal contradictions of the doctrine": the tensions which Aristotle tries to bring out in 1079a13-b11 are not open doctrinal contradictions, but rather arise when a Platonist argument-strategy for proving one doctrine would also prove something contradicting another Platonic doctrine. We have already discussed Aristotle's claim that the strategy of arguing that the more universal is prior to the less universal (by Plato's test) will lead to unacceptable conclusions: "in general the arguments about the forms destroy the things which those who posit ideas[92] want more than they want the ideas to exist: for it follows that not the dyad is first but rather number, and the πρός τι [will be prior] to the καθ᾽ αὑτό,[93] and all the things which some people, following [or drawing the consequences of, ἀκολουθήσαντες] the doctrines about the ideas, said in opposition to the ἀρχαί" (M4 1079a14-19, parallel A9 990b17-22; detailed discussion in Iγ2c above). And Aristotle is continuing the same kind of criticism in an argument he chooses to develop at far

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[90]reference. then describe the four "third man" arguments from Alexander, stressing it's a mistake to distinguish the ones attributed to "philosophers" as serious pieces of philosophy from the ones attributed to "sophists" as mere sophisms (the confidence of Ross, ad locum in A9, about which third man argument Aristotle is thinking of, seems to have no basis except this) … stressing the dialectical Sitz im Leben of sophisms in general, then besides the pedagogical, protreptic, and challenge uses, also the special function of parallel sophisms, illustrated later by Alexinus against Zeno (perhaps cite Schofield "The Syllogisms of Zeno of Citium") … role of the On Ideas in this context … d see how much of this you've said before esp. in Iβ4c; much of it is also in the Lille Symposium Aristotelicum paper (a long footnote there, n46, can probably be mostly reused), and of course in "Aristotle and the Sophists" … the SE passage shows that Aristotle diagnoses third man sophisms (except the B#5 argument?) as sophisms of σχῆμα τῆς λέξεως, coming from taking a term like "man" as signifying τόδε τι when in fact it only signifies τοιόνδε; but such a solution will at the same time dissolve the Platonic arguments that are being parallelled (I think I discussed this in Iβ4c) … it is even worse to take "the third man" as referring to a passage of the Parmenides, which of course has "third large" and not "third man": sophisms are not fixed pieces of text, but are arguments practiced and transmitted orally, developing new variations and being taken up in writing in various forms, and the Parmenides passage is only one of many written third man arguments. It is unlikely that Plato invented the argument, since it is easy to explain why the Parmenides would have adapted an already existing third man argument into a third large argument, and very hard to explain why anyone would adapt the argument in the opposite direction. In any case, Plato is either taking up an existing fourth-century parallel sophism against the ideas and projecting it back into the fifth century, or else he is projecting back into the fifth century the fourth-century practice of inventing such parallel sophisms against the ideas, even if he himself invented this particular example (Parmenides' use is protreptic but also challenging-directed, since Socrates is both a prospective student and a challenger).

[91]same strategy at M9 1085b34-1086a18, on versions of the doctrine of self-subsistent numbers

[92]A9 "we"

[93]reading καὶ τὸ πρός τι τοῦ καθ᾽ αὑτό from A9 (with Christ). the transmission in M4 is a mess, give details

greater length, to the end of the chapter, M4 1079a19-b11 (indeed, this argument is further developed in M4 than in A9, where 990b22-991a8 parallel only 1079a19-b3). Namely: the arguments for the forms, if they work, will establish forms not only of οὐσίαι but of many other things as well (1079a19-23).[94] But, Aristotle argues, there can only be forms of οὐσίαι. He argues for this conclusion in two steps. First, every form must itself be an οὐσία, that is, something that exists καθ᾽ αὑτό rather than by being predicated of some other underlying nature. Indeed, just this is the main point at issue, as Aristotle sees it, in the dispute about ideas, whether e.g. the universal "horse" exists καθ᾽ αὑτό in this way. But Aristotle insists here on taking this point in a strict sense: when I say that the idea of F is F itself existing αὐτὸ καθ᾽ αὑτό, this cannot mean simply that there is a separate eternal οὐσία which is numerically identical with the idea of F, but whose underlying nature might be something other than just being F: rather, the very attribute of the thing in which sensible F's participate, its being F, must be what exists καθ᾽ αὑτό.[95] Then, in a second step, Aristotle infers that there are only forms of οὐσίαι, because according to the Platonists F is predicated univocally of the form of F and of all the other F's (if not univocally, it would be like calling both Callias and a piece of wood "man"), and so cannot fall under different genera or categories in the two cases, e.g. it cannot be an οὐσία in the intelligibles and a quality or relation in the sensibles. This argument can be seen as completing the reductio ad absurdum in the earlier objection that some of the Platonist arguments would lead to ideas of relatives (and that some arguments would lead to what is relative being prior to what is καθ᾽ αὑτό), but it is also an independent objection against argument-strategies that tend to produce ideas of things in any category of accidents, not just relations: and while Plato may be committed in various ways to forms of relations (knowledge and mastery as described in Parmenides 133c8-134e8, the other or the large or the unequal), it is much clearer that he is committed to forms of qualities, such as the virtues. And while some defenders of the forms (probably including Xenocrates, discussed Iγ2c above) tried to get out of putting relatives such as the unequal in the intelligible world (except per accidens, inasmuch as things existing there καθ᾽ αὑτά are also somehow related to each other), it would be much harder to avoid positing forms of the virtues. The view would presumably have been that the form of temperance itself is an οὐσία, although "temperate" is said of Charmides merely in the ποιόν; and, as we have seen (Iβ4b above), the Timaeus also thinks that what is called fire in the sensible world is called fire merely in the ποιόν, although the form of fire itself is an οὐσία. So the Platonists will have to confront Aristotle's objection.

The Platonists probably had several ways to defend the suggestion that an F in the intelligible world can be F in οὐσία while an F in the sensible world is F merely in quality, without "F" being so purely equivocal that the form F could not help to explain sensible F's. Aristotle considers one such Platonist response in the added passage M4 1079b3-11 (without parallel in A9): although the definition of F applies to the form as well as to sensible F's, the form is not

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[94]Aristotle says that there will be forms not only of οὐσίαι but of many other things too "according to the ὑπόληψις according to which they [we, A9] say that the ideas exist," and ὑπόληψις may sound more like a doctrine than like an argument; but the next two lines make it clear that he is referring precisely to what will result from the one-over-many argument and the argument from the sciences. if the ὑπόληψις must be a belief, perhaps it is simply the belief that these arguments are sound

[95]Aristotle argues for this from examples. he does not deny that a form can have other attributes besides its underlying nature, e.g., the form of horse is also eternal; but what the participants participate in per se is horse and not eternity, indeed they are generally not eternal. note this is NOT about a "two-levels" distinction. also note the (disputed) passage in Z6 which may be making a similar claim about the strict sense in which Platonic forms would be οὐσίαι; reference, discussion in Iγ1a

simply another F, but is distinguished as "the real [ὃ ἔστι] F"; this addition modifies the force of "F" so that it can signify οὐσία in this occurrence, even if usually it signifies an accident. Aristotle once again argues by parity of reasoning that the added term "real" would have to be added on to each term in the definition of F in order to yield a definition of the form of F; and this repetition of the same term within a definition is supposed to be absurd (as in arguments elsewhere that one and being cannot be genera because they would have to be repeated several times within each definition). At most, "real" can belong once in the definition of the form of F, as a kind of genus that applies to all the forms, so that the form of man would be defined by the intersection of the genera "animal," "biped," and "real"; and in this case "animal" would still be predicated univocally of the form of man and of mortal humans, and it will fall under the same category in both cases.[96] There are, however, probably better Platonist responses: instead of saying that sensible F's and the form of F satisfy the same definition of F, with the form also satisfying an extra clause, we can say that a sensible F is an F through being somehow related to the form of F, to which the definition of F primarily applies. Aristotle can hardly deny that this is possible: a reflection of Socrates is called Socrates because it bears a certain relation to Socrates, and it is not called Socrates purely equivocally, but it need not be an οὐσία because Socrates is an οὐσία. A Platonist can say that fire here is an imitation of the form of fire in sensible matter, and the quality of temperance here is an imitation of the form of temperance in a tripartite soul.[97] But this demands a more complicated account of the logic of being F than is presupposed in the Platonist arguments Aristotle considers in M4, and it would have to be argued individually for each predicate F that being F consists in being somehow related to something existing separately from matter; and Aristotle will argue to the contrary that being fire or temperate involve forms that are said like snubness with regard to the matter or to the appetitive soul. He pursues this elsewhere, but not in the discussion of the forms ὅσον νόμου χάριν as he gives it in M4-5.

Into M6-N: Aristotle, Speusippus, and debates in the Academy[98]

Only with M6 does Aristotle reach the main theme of MN, the critical examination of Academic attempts to discover the ἀρχαί as immanent στοιχεῖα of intelligible οὐσίαι mathematically described. Here his discussion becomes more detailed (far more detailed than the corresponding sections of A9), and here for the first time he aims at something like refutation of Academic theses, and not simply at undermining the force of Academic arguments.[99] This begins with the critical examination of numbers (and much more briefly of magnitudes) in M6-9α. A main Platonist motive for describing the forms as numbers is that only thus can they plausibly be derived from a small stock of initially posited ἀρχαί ("if the ideas are not numbers, they cannot exist at all: for out of what ἀρχαί will the ideas be? For number is out of the one and the indefinite dyad, and these are said to be the ἀρχαί and στοιχεῖα of number, and it is not possible

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[96]this argument is often read as having something to do with the third man: I can't see any connection at all. also note against the view that this is a two-levels problem, e.g. that the form of justice would be an οὐσία in itself (in the same way that it is eternal, unitary etc. in itself) but a quality in its representational content

[97]Syrianus takes this line, responding specifically to the problem about difference of categories

[98]some paragraphs need to be adjusted: where talking about the relation to Speusippus, where about the importance of numbers (and units as στοιχεῖα of numbers), where about the overall plan of M6-N and the role within it of M6-9α (whose more detailed structure will be discussed in the next subsection)?

[99]"something like refutation" because the argument may turn on embarrassing questions to which the opponent can offer no satisfying answer ("where do the many units come from?" "what distinguishes them?") but which do not actually deduce contradictions from the opponent's assertions

to rank [the ideas] either prior or posterior to number," M7 1081a12-17, cited and discussed above, including discussion of a textual issue); but once they are described in this way, difficulties arise about the relations among the constituents within each form, and between the constituents of different forms, which Aristotle will use to refute the Platonic theses that "the forms are numbers," or even that there are some form-numbers.[100] In theory, M6-9α are supposed to be examining not just form-numbers but any account on which numbers exist καθ' αὐτά and not as attributes of some other nature (so he describes the hypothesis to be examined, M6 1080a15-16, M8 1083b19-23, M9 1085b34-1086a2). This would apply to mathematical numbers as well as to form-numbers, and indeed Aristotle does raises a few difficulties against mathematical numbers, but his argument is overwhelmingly directed against form-numbers, and also the difficulties that he does raise against mathematical numbers seem much less serious than the difficulties he raises against form-numbers. There is thus a tension between Aristotle's official description of his task in M6-9α (which is evenhanded between form-numbers and mathematical numbers, and between Plato and Xenocrates and Speusippus) and the way he actually proceeds; examination of this issue in M6-9α will lead to some broader conclusions about Aristotle's aims and methods in MN.

This connects with a point I made in the introduction to this section:[101] Aristotle is not in MN criticizing a position held uniformly by all (other) Academics, nor are their differences merely on the details, so that we can simply confront Aristotle with a core position that all his opponents share. Rather, he has importantly different relations to different Academics, in particular, different to Speusippus than to everyone else. Speusippus' position is a radical criticism of Plato's: in some ways it is too radical for Aristotle, and Aristotle wants to defend Plato against Speusippus on some points, and to present himself, against Speusippus, as Plato's legitimate heir. At the same time Aristote wants to argue against the tendencies in Plato that lead to Speusippus, above all the attempt to discover the ἀρχαί as στοιχεῖα of numbers. But Aristotle also finds something right and usable in Speusippus. Speusippus correctly recognizes inconsistencies in Plato (above all, between looking for the first ἀρχή as the good and looking for it as the one and ἀρχή of numbers), but makes the wrong decisions about which Platonic commitments to keep and which to throw out. But while Aristotle fundamentally disagrees with Speusippus on the crucial issue of the good, he can agree with Speusippus against Plato on other issues, notably in rejecting separate forms, and thus also in rejecting form-numbers: there is no reason why Aristotle cannot start from Speusippus' criticism of Plato on these issues, as well as from Speusippus' exposure of inconsistencies elsewhere in Plato. And we will find that on many issues in M6-N6 Aristotle's criticism of Plato and of the Academy in general seems to have as its core a Speusippean criticism of Plato: not necessarily in the sense that Speusippus said all of these things, but in the sense of developing a strategy of argument that tends to support a Speusippean position against Plato (and it is plausible enough that at least the germ of the strategy is Speusippus' own). On most issues Aristotle thinks that Speusippus' position is consistent and possible (unlike Plato's), but that Speusippus' pruning-back of Plato's position also eliminates

[100]perhaps clarification on how I'm using "form-numbers": not a special realm of being superior or inferior to other forms, but simply those forms which are numbers, or those numbers which are forms … thus a three-itself: a three which is just a three, i.e. just three units (*no* ancient theory, until we come to neo-Platonic allegorizations, posits a three which is not three units); this would also apply to a mathematical three; but a form-three is also unique of its kind

[101]some of this is repeating, perhaps excessively literally, from circa p.14 above; do something about this?

most of the motivation one might have had for believing in Plato's position in the first place.[102] So it is often easy for Aristotle, by adding a brief appendix against Speusippus, to turn a critique of Plato (possibly taken or developed from Speusippus) into a critique of all Academic positions. He may do this by saying that Speusippus eliminates the Platonic motivation; or that, while Speusippus recognizes a difficulty in Plato, he misdiagnoses the source of the difficulty and so remains liable to it himself, indeed may still be liable to his own arguments against Plato. Or, sometimes, there is a special criticism of Speusippus that does not apply against Plato, as on the issues of the good and of the plurality of independent ἀρχαί (the "episodic universe"): in these cases it is likely that Aristotle is taking up more conservative Academics' criticisms of Speusippus, and using both sides against each other.

Tracking Speusippus in Aristotle's argument is not as easy as it might be, because Aristotle almost always refuses to name him (just four times in the corpus, NE I,6 1096b7 and VII,13 1153b5, Metaphysics Z2 1028b21 and Λ7 1072b31),[103] but phrases like "those who posit only mathematical number" serve in effect as conventional substitutes for his name. There are other less decisive but also important signifiers for Speusippus. Notably, as Cherniss suggested, the word δυσχέρεια seems to have been a favorite of Speusippus', and it has been argued that the word and its cognates are used repeatedly in the Philebus with reference to him;[104] and this suggestion is confirmed by Aristotle's usage. Δυσχέρεια, δυσχερής, and δυσχεραίνω are used more often in the Metaphysics than in any other work of Aristotle (21 times in the Metaphysics, 15 NE, 7 Politics, much less elsewhere), and the difference is much starker than bare numbers would suggest, since in other works these words are used mostly in ethical contexts (δυσχεραίνειν is to be discontented or accept something unwillingly, opposed to χαίρειν or ἀγαπᾶν), whereas in the Metaphysics a δυσχέρεια is something like an aporia, either a difficulty

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[102]cp. Crubellier: "Contre chacune de ces deux philosophies [sc. Plato's and Speusippus'], Aristote emploie un style de réfutation bien différent. Les critiques qu'il adresse aux thèses platoniciennes visent en général à y faire apparaître des contradictions internes, ou, dans quelques cas (par exemple au chapitre M 7, 1082b 1-37), à montrer qu'elles sont incompatibles avec des certitudes jugées incontestables. Au contraire, il semble admettre que la position de Speusippe est cohérente, et peut-être même compatible avec notre expérience, au moins à un niveau superficiel de description. Par contre il juge qu'elle n'est pas raisonnable, c'est-à-dire qu'elle contredit quelques-unes des intuitions les plus profondes concernant ce que doit être le monde: il n'est pas raisonnable de penser que la réalité soit 'décousue ainsi qu'une mauvaise tragédie' (1090b 19-20), ou que le principe, s'il est éternel et subsiste par lui-même, ne soit pas «bon» de ce fait même" (pp. 24-5). … contrast the uncomprehending nonsense in Annas pp.73-5

[103]I take it that the Speusippus mentioned at Rhetoric III,10 1411a21 is someone else. I think I discussed the problem of references to Speusippus somewhere above, maybe Iβ2c or its appendix, d cross-ref and eliminate duplication. the large majority of Aristotle's references to Plato are also not by name, and he also names Xenocrates only four times, and only in the Topics (112a37, 141a6, 152a7, 152a27). I do not fully understand why Greek authors so often fail to name authors they are referring to or criticizing, or what rules govern when they do name them. there is a quasi-taboo against naming living authors (clearly not unbreakable: Xenocrates outlived Aristotle), but this cannot explain it all--perhaps the most striking instance is that Plotinus, much of whose work is taken up with polemics against the Stoics, never once says Στόα or Στωικός (other neo-Platonists do not observe this taboo)

[104]references to Cherniss and others, and on the Philebus issue (it's used I think five times around 44-6, then once retrospectively at the very end): on the Philebus d check Malcolm Schofield, "Who were οἱ δυσχερεῖς in Plato Philebus 44Aff?", Museum Helveticum 28 (1971), 2-20, supporting the Speusippus identification and with further reflections; some further support in Harold Tarrant, "The Duschereis of the Magna Moralia," in the electronic journal Plato 8 (2008). also and strikingly, the word is used in Iamblichus De communi mathematica scientia c4, the passage that Merlan claimed was an extract from Speusippus (and in a very Speusippean context: raising difficulties against all kinds of things--numbers, continuous magnitudes and so on--being generated out of a single material στοιχεῖον). this is one of only four uses of -δυσχερ- in Iamblichus, and the only one not in an ethical sense. whether we ultimately think this chapter is an extract from Speusippus, an extract from a pseudo-Speusippean forgery, an extract from a doxography based on Speusippus, or whatever, this is very unlikely to be a coincidence

objectively existing in some doctrine or an objection that someone raises against it. Furthermore, the overwhelming majority of uses in the Metaphysics (16 out of 21) are in MN, and in at least four of them it is obviously Speusippus who is finding the difficulty. All four are important and are worth some discussion. The first passage is in M9α, where Aristotle is summing up his criticism of the different accounts of separately existing numbers: "those who posit only mathematical numbers besides the sensibles [i.e. Speusippus], seeing the difficulty [δυσχέρεια] and arbitrary invention [πλάσις] involved in the forms, defected from [ἀπέστησαν ἀπό] form-number and posited [only] mathematical number" (1086a2-5); while "others [apparently Xenocrates], wanting to posit both forms and numbers, but not seeing how, if we make the ἀρχαί the same,[105] mathematical number will exist besides the form-number, made the same number both a form-number and a mathematical number" (1086a5-8), which, Aristotle says, leads to more arbitrarily invented hypotheses (rather than genuine mathematical theorems) about the behavior of these numbers. Then, at the end of N2, Aristotle asks what ground we are supposed to have for believing in (separately existing) numbers: for the person who believes in ideas, and believes that numbers are ideas, they are supposed to be some sort of cause, "but for the person who does not think this way, because he sees the difficulties [δυσχέρειαι] present in the ideas, so that he would not posit numbers for this reason, but who posited mathematical number, what ground does he have for believing that there is such a number, and how is it useful for other things," since it seems to be a separate causally unconnected substance (1090a7-11)? Finally, the extended attack on Academic accounts of the relation of the good to the ἀρχαί, N4 1091a29-N5 1092a17, which sharply contrasts Plato with Speusippus, twice speaks of Speusippus as being motivated by δυσχέρειαι: those moderns who say that there is no good-itself among the ἀρχαί, but that the good appears at a later stage, "do so because they are taking precautions against a real difficulty [δυσχέρεια] which results for those who say, as some do, that the one is an ἀρχή: but the difficulty arises not from granting that goodness [τὸ εὖ] belongs to the ἀρχή, but from granting that the one is an ἀρχή, and an ἀρχή as a στοιχεῖον, and that number arises out of the one" (N4 1091a36-b3). As Aristotle says further down, "much difficulty [δυσχέρεια] results, and some fled it and gave up [ἀπειρήκασιν], those who agreed that the one is a first ἀρχή and στοιχεῖον, but of mathematical number" (1091b22-5): the main difficulties are that, if the one is the good, all units would be goodnesses and there would be an embarrassment of goods in the numbers, and that, if the ἀρχή contrary to the one is also found in the numbers (and found there in its purest form), and if the contrary to the good is the evil, pure evil would also be in the numbers, which is agreed to be silly.[106] But, of course, Speusippus misdiagnoses the source of the difficulty, and so denies the wrong Platonic theses: instead of "giving up" on the good-itself, and maintaining that the one and plurality, the στοιχεῖα of mathematical number, are the first ἀρχαί, he should have kept the good-itself as an extrinsic efficient ἀρχή, with no contrary, of physical things.[107]

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[105]reading εἰ τὰς ἀρχάς τις τάς αὐτὰς θήσεται, with a conjecture of Ross, for the manuscripts' εἰ τὰς ἀρχάς τις ταύτας θήσεται. Annas translates the manuscript text interpretively as "if one posits only these principles," which would come to pretty much the same thing

[106]Crubellier p.522 suggests at 1091a37 that the δυσχέρεια Speusippus is trying to avoid is specifically that everything except one (except the One?) would participate in evil, citing 1091b32-4 and Λ10 1075a34-6; I can add that the Iamblichus text goes in the same direction

[107]so implied at the end of the N4-5 passage, with the positive lesson made explicit in the Λ10 parallel, see IIIγ3. (perhaps note, somewhere, about what seems to be Annas' view, p.212, that Speusippus accepts a good-itself but denies that it is an ἀρχή). d check elsewhere, esp. IIIγ3 and Iβ2c and Iα4, to see whether you've translated these passages elsewhere

A distinctive picture of Speusippus' philosophizing emerges from these and related texts. His views are always explained by starting with Plato and motivating the differences: they have no independent appeal. He stands out from others in the Academy in that he has no tolerance, not only for contradictions, but also for making things up [πλάσις]. (By contrast, Plato or his defenders, and perhaps especially Xenocrates, are accused in various terms of inventing arbitrary stories, especially about numbers, at M9 1086a8-11, N3 1090b27-30, and N3 1091a5-12; the accounts of form-numbers and their units or the great and small are called πλασματώδη at M7 1081b29-31 and 1082b1-4 and M9 1085a14-5.) What Speusippus refuses to make up are, above all, stories about how some things are derived or generated from others: thus, as Aristotle complains, Speusippus does not claim any causal connection between numbers and physical things, and he does not derive geometrical magnitudes from the one and plurality, but only from the point which is "not one but like the one" and a matter which is "not plurality but like plurality" (M9 1085a32-4; if the decad is the παράδειγμα of the sensible universe, Speusippus F28 lines 13-14, here too there is likeness rather than causal derivation; various geometrical shapes "resemble" the first four numbers, lines 49-60). Also, unlike the partisans of the one and the dyad, who generate numbers successively by doubling and adding one (M8 1084a3-7), Speusippus seems not to have told any story generating some numbers out of others. Because he does not see any way to make these connections work, Speusippus "gives up" on a single first ἀρχή of all things, and because he is unwilling to admit the silliness of good and evil in numbers, he gives up on the highest ἀρχή as the good: the language describing Speusippus suggests fastidiousness, dyspepsia, despondency, flight, desertion, surrender.[108]

But Speusippus is not the only person to complain of δυσχέρεια. Sometimes the point is that Speusippus does not succeed in escaping the δυσχέρειαι he detects. Thus at M9 1085b4-27, arguing that Speusippus can give no account of the generation of numbers (and especially of their units) out of the one and plurality, Aristotle says that "the same difficulties [δυσχερῆ] result [for Speusippus] as for those who [generate numbers] out of the one and the indefinite dyad" (1085b6-7), since the same difficulties arise whether we generate numbers out of the one and plurality or out of the one and a particular plurality such as the dyad; for good measure, one of the options that Speusippus is faced with on the origins of the units "involves many other difficulties [δυσχέρειαι]" (1085b17).[109] At N1 1087b16-21 and N2 1088b28-35 two different parties of Platonists (not Speusippeans--in the N2 passage it is probably Xenocrates) try to reformulate the indefinite dyad to avoid δυσχέρειαι: these are likely to be among the same δυσχέρειαι that Speusippus had pointed out, but other Academics find more conservative solutions. Something like this also seems to be involved in a passage we have discussed, M9 1086a2-8, where Speusippus, to avoid "the difficulty [δυσχέρεια] and arbitrary invention [πλάσις] involved in the forms," posits only mathematical number, and someone who is apparently Xenocrates, "wanting to posit both forms and numbers, but not seeing how, if we make the ἀρχαί the same, mathematical number will exist besides the form-number, made the same number both a form-number and a mathematical number." That is: Speusippus points out the δυσχέρεια in Plato's claim that we can get ideas, mathematical numbers, magnitudes and so

[108]cp. the Philebus texts

[109](note against Annas' bizarre comment on "particular plurality," her p.186). a similar strategy against Speusippus, using not δυσχεραίνειν but ἀπορεῖν, at 1085a31-b4: Speusippus, to avoid difficulties that Plato gets into, generates geometrical magnitudes not out of plurality but out of something like plurality (presumably, extension, cf. M9 1085b30-34), "about which, nonetheless, the same difficulties will result": is it one and the same matter for line, surface and solid, or different matters, and so on? here the strategy of turning Speusippus' own objections against Plato against him is particularly clear. maybe discuss this at the end of M6-9α, d cross-ref and eliminate duplication

on all out of the same pair of ἀρχαί (perhaps with different form-numbers rather than the one as formal causes of magnitudes, but all arising from a single material ἀρχή, and with no special account of the origins of mathematical number; so esp. N3 1090b20-24, b32-5, and cp. A6 987b20-25 and A7 988b1-6). Speusippus solves the problem by eliminating ideas entirely and positing different pairs of ἀρχαί for the other kinds of beings; Xenocrates, recognizing the difficulty but seeing equal difficulty in positing many radically independent ἀρχαί, instead tries to derive from the one and the dyad a single kind of thing which will serve the roles both of ideas and of mathematical numbers, and to derive other things from that, but only at the cost (Aristotle says) of doing arbitrary violence to mathematical truths. (This account of the motivations emerges from combining M9 1085b36-1086a18 with the partly parallel N3 1090b13-1091a9.) Aristotle can thus cite the difficulties which Speusippus finds in Plato (and which Xenocrates' "arbitrary inventions" cannot solve), as well as the difficulties that Xenocrates finds in Speusippus, as evidence against the common project of seeking the ἀρχαί as στοιχεῖα of mathematically described unmoved things.

These difficulties that Speusippus and the Platonists find with each other's accounts are, in the first place, about the derivation of things from the ἀρχαί. Unfortunately, while modern philosophers are able to make something of disputes about the ontological status of mathematical objects or of universals, Academic "derivation-systems" (usually referred to in German, "Ableitungssysteme") seem alien enough that we can find it difficult to understand issues raised in terms of them. (This is in part the legacy of Aristotle's criticism--and perhaps originally of Speusippus' criticism--of such systems.) However, the issues about numbers and their units in M6-9α, even apart from the strange details about the generation of particular numbers by doubling or adding one, arise in the context of such derivation-systems: that is, the issue is not simply what numbers are, but also where they come from. So a certain amount of sympathetic understanding or at least forgiveness [συγγνώμη] is required.

In the first place, of course, Plato and the other Academics are trying to compete with the physicists' accounts of the generation of all things out of a few ἀρχαί. For the physicists this is a cosmogonic narrative, unfolding in time, whereas any derivation of ideas or mathematicals must be atemporal. It must be emphasized that the ideas, and also separate mathematicals, were a hypothesis, or, more precisely, many hypotheses: positing a separate form of justice and positing a separate form of fire are two different judgments, neither is self-evident, and one may be true without the other. Plato regards it as unsatisfactory to posit very many such things as independent ἀρχαί, both because they are very many, and because a form of (say) camel is intrinsically implausible as an independent ἀρχή for reality.[110] In the Phaedo and Republic a hypothesis (including the hypothesis of forms, or some one form or range of forms) is a step towards what the Phaedo calls a "sufficient hypothesis" (101d5-e1) or what the Republic calls an "unhypothetical ἀρχή" (VI 510b6-7).[111] In the Republic, the ideal is to reach a single such ἀρχή, the idea of the good, and to be able to derive everything else from it: if we cannot derive everything else from it, we will have to posit other ἀρχαί as well. Aristotle of course attributes to Plato, with approval, the distinction between the path towards the ἀρχαί and the path back down from the ἀρχαί (NE I,4 1095a30-b1). A step along the upward path might typically work by starting from some X, which we know or have posited to exist, and then arguing that X cannot exist without Y existing: this would serve as an argument, not only that Y exists, but also, by Plato's test, that Y is prior to X. In the arguments that Aristotle is examining in MN, X is

[110]I'm sure I'm repeating from someplace--where, and what should I do about it?
[111]the Phaedo doesn't quite explicitly call it a hypothesis, but that seems implied by the sentence as a whole

typically something mathematically described, and Y is something which is argued to be the οὐσία of X as a part in the λόγος of X, as Δ8 puts it "whatever parts are present [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 when it is destroyed nothing exists, and it defines/delimits all things)" (1017b17-21).[112] In such cases Aristotle typically grants that Y is prior to X in λόγος, but denies that it exists separately and so denies that it is prior in οὐσία (where Y is the one or being, as a universal predicate, Aristotle denies that it is strictly a part in the λόγος of X, but it is still presumably prior to X in λόγος although not in οὐσία). However, Aristotle completely rejects all Academic accounts of a way back down from the ἀρχαί, thus from Y back down to X, subjecting each variant version of the derivation of things from the ἀρχαί to critical examination if not to ridicule. Here he is presumably in large measure drawing on (and extrapolating from) Speusippus, while at the same time accepting the more conservative Academics' criticisms of Speusippus' plurality of ἀρχαί and of his denial of causal connection between the different genera of beings; and Aristotle also argues that Speusippus too cannot make out a "downward way," for instance by explaining the derivation of numbers from the one and plurality.

We can understand particular Academic versions of a "downward way" more sympathetically if we concentrate on the upward ways that they are reversing. Most obviously, there is an upward way that leads from say, cube to square (since, as noted above, the λόγος of cube is "solid figure contained by six equal squares," Euclid XIdef25), and from square to line and from line to point; there are also upward paths from particular geometrical figures to particular numbers (e.g. from cube to six). It is unsurprising that the Academics would take these arguments as proving priority in οὐσία, and thus bringing us closer to the ἀρχαί; and so it is natural that they would also try to reverse the upward way to give a derivation of geometical figures. Of the many ways to try to do this, the most obvious is to try to reverse the path "up" from (say) a triangle to its three bounding lines and then their three bounding points, by starting with three points and deriving the triangle that they define or delimit: in a sense, this is what we do whenever we say "let ABC be a triangle," using the points to determine the lines and thus the triangle.[113] Something like this thought presumably underlies the view of "those who posit ideas," who "make magnitudes out of matter and a number, lengths out of the two, surfaces doubtless out of the three and solids out of the four, or from other numbers, it makes no difference" (N3 1090b20-24). But for these people to make their "downward way" work, they need to derive a triangle, not just from three points, but from three (and matter). Aristotle denies that any such transition from numbers to magnitudes can work, and here he is following Speusippus. Since Speusippus takes the ἀρχαί of magnitudes to be the point and extension, he presumably has no objection to saying that triangle is extension determined by three points, and thus to deriving triangle from three points and extension, but "three points" and "extension" are merely like "three" and "plurality," and cannot be derived from them.[114] Other Academics, seeing the force of Speusippus' objection, try other ways of generating geometrical figures, e.g. generating higher-dimensional figures from the

[112]close to the argument cited for boundaries and numbers as οὐσίαι in B#12, cross-ref, and cross-ref to other discussion of this sense of οὐσία in Δ8: there's a discussion in IIα3, elsewhere? (brief discussion also above on M2-3)

[113]someone makes a point like this: Crubellier? one of the MN Symposium Aristotelicum contributors? also, on Speusippus on "rectilineal figures … as determined by their vertices," cf. Mueller in the MN Symposium Aristotelicum p.253

[114]note F28, in what sense pyramid "exists in" the decad and so on

motion of lower-dimensional figures (De Anima I,4 409a3-5), from species of exceeding and exceeded such as the long and the short, the broad and the narrow, and the deep and the shallow (Metaphysics N2 1089b11-14), or from indivisible lines.

The Academic attempts to generate numbers can be understood in a similar way. Again, rather than simply positing the existence of all the numbers, we would want to posit a few ἀρχαί and then derive the existence of each of the numbers from them: Plato indeed does something like this, in a rather haphazard way, at Parmenides 143c1-144a9. In the spirit of reversing an upward way to parts in the λόγος, we could reverse something like Aristotle's definition of number as "plurality measured by the one" (Iota 6 1057a3-4) or Euclid's definition of number as "plurality composed out of units" (Elements VIIdef2) to derive number from unity and plurality as Speusippus did.[115] However, some Academics want to derive particular numbers, and not merely number in general, and here too it is possible to start by reversing definitions. Euclid defines "even number" as "[a number which is] divided in half [δίχα, i.e., into two equal parts]" (VIIdef6) and "odd" as "[a number which is] not divided in half, or which differs by a unit from an even number" (VIIdef7). The definition of even suggests that two should be prior (in λόγος, and therefore in οὐσία) to even number, and, in particular cases, that 2 and n should be prior to 2n; the second definition of odd number suggests that one and even number should be prior to odd number, and that 2n and 1 should be prior to 2n+1. If we try to reverse these priority-relations to generate the numbers, we get two procedures, namely doubling any number to yield an even number, and adding 1 to an even number to yield an odd number. In fact every positive integer can be generated in precisely one way by successively applying these two operations, in some sequence, starting from 1 (this is equivalent to the fact that every positive integer can be expressed in precisely one way in binary notation), and it is clear that these are the generation-procedures that Aristotle is attributing to his opponents at M8 1084a3-7. These Academics put these procedures forward as a way of generating all of the numbers out of the one (as the starting-point for the procedures, and as generating odd numbers out of even numbers) and the two (as generating even numbers out of any numbers);[116] Aristotle, perhaps following Speusippus, will argue that these procedures do not succeed, or at least that they do not succeed in generating the form-numbers, which is what they were designed to generate.

However, the difficulties of reversing an upward way to derive the numbers go beyond the particular difficulties that Aristotle will raise about generation from the one and the indefinite dyad. Indeed, although the indefinite dyad is mentioned in M6-9α, it does not seem to be near the center of Aristotle's interests until Metaphysics N: M6-9α have objections to any Academic account of the relation of numbers to their ἀρχαί, independent of particular stories about the one

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[115] on Aristotle's definition of number and its consequences see end of Iγ2c above; for this way of thinking about Speusippus on number cf. Burnyeat in the MN Symposium Aristotelicum 238n63 (I don't mean to endorse what Burnyeat says on Speusippus on the one as not a being)

[116] Annas pp.52-3 seems to be on the verge of understanding the mathematics, but wobbles and falls; I think I've seen correct accounts, maybe in Gaiser or Findlay, with a tree-representation, d find references. note the point on Archytas, and on the decad: currently I do this in a footnote toward the end of Iγ2a, but it would be better here. also: more needs to be said on why the indefinite dyad would have the function of doubling things, which is how Aristotle represents it (although of course he thinks the story cannot be made coherent). presumably the story doesn't allow multiplication by arbitrary numbers, so the definite dyad wouldn't be sufficient to generate even numbers by doubling. some of the story can be teased out of what Aristotle says about how the definite dyad is generated, by equalization of the indefinite dyad; something like this would have to be repeated in each process of doubling. thus 2n must be generated when its two parts become equal to each other and to n (perhaps Euclid's definition of even is thought to entail that the two parts are prior to even number, that when they are equal there is even number, and thus that before there is even number they are unequal, i.e. one is great and the other is small)

and the dyad. Since a number is "plurality measured by the one" or "plurality composed out of units," there is certainly an upward way from numbers to the one as something prior at least in λόγος. But even if we concede to the Academics that numbers exist as separate οὐσίαι, and that the one is prior to them in οὐσία as well as in λόγος, it will be much more problematic to reverse the path to derive the numbers from the one, because numbers are composed not of a single one many times, but of many units: deriving the numbers from the one seems straightforward only if we implicitly assume that there are many units available, not if these units must themselves be derived from the one. In fact no Academic seems to have thought that numbers could be generated simply from the one, without also positing some material or pluralizing ἀρχή such as the indefinite dyad,[117] and presumably the many units too will be somehow generated from this material ἀρχή (for instance, by "equalizing" the great and the small within the indefinite dyad, M7 1081a23-5 and M8 1083b23-32). But Aristotle argues that there is no satisfactory account of the relations between the numbers, units as their constituent ἀρχαί, and the one as an ἀρχή. Already in the much shorter version in the second half of A9, he raises the problem as a dilemma about whether the units out of which idea-numbers come to be are uniform [ὁμοειδές, i.e., conspecific] or not, both the units within a single number and the units of different numbers: if they are uniform, absurdities (not explained here) will result, and we can maintain that they are non-uniform only by the kind of arbitrarily invented hypothesis which Aristotle decries throughout his critique of idea-numbers (summarizing A9 991b22-7 {which quote in full, at least in a footnote}). The much more detailed criticism of M6-9α also starts from this point. As we have already noted, these chapters are officially directed against all versions of the thesis that numbers exist καθ᾽ αὑτά, but are in fact directed overwhelmingly against the Platonic thesis of idea-numbers; and this tension can be explained by seeing how Aristotle's argument-strategy arises from the dispute between Speusippus and the Platonists.[118]

The argument of M6-9α

Aristotle sets up the problem in M6 with a trichotomy of possible views: if "number is some nature, and its οὐσία is not something else but just this" (1080a15-16), and if "some [number] is first and some is subsequent, each being different in species" (a17-18)--that is, if there is a two, and then not another coordinate two, but a subsequent three, and each number differs in species--then either (i) the units too are each different in species, and (therefore) they are all "incomparable" [ἀσύμβλητοι] with each other, or (ii) the units do not differ in species and are all "comparable" [συμβλητοί] with each other, like the units of mathematical numbers, or (iii) each unit is comparable with some other units but not with all of them, e.g. each unit in the dyad is comparable with the other unit in the dyad but not with any of the units in the triad (summarizing through 1080a30). {"Συμβλητόν" is often translated as "associable" or "combinable," but Crubellier ad 1080a19 argues, correctly, that the right meaning is "comparable"; I will return to the translation issue below [NB add discussion of GC II,6 333a16-34, which I think gives further support to Crubellier, unless he already has discussion of this; also Physics VII 248b12-15, Metaphysics Iota 4 1055a7]. At M7 1081a5-6 Aristotle either takes "συμβλητόν" and "ἀδιάφορον" as equivalent, or infers from "συμβλητόν" to "ἀδιάφορον"; if "συμβλητόν" meant

[117] or at least, as in the Parmenides, positing the one and being participating in each other

[118] cp. a comment of Annas p.163 on Aristotle perhaps beginning here with a criticism of Plato and adapting it (rather superficially) into a criticism of all Academic views. she does not draw the connection with Speusippus that I am drawing

"combinable" he might infer from "ἀδιάφορον" to "συμβλητόν", but not vice versa. (He uses "ὁμοειδές" in the short parallel A9 991b22-7 cited above.) On the structure of the present passage I agree, in the main, with Ross and Crubellier against Bonitz and Annas. Annas reads the passage in such a way that the condition "some [number] is first and some is subsequent, each being different in species" applies only to alternative (i), describing form-numbers, and alternative (ii) would describe, not what form-numbers would be if they were like mathematical numbers, but mathematical numbers themselves (but (iii) is again describing what form-numbers would be on a different conception). The main evidence for Annas' reading is that the initial ἤτοι at 1080a17 seems not to be properly picked up: so she deletes the first ἢ at a18, and has the ἤτοι picked up by the second and third ἢ at a20 and a23. I agree with her that the ἤτοι can't reasonably be picked up by the ἢ's at 1080a35-7, but I would prefer to posit an anacoluthon rather than to emend: there must be an implicit alternative, "or else there is just mathematical number," but this is not Aristotle's focus here and he gets sidetracked and never gets there. (There is then a difficulty about how to take a35-7, which could support a straight identification of (ii) with mathematical number; but perhaps Aristotle is telescoping, anticipating the inference he will draw from (ii).) It makes sense for Aristotle not simply to assume that if numbers are each different in species then units too are each different in species, but to ask, if numbers are each different in species, what are their units like, and to show that each answer leads to difficulties. Also Aristotle's answer to alternative (ii), at M7 1081a5-17, is to say that in this case there would only be mathematical numbers and not form-numbers, which would be a peculiar reductio ad absurdum if this were what (ii) had been saying in the first place.}[119]

The dilemma (or trilemma) that Aristotle brings here against Plato here comes out of a fundamental challenge to the distinctively Platonic, as opposed to Speusippean, claim that there are numbers which are each one-per-type. The challenge can itself be described as Speusippean, inasmuch as it tends to support a Speusippean program against Plato, although Aristotle tacks on a critique of Speusippus too. The fundamental challenge is: if we posit οὐσίαι which are each one-per-type, as Platonic forms (including forms described as numbers) are supposed to be, then are their constituent στοιχεῖα (the kind of ἀρχαί of eternal things that both Plato and Speusippus are pursuing) also one-per-type, or are these στοιχεῖα many-per-type? Challenges of this type recur several times in the Metaphysics. We have encountered such a challenge first in the ninth aporia of B, discussed in Iβ3 above:

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[119]Also note that on Annas' reading something a bit funny happens at ἢ in 1080a20, where the subject becomes the units, when it was number at the coordinate ἤτοι in a17; this is not a problem if, as the usual reading has it, ἢ in 1080a20 is coordinate with ἢ governing a18-20. The switch from the infinitive at a17 to the indicative at a20 would also be odd on Annas' reading, expected on the usual reading where it parallels the indicatives at a18-20, although the switch back to the infinitive at a23 is not good on anyone's reading. [but d check M.] Annas can say, though, that these things are explained by attraction rather than by logical parallelism. [Bonitz' reading comes to much the same in meaning as Annas', although he doesn't delete ἢ a18; rather, he takes ἢ a18 and ἢ a23 to be an alternative within ἤτοι a17, and ἢ a20 to be an alternative to ἤτοι a17, which he admits is peculiar sentence-structure. Bonitz unfortunately speaks of συμβλητοί and ἀσύμβλητοι numbers as well as units, but this doesn't actually seem to affect his interpretation.] Crubellier's reading is fairly close to Ross', except that at the end of the passage, 1080a35-7, which Ross takes as putting forward a new option, namely that there are some type (i) numbers, some type (ii) numbers, and some type (iii) numbers, Crubellier [apparently following Robin against Bonitz, Ross and Annas] takes Aristotle merely to be summing up what he's said before, "so, there is [i.e. is the conceptual possibility of] number in sense (i), in sense (ii), in sense (iii)," taking the ἢ at the beginning to mean "or, an alternative way of putting it would be …"; this strikes me as just possible, but I don't see that he has sufficient reasons for preferring it. On this passage see also Tarán in Greek, Roman and Byzantine Studies for 1978 [perhaps reprinted in his Kleine Schriften?].

> If [the ἀρχαί] are [each] one [only] in species, then nothing will be one in number, not even the one itself and being itself; and how will [scientific] knowing be possible, if there is not a one over [ἐπί] all? But 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 besides the στοιχεῖα. For saying "one in number" is no different than saying "individual": for this is what we call individual, what is one in number, and the universal is what is over 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]. (999b25-1000a4; from 999b27 on cited in Iβ3)

The main argument is: if the στοιχεῖα of the things that are are each many-per-type ("one in species"), then the things derived from them will also be many-per-type, and there will be no explanation of things that are one-per-type ("one in number," such as Platonic forms); but if the στοιχεῖα of the things that are are each one-per-type, then there will be nothing besides the στοιχεῖα (see Iβ3 for development of the latter half of the argument). We saw in Iβ3 that it is especially Plato who makes the ἀρχαί or στοιχεῖα each one-per-type, and in any case it is especially Plato who must explain effects which are one-per-type, since he posits such effects and takes them as his point of departure in the upward way to the ἀρχαί. The argument is most especially and obviously directed against the genera as στοιχεῖα of universal things, and the aporia will be taken up in this application, to some extent in Z12-16 (in arguing against the claim that the genus is οὐσία) and directly and explicitly in M9β-10. The aporia belongs to the series of aporiai going back to B#6 where there is a conflict between the physicists' and the dialeticians' claims to have the path to the ἀρχαί: here in particular there seems to be a conflict between Democritus' physical application of the στοιχεῖον-metaphor (to atoms, each many-per-type like the letters of the alphabet) and Plato's dialectical application of the same metaphor (to the genera and being and unity, each many-per-type). However, the aporia, or the same fundamental dilemma underlying the aporia, also has a mathematical application, not to genera as στοιχεῖα of universals but to units as στοιχεῖα of numbers. Aristotle is implicitly making this application already in B#13, which builds on B#9:

> In general one might raise the aporia why we should seek other things besides the sensibles and the intermediates, such as the forms which we posit. If it is for this reason, that the mathematicals differ in other ways from the things here, but do not differ from them in the fact that there are many per species [τῷ πολλὰ τὰ ὁμοειδῆ εἶναι], so that their ἀρχαί will not be determinate in number (for just as the ἀρχαί of γράμματα here are not determinate in number, but [only] in species--unless we are taking [the ἀρχαί] of <u>this</u> syllable or of <u>this</u> utterance, for [the ἀρχαί] of these will be determinate even in number, and likewise in the case of the intermediates, for there too there are infinitely many [compounds and presumably also ἀρχαί] per species), so that if there are not other things besides the sensibles and the mathematicals, such as some people say the forms are,

> οὐσία will not be one in number but [only] in species,[120] nor will the ἀρχαί of the things that are be so-and-so-many in number, but [only] in species [sc. which seem to be absurd consequences]. So if this is necessary, it is also necessary for this reason to posit that the forms should exist.[121] For even if the people who speak [in this way] do not articulate clearly, this is what they mean, and they must say this, that each of the forms is an οὐσία and is nothing per accidens.[122] But if we posit that the forms exist and that the ἀρχαί are [each] one in number and not [only] in species, we have said [in B#9] what impossible things must follow. (B6 1002b12-32)

This text does not specify what the ἀρχαί of the forms would be, and it is conceivable that they are genera and differentiae, but it looks as if the forms here resemble the mathematicals except for being one-per-type, and so presumably their ἀρχαί too will be like the ἀρχαί of the mathematicals, boundaries and units and so on, except for being one-per-type. But if they are one-per-type, difficulties like those of B#9 will set in: indeed, they will be worse, since besides the absurdities that result from assuming that the line in triangle and the line in square, or the animal in man and the animal in horse, are numerically the same, there will be worse absurdities from assuming that all three lines in triangle, or all five units in the number five, are numerically the same. Aristotle makes explicit the parallel between the problem about genera and the probem about mathematical components in a passage from M9 which we discused in Iγ2a: "common to all these [Academic accounts of the numbers and their constituent units] is the same difficulty that results about the species of a genus, if we set out the universals, whether the animal-itself is in [some given] animal or an animal other than it. For if it is not separate this causes no difficulty, but if--as those who say these things say--the one and the numbers are separate, it is not easy to solve, if we may call the impossible 'not easy.' For when we consider the one in the dyad, or in a number generally, are we considering an 'itself' [i.e. the one-itself] or something else?" (1085a23-31). A similar challenge arises in the eleventh aporia of B: if the one is not an οὐσία, then it seems impossible for any number to be an οὐσία, but if the one is an οὐσία, then too it seems impossible for any number to be an οὐσία: "for out of what besides the one itself will there be another one? For it must be not-one; and all the things that are are either one, or many each of which is one" (B4 1001b4-6, see discussion in Iβ3, some in Iγ2a, and eliminate duplications). All of these texts, in somewhat different ways, are arguing that if the one or unit as an ἀρχή of numbers is one-per-type, no numbers will arise from it, and that if the units are many-

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[120]emending καὶ εἶδει at 1002b24 to ἀλλ᾽ εἴδει with Ross following Alexander--d check; or we could delete καὶ εἶδει with Jaeger

[121]provisionally reading εἶναι τιθέναι A^b Ross (and Jaeger says a second hand in J?) against εἶναι EJ Jaeger, despite preference for EJ; Jaeger's idée fixe of a varia lectio is less plausible than an omission by homoeoteleuton in α. it doesn't make much difference

[122]I am not entirely sure what is going on here, but am provisionally taking οὐθὲν as predicate nominative, "each of them is an οὐσία, and is not anything per accidens," i.e. they contain nothing over and above the shared essence, therefore have nothing to individuate them, therefore are numerically one per type (taking this to be why it is presumptively absurd to say that "οὐσία will not be one in number but [only] in species"). Ross takes οὐθὲν as subject nominative parallel to ἕκαστον, each of the forms is an οὐσία, none of them is per accidens, which seems a bit lame. Ross also seems to be taking ὅτι as "because" rather than "that," so "they must be saying these things because each of the forms is an οὐσία" etc.; d check Madigan and the ancient commentators, and Mueller at Lille. on text and construal issues M10 1086b16-19 is relevant. at the end of 1002b28, we must either read αὐτοὺς with A^b (and according to Ross Asclepius, d check) or interpret αὐτοῖς EJ Ross Jaeger in the same sense, governed by ἀνάγκη rather then indirect object of λέγειν (how often does ἀνάγκη take accusative vs. dative?)

per-type, the numbers that arise out of them will also be many-per-type; together these arguments refute the positing of numbers that are one-per-type, that is, of form-numbers. The main argument of M6-9α is a more sophisticated version of this fundamental argument-strategy.

One way in which the main argument of M6-9α is more sophisticated is that it contains arguments against more sophisticated Platonist responses. So even the most extreme Platonist position considered in the doxographical diairesis of M6, that all the units are "incomparable" [ἀσύμβλητα] or "differentiated" and thus one-per-type, is not saying that there is only one numerically single unit, but rather that there are many units, each unique in their type, and that each number, also unique in its type, is composed not out of a single unit somehow combined with itself, but out of units of different types combined with each other. Nonetheless, Aristotle wants to show that this response, and other more sophisticated Platonist responses, cannot really solve the problem. In particular, here as elsewhere he wants to show that if the στοιχεῖα are each one-per-type, nothing besides the στοιχεῖα will result. There are several arguments to this effect in M6-9α, and it is worth noting how Aristotle feels he can infer this, and how he feels he cannot infer it. He never gives the simple argument: "on this view, each unit is ἀσύμβλητον with each other unit; but for X to be ἀσύμβλητον with Y is for X and Y not to be combinable or associable in a numerical whole; therefore there are no numbers containing two or more units; therefore there are no numbers." The fact that he never gives this argument seems to me to give decisive support to Crubellier's claim that "συμβλητόν" does not mean "combinable" or "associable," but rather something like "comparable" or "undifferentiated," even if it can be argued that ἀσύμβλητα units cannot be combined or associated in a number (Aristotle does later say that, on the view on which the units within each number are συμβλητά but the units in the dyad are ἀσύμβλητα with those in the triad, we cannot combine a unit in the dyad and a unit in the triad to yield a new dyad, M7 1082b11-19; but this depends on an argument about priority, and is not simply read off of the definition of ἀσύμβλητον). One strategy for arguing that units each one-per-type cannot combine to yield the numbers is to argue that, in fact, there could be only one such unit, because there are no appropriate differentiae (without "arbitrary invention") that could differentiate many units into different types: one unit cannot be quantitatively greater than another, nor are there plausible qualitative differentiae (form-numbers are supposed to be just numbers, without any other underlying nature, and numbers qua numbers have qualitative differences only as a consequence of their quantities, e.g. being odd and even; and none of these differences apply to the individual units). Another strategy is to argue that the units cannot combine into a genuine whole, because, with no potentiality in eternal things, with no possibility of one unit being predicated of another, and so on, there could not be a unified whole παρά the individual units. Aristotle does indeed give both of these kinds of arguments (M7 1082b1-11 and M8 1083a1-17, M7 1082a15-26), but only later: his initial treatment of the thesis that the units are all ἀσύμβλητα turns on arguments about priority and posteriority. This brings out something important, namely that the thesis of form-numbers is not simply the thesis that there is (for instance) a three which is unique in its type, but also that there is a first three, from which all others are posterior and derivative.[123] Likewise Aristotle assumes that if units are ἀσύμβλητα, they are not simply different in type, but ordered, with posterior units dependent on prior units: presumably the alternative, that there are many equally primordial unit-ἀρχαί of different types, is implausible for the same reason that positing many equally primordial Platonic forms with no derivation-relations is implausible (as at M7 1081a12-17, "if the ideas are not numbers, they

[123]it is not clear at M6 1080a17-18 what is prior to what (a two to a two? two to three?) or in what sense, but at M7 1081b1-8 there is clearly a priority order among dyads, and therefore there ought also to be among units

cannot exist at all: for out of what ἀρχαί will the ideas be? …. it is not possible to rank [the ideas] either prior or posterior to number"; from the beginning of M6, when ἀσύμβλητα units are introduced, it is immediately assumed that they would have order-relations). But, Aristotle argues, even if units so ordered can combine to constitute numbers, they cannot constitute form-numbers, a first n on which every other n would depend and so on; and so differing and ordered units would contradict the differing and ordered numbers that they are posited to explain. The units in the form-dyad are supposed to be generated simultaneously (by equalization of the indefinite dyad or however, M7 1081a23-5), so that when either of the units exists the dyad also simultaneously exists; by contrast, if one of the units is prior and the other is posterior, then the first of these units is also prior to the dyad. Thus if all units are ἀσύμβλητα, numbers will be dependent on many previously existing units; and so, for instance, the second unit (the first unit in the dyad) will exist before the two-itself, and the third unit (the second unit in the dyad) before the three-itself, although "second" and "third" are paronymous from "two" and "three," and so should exist only derivatively from the two-itself and three-itself (M7 1081a21-35). Again, if the n-itself consists of many units of different types essentially ordered by before and after, the many n's of which it is the paradigm should also be essentially ordered, which they often are not (1081b27-9). Aristotle comments that on the thesis of ἀσύμβλητα units the two-itself will be generated not from the one-itself and an indefinite dyad, but out of the one-itself and another one (1081b24-6). This is a serious objection because, as argued in B#11 (1001b4-6, cited above), if there is a one-itself there cannot be another one-οὐσία, rather everything else must be out of the one-itself and of something else that is not one (and does not have ones as constituents): this is why people posited something like an indefinite dyad or infinite plurality, but on the present thesis the ἀρχαί of numbers would be other primitive units, and the difficulty would remain.

After refuting the thesis that all units are ἀσύμβλητα, Aristotle says, somewhat disconcertingly, that no one has in fact ever held this thesis (although people who believe in a first one-per-type n-itself should believe this thesis as well, 1081a35-b10). This has led to a widespread suspicion that M6-9α, or MN in general, are not interested in answering actual Academic philosophers, but rather use a diairetic method to construct an exhaustive list of possible Academic positions, and then refute these a priori constructions rather than real people. But, while we must certainly be cautious in using MN as a source for reconstructing Academic positions, I think Aristotle's procedure is not as arbitrary as this would suggest. In arguing that those who believe in first one-per-type numbers should also believe in first one-per-type units, he is following an argument-strategy typical of M (and of the On Ideas), "the same reasons that lead you to posit a separate and prior X-itself should also lead you to posit a separate and prior Y-itself, which would contradict the X-itself or your other commitments": Aristotle uses this strategy, in particular, to argue from prior separate species to prior separate genera which cause trouble for the species, and it is no surprise that he should use the same strategy for the parallel case of numbers and units. This kind of argument is not meant to be the last word, but is a challenge to the Platonists to respond, and in M6-9α we can indeed see an anti-Platonist (perhaps originally Speusippean) challenge, a more sophisticated Platonist response, and then more sophisticated anti-Platonist arguments in return. The basic challenge offers the Platonist a dichotomy between one-per-type ἀσύβμλητα units, which yield no numbers (or at any rate not form-numbers) παρά the units, and many-per-type συμβλητά units, which yield only many-per-type mathematical numbers and not form-numbers.[124] The more sophisticated Platonist response

[124]as noted above, even the theory of ἀσύμβλητα units is a more sophisticated Platonist response to challenge, in comparison with the theory of only a single one-per-type one-itself

is the theory of partially συμβλητά units: the units in the two are of the same type as each other, and arise simultaneously with each other and with the two, while the units in the three are posterior and of a different type from the units in the two, but are of the same type as each other and arise simultaneously with each other and with the three. This is supposed to avoid the difficulties which we have described as arising when each number is made out of essentially differing prior and posterior units, without making all units συμβλητά and so allowing them to combine into arbitrarily many numbers of each type, with no first n-itself. Aristotle gives a battery of arguments that this solution cannot work--not that it is incoherent, but that it cannot avoid the difficulties it is designed to avoid. Some of these arguments we have already described: arguments that the number will not be a single thing παρά the units (M7 1082a15-26), or that the units cannot be differentiated into types without "arbitrary invention" (M7 1082b1-11 and M8 1083a1-17). Aristotle could have used these arguments against the thesis that all units are ἀσύμβλητα, but he chose instead to save them up for his discussion of the theory of partially συμβλητά units--probably on the ground that other more specific arguments were sufficient to refute the extreme thesis that all units are ἀσύμβλητα, and that it would be better to save the more generally applicable arguments for later, when he would be more in need of them. However, he does also give more specific arguments designed to show that the theory of partially συμβλητά units will imply some of the same embarrassing consequences that were the motives for abandoning the extreme theories of συμβλητά or ἀσύμβλητα units. The main consideration turns on numbers within the form-numbers. That is: the motive for positing ἀσύμβλητα units of form-numbers was to avoid having many form-number n's, for instance, besides the two-itself a two containing one unit of the two-itself and one unit of the three-itself; the motive for not having all units ἀσύμβλητα with all other units was to allow at least one form-number n, by having n units simultaneous and of the same type which can be combined into a form-number. But this has the consequence that, for any $m < n$, any m of these n units will also be simultaneous and of the same type, and so there should be no obstacle to their being combined into a number (and what kind of number can it be if not a form-number?); so there will be, for instance, many form-number 5's within the decad (summarizing 1081b35-1082a11). The Platonists perhaps want to have two naturally distinguished pentads within the decad (cf. 1082a11-15 and a26-32; perhaps implied by generating the decad by doubling the pentad, and perhaps coming from the definition of even number as ὁ δίχα διαιρούμενος), but positing ten simultaneous and uniform units will instead give them 252 pentads of equal status within the decad; if they try to block these unwanted pentads by making the units ἀσύμβλητα, they will block the decad as well. Aristotle says, using the Speusippean term and developing the Speusippean style of criticism, that if we abandon entirely differentiated (i.e. ἀσύμβλητα) units because of the impossibilities that result, and so substitute units undifferentiated within each number, but differing between one number and another, "δυσχερῆ no fewer will result" (1081b33-7); his aim is not so much to derive any one particular contradiction as to show the Platonists stumbling from one difficulty to another, accumulating more and more complicated ad hoc hypotheses, when they should just have renounced the original hypothesis that was at the root of the difficulties.

Up through M8 1083a20, Aristotle has given a coherent overall argument, turning on difficulties about the units, against any version of form-numbers (although a more polished version would probably select a subset of the arguments and develop and connect them better); M8 1083a20-b23, proceeding much more quickly, systematically eliminate all other Academic and Pythagorean theories of number. M9 1085b36-1086a21 give a formal conclusion to the investigation of number in M6-9α; they look as if they could easily follow directly on M8

1083a20-b23, and it seems possible that the material in between, M8 1083b23-M9 1085b36, consists of later additions or optional expansions on the main argument. Even more than the material we have discussed, this section consists of too many too brief arguments, probably not transmitted in their ideal order,[125] and there is no point to going through all of them. Still, there are some important themes in this section, which Aristotle had good reason to want to add. There is a dilemma about whether there are infinitely many form-numbers or some (necessarily arbitrarily imposed) finite maximum; there are several arguments (some of which we have already discussed) raising difficulties for the Platonists about whether the units are prior to the numbers they are constituents of, about how they can be generated, and about the two different ways that the one might be an ἀρχή of numbers (as a constituent unit or as the unity predicated of the whole). Then there are arguments against the Platonists on geometrical magnitudes (if, conceding Speusippus' argument that magnitudes and numbers cannot both arise from the same indefinite dyad, the Platonists posit for magnitudes other ἀρχαί analogous to the indefinite dyad, new difficulties will arise about these ἀρχαί); and arguments that Speusippus cannot avoid the same δυσχερῆ that he has diagnosed for the Platonists, whether about magnitudes or about the units in the numbers.

The most important contributions beyond the arguments we have discussed already are the arguments against Speusippus on the ἀρχαί of numbers at M8 1083a20-b1, and against both the Platonists and Speusippus on the ἀρχαί of magnitudes and numbers at M9 1085a7-23 and a31-b34. The argument against Speusippus at M8 1083a20-b1 must be understood as part of the strategy of expanding the Speusippean argument against Platonic theories of form-numbers and their unit-ἀρχαί at M6-M8 1083a20 into a refutation of <u>all</u> Academic or Pythagorean theories of numbers existing καθ᾽ αὐτά. Here, as with the arguments against the Platonists, and as with other arguments against Speusippus as well, the argument turns on the one as an ἀρχή, and on the difficulty of a downward way from the one, and especially from the one to the many units. As in many of the arguments against Plato, Aristotle suggests a parallel argument: if, as Speusippus says (and as we claim to have proved in M6-M8 1083a20), there is no first two-itself or three-itself, but rather there are many dyads and triads with no differentiae or priority-order among them, then the same reasons should show that there is no first one-itself, and thus no one as an ἀρχή (so M8 1083a23-31, speaking as if equivalently of αὐτὸ τὸ ἕν, a πρῶτον τῶν ἑνῶν, or τὸ ἕν which is an ἀρχή, all of which Speusippus supposedly accepts; there is probably an implicit argument that, if there were not a first one but many undifferentiated ones, there would be indeterminately or infinitely many such ones, and if any of them was an ἀρχή they would all equally be ἀρχαί, and there cannot be indeterminately or infinitely many ἀρχαί). Contrapositively, if there is a single first one which is an ἀρχή, there should also be a first two, a first three, and so on, the position which Plato maintained and which we have already refuted. While Aristotle's presentation is too abbreviated to be sure how he would fill in the argument, the point seems to be that a one-per-type ἀρχή, if it could generate anything, would generate one-per-type effects, and could not explain the many-per-type numbers that Speusippus believes in, as we have argued already that many-per-type συμβλητά units could not produce one-per-type numbers. Speusippus would presumably say that while a single first one cannot, <u>as a constituent</u>

[125]it looks to me as if the sections M9 1085a7-23 and M9 1085a23-31 ought to be interchanged; M8 1084b2-M9 1085a7 fits fairly well with M9 1085a23-31, and M9 1085a7-23 fits fairly well with M9 1085a31-b34 (with b34-6 making the transition to the concluding M9 1085b36-1086a21). Ross says that M9 1085a23-31 "breaks the continuity of the thought, and is evidently out of place"; Crubellier tries to defend the transmitted order, but I am not convinced. I have discussed M9 1085a23-31 in Iγ2a above and will not return to it here

unit, generate many numbers of each type (indeed, it cannot as a solitary constituent generate anything), it is the many-per-type units that are the constituents of the many-per-type numbers; but, rather than posit indeterminately or infinitely many unit-ἀρχαί, we should posit that the many unit-constituents of the numbers depend on a first one-ἀρχή, not of course as their constituent but in some other way. Aristotle will then reply that, if there is a single one-itself παρά the many units, there should by parity of reasoning be a single two-itself παρά the many dyads and so on; he will also reply that positing a single one-itself will escape the difficulty of indeterminately or infinitely many unit-ἀρχαί only if these units can be somehow derived from the first one-itself, and how they would be derived from it is obscure. This argument is taken up further at M9 1085b12-22: if (for Speusippus) each of the units is not the στοιχεῖον, the one-itself, then it must arise from some combination of the two στοιχεῖα, the one and plurality; "so it must be either out of the one-itself and plurality or [out of the one-itself and] a part of plurality" (1085b14-15), presumably with the one-itself as a formal cause and plurality or a part of plurality as a substratum. Either way there is difficulty: if the unit has plurality itself or a divisible part of plurality as its substratum, then it will be divisible and so not a true unit, like the other ones of Parmenides Hypothesis 3, produced when a part of the continuous nature of otherness participates in unity, yielding continuous rather than discrete quantities; but if plurality has primitive indivisible parts, then in positing such a plurality we are already positing indivisible units (and a number as the totality of such units), rather than deriving them from στοιχεῖα.[126]

This last argument against Speusippus on the units comes embedded in a longer argument against both the Platonists and Speusippus on geometrical magnitudes and their ἀρχαί (M9 1085a7-23 and a23-b34),[127] which complements the main argument of M6-9α on numbers and their ἀρχαί. Magnitudes are much less important to the theory of Forms than numbers are, and for the most part Aristotle discusses magnitudes only in M2-3, and numbers only in M6-9α. So why does he bring up magnitudes in here in M9α? Looking at the issues he raises here, the first thing to say is: he is interested here in problems about how magnitudes arise from ἀρχαί analogous to the one and the great-and-small (for the Platonists) or to the one and plurality (for Speusippus), issues which were not on the table in M2-3. But this answer is not fully satisfying, because M6-9α have also not focussed on the one and the great-and-small. The better explanation is that here as elsewhere in M6-9α, Aristotle is starting from a Speusippean criticism of Plato and extending it to a criticism of all Academic alternatives. Speusippus had posited different material ἀρχαί for numbers and for geometrical magnitudes and for other genera of being, and he must have justified this with arguments that things so different could not all be

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[126]this argument was also discussed in Iγ2b above. make sure it's discussed properly somewhere, and eliminate duplication. you may need to expand here--maybe the fullest treatment at the moment is in the Nanterre paper. here is the old discussion from Iγ2b, which I am now deleting from there, and replacing with something shorter: Aristotle makes this argument against Speusippus in Metaphysics M9: "if each unit is one, what will it be out of? For they cannot each be the one itself. So they must be out of the one itself and plurality or some part of plurality" (M9 1085b13-15). But if each unit arises from plurality or from a divisible part of plurality--as when the nature of otherness participates in the one as a whole or in parts, in the third Hypothesis of the Parmenides--then the "units" so formed will be divisible, and will yield not numbers but continuous quantities; and this also gives Aristotle's answer to the option saying that the ἀρχαί are not unity and plurality but unity and infinity. But if each unit is out of an indivisible part of plurality, then "the one and plurality will not be στοιχεῖα; for each unit is not out of a plurality and a one" (1085b19-21). So in effect we will be positing each of the units as a primitive στοιχεῖον in its own right, and the numbers will arise when these are combined. Worse, in positing such a plurality of indivisibles, "the person who says this is making [i.e. positing] nothing but another number: for a plurality of indivisibles is a number" (b21-2), and so we would be giving up on explaining number by tracing it back to any more primitive ἀρχή.

[127]see previous note on M9 1085a23-31

made out of a single substratum such as an indefinite dyad of the great and the small (the text controversially attributed to Speusippus in Iamblichus De Communi Mathematica Scientia c4 does argue this way, 4,56-95, and says in strikingly Speusippean language that someone might appropriately δυσχεραίνειν about the first στοιχεῖον [i.e. a single material substratum of all things] admitting so many differentiae, 4,75-7). Aristotle had adopted this type of argument in Metaphysics B, asking in the tenth aporia how both incorruptible and corruptible things could proceed from the same ἀρχαί, and at the end of the eleventh aporia how (within the realm of incorruptible things) both numbers and magnitudes could proceed from the same ἀρχαί: "even if one assumes that number comes to be, as some say, from the one itself and from something else that is not one, nonetheless it must be investigated why and how what results is sometimes a number and sometimes a magnitude, if the [στοιχεῖον which is] not one is the same nature, inequality: for it is not clear how magnitudes would come to be either out of the one and this or out of some number and this" (1001b19-25).[128] But, as Aristotle now notes, the same type of argument can be turned against Speusippus, who is apparently willing to define line and triangle as extension delimited by two or by three points, and thus to say that they proceed from two or three points and extension (not, like some Platonists, from two or three and inequality): "about these [Speusippean στοιχεῖα], nonetheless, the same aporiai will result: for if the matter is one, line and [plane] surface and solid will be the same, for out of the same [στοιχεῖα] there will be one and the same thing" (M9 1085a34-b1). But if Speusippus gives in to these aporiai and posits different material ἀρχαί, not just for objects of different sciences (arithmeticals, geometricals, astronomicals, …) but also for the different kinds of geometrical magnitudes, like those Platonists who posited the much and the little as matter for numbers, the long and the short for lines, the broad and the narrow for plane surfaces, and the deep and the shallow for solids (N2 1089b11-14), then Speusippus will face the same difficulties as these Platonists in explaining how the different kinds of magnitudes are related (as Aristotle says, if the broad and narrow are not long and short, surfaces will not have length, and if the broad and narrow are long and short, surfaces will be lines, M9 1085a7-19; so likewise if linear extension does not belong to planar extension, surfaces will not contain lines, and if linear extension does belong to planar extension, surfaces will be lines, 1085b1-4). And the rest of the final section against Speusippus, M9 1085a31-b34, is constructed on the same pattern: the Platonists have a difficulty with whether the units of the form-number two come from the whole of the great-and-small or whether one unit comes from the great and the other from the small (M8 1083b23-36), and Speusippus has a similar difficulty about whether the units in his numbers come from the plurality he posits as an ἀρχή or from a part of that plurality (M9 1085b4-11 and b12-22; the difficulty is even worse for points, since even if a unit comes from an indivisible part of a plurality, a point cannot come from an indivisible part of an extensiuon, b27-34). Likewise, Speusippus is in the same difficulty as the Platonists about how the one and the contrary στοιχεῖον are combined in a number (by blending, juxtaposition, or the like? M9 1085b11-12, elaborated N5 1092a21-b8),[129] and about whether number is finite or infinite (Platonists M8 1083b36-1084b2, Speusippus M9 1085b23-7). It is possible that in each of these cases Aristotle is beginning with an argument that

[128]have I cited this elsewhere? d harmonize translations

[129]cp. also M7 1082a15-26, although there the problem seems to be how the units in a number are combined rather than how the one is combined with the unequal or plurality; similar challenges about how genera and differentiae are combined, notably Z14 1039b2-6, with particularly close echoes with the M7 text. I probably have discussion of the meaning of these challenges elsewhere. I'm not sure I fully understand the N5 text--I may come back to it later. but in any case M9 1085b11-12 is just a mnemonic flag for an argument that Aristotle could develop, not an actual argument

Speusippus had used against the Platonists, and then turning it against Speusippus; but even if not, Aristotle has still been developing a Speusippean style of criticism of the Platonists, and he generates the entirety of the refutation of Speusippus in M9 1085a31-b34 (i.e., that part of the "later additions or optional expansions" M8 1083b23-M9 1085b36 which is directed against Speusippus) by taking some difficulty that he has developed against Plato and showing that Speusippus too is unable to resolve it. The cumulative effect is supposed to be to persuade the reader that the Academics are necessarily unable to resolve these difficulties as long as they retain the fundamental commitments that numbers exist καθ᾽ αὐτά and that their στοιχεῖα are the first ἀρχαί.[130]

M9β-10 between M and N

As we have noted earlier, the transition from M9α to N1 seems to go more smoothly without M9β-10. It makes sense to regard M9β-10 as a later addition or optional expansion, and to ask first how the argument would develop in the earlier or shorter version without M9β-10, and then what M9β-10 would add; we can then come back to examine the argument-structure of N in detail.

We said earlier that M6-N as a whole is the "third investigation" which Aristotle projects in M1, after the investigation of mathematicals in M2-3 and the investigation of ideas considered in themselves in M4-5: that is, the investigation of whether the στοιχεῖα of numbers are the first ἀρχαί of all things, corresponding to the second half of A9. (We can say more generally that it is an investigation of whether the στοιχεῖα of unmoved intelligible things are the first ἀρχαί of all οὐσίαι, but these intelligibles will probably have to be described in mathematical terms in order to give a plausible path up to the ἀρχαί and down again.) Within this "third investigation," M6-9α investigate the many units as constituent στοιχεῖα of numbers (and, briefly, analogous στοιχεῖα of geometrical magnitudes), whereas N investigates a first one-itself and some contrary ἀρχή which would be responsible for pluralization: "everyone makes the ἀρχαί contraries, as in natural things, so likewise in the unmoved οὐσίαι" (N1 1087a29-31, the programmatic beginning of N after the opening transitional clause). Both M6-9α and N can be seen as developing challenges from B#11. B#11 argues not just that "if the one is not an οὐσία, it is clear that number too will not be a separate nature of beings" (1001a24-6), but also that if the one does exist καθ᾽ αὐτό (and therefore as something one-per-type), there will be no other ones besides the one-itself, so that in this case too there will be no numbers: "for out of what besides the one itself will there be another one? For it must be not-one; and all the things that are are either one, or many each of which is one" (1001b4-6, cited above). As we have seen, the core of M6-9α develops the argument that neither one-per-type units (either a single one-per-type unit or one of each of several differentiated types) nor many-per-type units can yield one-per-type numbers. But B#11 makes it clear that some people try to derive number from the one-itself and something that is not one and also not determinately many, "that number comes to be, as some

[130]I wonder whether I've actually understated the coherence of M8 1083b23-M9 1085b36: d think whether it can all be described as "as the well-known difficulty for Plato, so too, I say, for Speusippus": that's not the immediate impression, because the Speusippus section is rather short and at the end, but maybe that's where the emphasis is supposed to go. d think how much of the section against Plato could be motivated by set-up against Speusippus, how much won't have a parallel against Speusippus and needs independent motivation. even if there's some of the latter, it could just come from Aristotle getting carried away in writing up the preliminary anti-Plato part and developing it a bit farther than he logically needs to for its role in the larger argument. see whether Michel has something to say on this

say, from the one itself and from something else that is not one," such as "inequality" (1001b19-25, cited above), and N is concerned, not so much with details about numbers, as with the fundamental conception of the one-itself and some contrary as the first ἀρχαί, and with different ways that these ἀρχαί could be conceived. B#11 compares the problem of deriving the many units from the one-itself and something that is not one with the problem bequeathed by Parmenides of deriving the many beings from being-itself and something that is not being, and N takes up the comparison (N2 1088b35-1090a2), in order to show that Plato's problem about unity, like Parmenides' problem about being, rests on a fundamental misconception. Broadly speaking, N argues against a separate one-itself, argues against Plato's description of the contrary ἀρχή as something relative (the unequal or great and small), tries to expose the fundamental misconception behind the attempt to explain plurality though an ἀρχή contrary to the one, and argues that the Academic alternatives which try to avoid the objections against Plato's conception of the contrary ἀρχή are unsatisfactory; argues against Plato's identification of the one with the good ἀρχή and of its contrary with the evil ἀρχή, and argues the Academics can give no satisfactory alternative account of the good "partly because they make every ἀρχή a στοιχεῖον, partly because they make the contraries ἀρχαί, partly because they make the One an ἀρχή, partly because they make numbers the first οὐσίαι and separate and forms" (N4 1092a6-8, cited above); and finally argues that, even granted these ἀρχαί, there is no legitimate downward way either from the ἀρχαί to the numbers or from these to sensible things. Together with what we have seen in M, this adds up to a sweeping indictment of the Academic project (first described in A) of finding the ἀρχαί of all things in the One, or the One and something else, as the στοιχεῖα of numbers and perhaps of unmoved intelligible οὐσίαι in general; Aristotle's intended alternative is to seek the ἀρχαί in the causes of motion to sensible things. What would M9β-10 add to all this?

M9β-10 are usually read as an introduction to an examination of the ἀρχαί of intelligible οὐσίαι, either N (although it is conceded that it does not fit perfectly) or an earlier version of M. This corresponds well to the programmatic statement M9 1086a21-9 (cited above), and it contains some truth, but it is equally important to understand the connections with the preceding M6-9α. As we saw above, the dilemma that forms the core of M6-9α, whether the units of one-per-type numbers are themselves one-per-type or many-per-type, while it appears here specifically as a Speusippean challenge to Platonic accounts of number, is also a specification of a more general dilemma going back to B#9, whether, if we posit οὐσίαι which are each one-per-type, their constituent στοιχεῖα will also be one-per-type or rather many-per-type. B#9 argued that if the στοιχεῖα are each many-per-type, the things derived from them will also be many-per-type, and that if the στοιχεῖα are each one-per-type, there will be nothing besides the στοιχεῖα. The most obvious application of this dilemma is to Platonic forms and the genera as their στοιχεῖα (are the animal in man and the animal in horse numerically identical?), but it can also be applied, as in M6-9α, against form-numbers and the one or ones as their στοιχεῖα. Now this dilemma, whether applied against forms as definable universals or against form-numbers, is in the first instance a dilemma against Plato, which we could avoid simply by not positing one-per-type οὐσίαι; but Aristotle also develops the Platonic counter-objection against many-per-type ἀρχαί in such a way that it does not depend on assuming a domain of one-per-type οὐσίαι whose ἀρχαί we are seeking (and does not depend on conceiving these ἀρχαί as στοιχεῖα). If there are not some finite number of ἀρχαί each of which are numerically one, then we could say either that there are infinitely many ἀρχαί each numerically one, or (assuming these infinitely many things fall under finitely many types) that there are finitely many ἀρχαί, namely the types

themselves, which are not οὐσίαι and not each numerically one. But, so the Platonic argument continues, if the ἀρχαί are infinitely many, they are not knowable (and so cannot give us knowledge of what is derived from them), and if the ἀρχαί are not οὐσίαι, they cannot be ἀρχαί of οὐσίαι (because non-οὐσίαι cannot be prior to οὐσίαι) and cannot explain the existence of οὐσίαι. Concerns like these seem to be stated, in compressed form, in B#13 and #15. In M9β-10 Aristotle explicitly takes up these difficulties--both the anti-Platonic challenge against positing either one-per-type or many-per-type ἀρχαί for one-per-type οὐσίαι, and the Platonic challenge against avoiding the difficulty by not positing one-per-type οὐσίαι or ἀρχαί. We can thus see M9β-10 as generalizing, stepping back from the particular difficulties about unit-στοιχεῖα of numbers developed in loving detail in M6-9α to reflect on the more fundamental issue about the στοιχεῖα of any kind of intelligible οὐσίαι--and this suits the function of MN, which within the larger argument of the Metaphysics must examine, not just numbers, but any path to the ἀρχαί as στοιχεῖα of unmoved intelligible οὐσίαι. And indeed the programmatic opening of M9β (1086a21-9), which has often been taken as the opening of a whole book or treatise (whether M9β-N or an earlier version of M), does announce such an investigation of the στοιχεῖα of intelligible οὐσίαι, in quite general terms. Still, it is clear that in the body of M9β-10, at least the primary examples he is concerned with are the στοιχεῖα of Platonic ideas, where these are described as universals considered as οὐσίαι, and whose στοιχεῖα would presumably be the genera. But even if this text was originally just about genera as στοιχεῖα of ideas, in its present context between M6-9α and N it functions to broaden the scope of the investigation of unit-στοιχεῖα of numbers in M6-9α, and helps to integrate M6-9α into the broader "third investigation" of the στοιχεῖα of ideas and numbers; we can say either that M9β-10 discusses the στοιχεῖα of intelligible οὐσίαι in general, or that it raises the fundamental issues about the στοιχεῖα of intelligible οὐσίαι by discussing the other case, the case of the genera as opposed to the case of the units discussed in M6-9α. In this way Aristotle shows the more general import of the fundamentally Speusippean and anti-Platonic line of argument that he has been pursuing in M6-9α. But also, by considering and responding to the Platonic counter-attack, he defends the position that he has implicitly committed himself to in M6-9α in the case of the numbers: namely, the Speusippean view that these οὐσίαι and their unit-στοιχεῖα are many-per-type, or rather--since Aristotle had criticized Speusippus' inconsistency in positing a single first one-itself but many-per-type numbers, and his inability to generate the many units out of the first one-itself--a radicalized version of Speusippus that eliminates the one-itself as a one-per-type ἀρχή of numbers. M6-9α thus give a solution to B#13, defending the Speusippean side of the aporia which denies separate forms besides the mathematicals, against the Platonic argument (1002b14-25) that if numbers are many-per-type their ἀρχαί will also be many-per-type and that the ἀρχαί of beings must be determinately many in number.[131] Further, inasmuch as M9β-10 call up and

[131]of course, Aristotle differs from Speusippus (as well as from Plato) in denying that numbers are separately existing οὐσίαι; rather, their existence is in some way dependent on sensible things, with the important consequence that studying the ἀρχαί of numbers does not give us a separate route to things that might be first κατ᾽ οὐσίαν. however, Aristotle says nothing about this in M9β-10, and while he does say in M9α that "it is impossible for number and magnitudes to be separate" (1085b35-6), he does not really give an argument in M6-9α that Speusippus' account of numbers is impossible, beyond saying that his derivation of the units from a single one-itself, or from the one-itself and plurality, does not work, so that Speusippus would have to posit a radical (and perhaps infinite) multiplicity of unit-στοιχεῖα. perhaps we can say that, given the impossibility of an actual infinite, this rules out separately existing units but does not rule out units depending on the potentiality (and potential infinite divisibility) of matter. but Aristotle does not bring this out here. in any case, even though Aristotelian numbers, unlike

respond to aporiai from B ("let us say now what involves some aporia both for those who posit the ideas and for those who do not, and was previously mentioned at the beginning in the διαπορήματα", M10 1086b14-16--which seems to involve points from all of B#9, #13, and #15),[132] these chapters help to integrate MN more closely into the program of the Metaphysics as governed by B. In fact M9β-10 are much more closely tied to arguments from B than the rest of MN is; and if this section was added later to a MN already existing without it, or if it was added when Aristotle stitched a number of shorter pieces together into MN, one function would be to bind these texts together not only with each other into the program laid out in M1, but also with the program of B and thus with the Metaphysics as a whole.

What I have said about M9β-10 replying to aporiai from B, and in particular trying to resolve the aporia about one-per-type or many-per-type στοιχεῖα of intelligible οὐσίαι, applies in the first instance to M10. M9β consists of the programmatic statement 1086a21-9 (cited above), calling for a study of the στοιχεῖα of intelligible οὐσίαι and their claim to be στοιχεῖα and ἀρχαί of the things that are, then a dismissal and postponement of an investigation of Speusippus' claims, and then, for the rest of the chapter, a discussion of difficulties involved in positing Platonic ideas and an explanation of why anyone would have posited such ideas in the first place. Now Julia Annas has denied that M9β and M10 form a unity together. She says that the opening of M9β promises an investigation of principles and causes (the "third investigation" of M1 1076a29-32) but that this is in fact delivered only in N: M9β would be a criticism of Platonic forms as such, and perhaps of forms as causes, but not the discussion of principles of intelligible things that M9 1086a21-9 promises, and M10 would be a separate "discussion of a problem about principles not proprietary to the Platonists" (Annas p.78), "a problem which confronts not only the Academy but also himself" (p.188) rather than a contribution to the discussion of principles of non-sensible things. If this were right, it would be very hard to trace any sequence of thought through these chapters and into N, and we would have to suppose that separate scraps of text had been put together more or less randomly. But Annas' description of M10 is misleading, and when we describe M10 correctly, we can see that M9β makes perfectly good sense as an introduction both to M10 and thus also to the discussion of στοιχεῖα of intelligible things in M9β-N as a whole. The main aim of M10 is to bring out the insoluble dilemma which befalls the Platonists "when they make the ideas out of στοιχεῖα and think that there is some one separate thing besides the οὐσίαι and ideas which have the same form [or species]" (1087a5-7),[133] i.e. when they assume that the definable universal is an individual οὐσία and that the στοιχεῖα of the definition (the genera and differentiae) are also στοιχεῖα of that οὐσία, and to respond to the Platonic counter-attack against avoiding the dilemma by not positing one-per-type οὐσίαι besides the members of the species. So it is entirely in order for Aristotle to introduce this argument in M9β by describing the theory of ideas--described in M9β precisely as the positing of universals of sensible types as individual οὐσίαι besides the

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Speusippean numbers, are dependent on sensible things, they are many-per-type, like Speusippean numbers, and so are liable to the same Platonic challenge

[132]for the B refs, see Crubellier ad locum, though he also adds #6, which I think is not directly relevant. also note M9β 1086a34-5 and the problem of finding a suitable reference in B

[133](repeating note from the Lille paper) παρὰ τὰς τὸ αὐτὸ εἶδος ἐχούσας οὐσίας καὶ ἰδέας ἔν τι ἀξιῶσιν εἶναι κεχωρισμένον, keeping, with hesitation, καὶ ἰδέας (kept by Ross, deleted by Jaeger and Annas). I do not think that Ross' interpretation ("they claim that apart from the substances which have the same form there are Ideas, which are each of them a single separate entity") is possible. If the words are to be kept, I think they must mean that, just as there is a separate man-himself beside the many human beings, so too there is a separate animal-itself beside the many ideas of animal, i.e. beside the animal in man-himself, the animal in horse-itself, and so on.

sensibles[134]--and explaining why people would have been led to posit such things and how we can avoid positing them.[135]

When Annas says that the problem of M10 is "not proprietary to the Platonists," she is thinking of M10 1086b14-16, "let us say now what involves some aporia both for those who posit the ideas and for those who do not, and was previously mentioned at the beginning in the διαπορήματα" (cited above). But Aristotle does not mean that the same difficulty affects us indifferently, no matter whether we posit ideas or not (so Annas); he means that there is a dilemma, and that if we posit ideas we fall into one difficulty, and that if we avoid that difficulty by not positing ideas we fall into a different difficulty. The dilemmatic structure is clearly marked by the εἰ μέν ... ἂν δέ in the next sentence: "if, on the one hand, someone does not posit that the οὐσίαι are separated, and [exist] in the way that individual beings are said [to be],[136] he will destroy what we mean by οὐσία; but if, on the other hand, he posits that the οὐσίαι are separate, how will he posit their στοιχεῖα and ἀρχαί [to be]?" (1086b16-20). If we take the second, Platonist, horn of the dilemma, then we face the sub-dilemma, whether the στοιχεῖα of these οὐσίαι are individual (difficulties developed 1086b20-37) or universal (difficulties developed 1086b37-a4); Aristotle then diagnoses how the Platonists become liable to this (sub-)dilemma (1087a4-7 cited above), and defends against Platonic counter-attack his option of avoiding the (sub-)dilemma by not positing one-per-type οὐσίαι besides the members of the species (1087a7-25). The problem, however, is what it means to posit, or not to posit, "that the οὐσίαι are separated." The structure of the argument seems to show that this is something that the Platonists posit (leading to their sub-dilemma) and that the anti-Platonists do not posit. So Bonitz took it, following the pseudo-Alexander: the first dilemma asks "utrum ponendae sint substantiae seiunctae et quasi singulares, quales ponuntur ideae," and, if yes, the sub-dilemma arises.[137] But Ross, and Annas and Crubellier following him, reject Bonitz' interpretation: they take the separateness of οὐσίαι to be a premiss that Aristotle shares with Plato, so that the sub-dilemma will arise indifferently for them both, whether the οὐσίαι are Platonic forms or an Aristotelian alternative, and this would be what Aristotle meant at 1086b14-16 by saying that there is aporia "both for those who posit the ideas and for those who do not." And indeed Aristotle too believes that οὐσίαι must be separate. But the issue is not what Aristotle believes but how he is arguing here, and Ross' interpretation does not do justice either to the εἰ μέν … ἂν δέ structure in 1086b16-20 (which corresponds to "both for those who posit the ideas and for those who do not") or to the way Aristotle argues in the sub-dilemma. In the sub-dilemma, in the branch arguing against saying that the στοιχεῖα are individuals, one of the two main arguments is that "the things that are will be [only] as many as the στοιχεῖα" (1086b20-22), i.e. that if

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[134]contrast with the parallels in A6 and M4, where there is talk about universals, definitions, Heraclitus and so on, but not about the universals as individuals, which is specifically tailored to the argument of M10 and the aporiai from B that it is responding to

[135]d expand on M9β, individuals and universals, its psychohistorical reconstruction?

[136]or, as Ross and Annas translate, "in the way in which individual [Annas adds 'existing'] things are said to be separate"; but the question here whether the οὐσίαι are separate, καὶ τὸν τρόπον τοῦτον ὡς λέγεται τὰ καθ' ἕκαστα τῶν ὄντων, is very close to B#15's question about the ἀρχαί, πότερον καθόλου εἰσὶν ἢ ὡς λέγομεν τὰ καθ' ἕκαστα (1003a7)

[137]the pseudo-Alexander puts it a bit differently, by glossing οὐσίαι as εἰδητικαὶ οὐσίαι, i.e. forms which he takes to be common to all members of the species, and asking in which of two ways they exist, whether as particular, i.e. as a single particular thing subsisting παρά the many species-members], or as universal, i.e. not separately existing. but his picture of the overall logic is pretty much the same as Bonitz'. note Ross is right against Bonitz that ὅπερ οὐ βουλόμεθα at ps-Alex 787,25 is a paraphrase and not a variant reading or an emendation (Ross is apparently responding to Jaeger's critique of Bonitz on the meaning of ὡς βουλόμεθα λέγειν)

"there will not be more than one alpha" (b28-9), "there will not be other things that are besides the στοιχεῖα" (b31). This is the argument against the Platonist side of B#9 (discussed in Iβ3 above), and it depends on the στοιχεῖα, like the οὐσίαι of which they are στοιχεῖα, being not merely individuals but also one-per-type: for if the στοιχεῖα included many individuals of the same type, say many alphas, there would be no reason why one of them should not be in a βα and another in a γα, and so there would be no reason why there should not be syllables besides the στοιχεῖα. Again, when Aristotle develops the argument in detail, he starts by saying "let the syllables in speech be οὐσίαι, and let their στοιχεῖα be στοιχεῖα of οὐσίαι. Then necessarily βα (and [likewise] each of the syllables) will be one, if indeed they are [each] the same not [merely] universally and in species, but rather each is numerically one and a this and not [merely] sharing a name. And indeed, they do posit that each αὐτὸ ὃ ἔστιν is one" (1086b22-7), and then argues that by parity of reasoning the στοιχεῖα will also be each "numerically one and a this" and that there will not be more than one alpha, which allows him to infer that there will be nothing besides the στοιχεῖα. It seems clear here that Aristotle is inferring from the second horn of the main dilemma ("that the οὐσίαι are separate") that each οὐσία is a one-per-type individual, and equally clear that "αὐτὸ ὃ ἔστιν" is supposed to be equivalent to "οὐσία", and that the "they" who take the second horn of the main dilemma, who "posit that each αὐτὸ ὃ ἔστιν is one," are Platonists: in context, to "posit the ideas" is precisely to posit that for each F, the οὐσία of F or αὐτὸ ὃ ἔστιν F, what F is or what we are predicating of something when we say that it is F, is numerically one and a this.[138] And the whole argument of the sub-dilemma is a very familiar type of argument against the Platonists: if the οὐσίαι (the ideas) are individual (one-per-type), then by parity of reasoning their στοιχεῖα (the genera) should also be individual (one-per-type), but if so there will be no further οὐσίαι compounded out of the στοιχεῖα, while on the other hand "if the ἀρχαί are universal [i.e. not one-per-type οὐσίαι], either the οὐσίαι that are [composed] out of them will also be universals [i.e. the definable essences will not be οὐσίαι in the sense of separately existing individuals], or else [absurdly] non-οὐσία will be prior to οὐσία [sc. because the στοιχεῖα and ἀρχαί, which are universals and therefore not οὐσίαι, will be prior to the οὐσίαι which are composed out of them]" (1086b37-1087a1).[139] (The argument-scheme of B#9 is filled in by identifying the στοιχεῖα in this way as genera and differentiae in Z14: "it is clear from this what follows for those who say that the ideas are separate οὐσίαι and also make the form/species out of the genus and the differentiae. For if the forms exist, and animal is in man and in horse, either it is one and the same in number, or it is other [in number]" (1039a24-8), and so on; see IIδ {or the OSAP paper} for detailed discussion. Some details are developed differently here than in M10, and in particular the second branch of the dilemma is argued somewhat differently, but the basic strategy is the same in both texts.) Thus it seems that the thesis under consideration in M10, that the οὐσίαι are separate and exist in the way that individuals do, is the same as the thesis argued against Speusippus in the Platonic

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[138]note Plato passages for αὐτὸ ὃ ἔστιν F and problems of its construal (the very thing which is F? the very thing which F is? the very F which is?): the passages I have found (exhaustive?) are Phaedo 74b2 and d4ff (where there is a possibly serious textual problem) and Republic 490b3 and 532a7-b1

[139]Accepting (with Annas) Ross' insertion of ἢ after καθόλου in 1087a1, and rejecting Jaeger's more radical deletion of the entire preceding phrase ἢ καὶ αἱ ἐκ τούτων οὐσίαι καθόλου. Jaeger says that this phrase contradicts Aristotle's saying that the universal is not an οὐσία, but Aristotle's point is that if the ἀρχαί are universal and non-οὐσία, then the things composed out of them will also be universal and therefore non-οὐσίαι (at least "in the sense in which we mean it"). contrary to the opponent's assumption; the alternative would be to admit that an οὐσία can emerge from non-οὐσίαι, that "non-οὐσία is prior to οὐσία", which Aristotle regards as absurd {d modify text above if necessary to accommodate this point}

half of B#13: "if there are not other things besides the sensibles and the mathematicals, such as some people say the forms are, οὐσία will not be one in number but [only] in species, nor will the ἀρχαί of the things that are be so-and-so-many in number, but [only] in species [sc. which seem to be absurd consequences]. So if this is necessary, it is also necessary for this reason to posit that the forms should exist" (1002b22-6, cited above); and, as in B#13, the thesis that οὐσίαι and their στοιχεῖα are each numerically one is refuted by using the anti-Platonist argument of B#9.

Aristotle's own solution turns on denying that either the οὐσίαι or their constituent στοιχεῖα are one-per-type individuals. This means that he rejects both horns of the sub-dilemma, one-per-type individual οὐσίαι and one-per-type individual στοιχεῖα or one-per-type individual οὐσίαι and universal στοιχεῖα. Does this mean that he embraces the first horn of the main dilemma, denying "that the οὐσίαι are separated, and [exist] in the way that individual beings are said [to be]"? Or, in the terms of B#13, does he accept that "οὐσία will not be one in number but [only] in species"? Clearly he accepts it in the sense that there are many οὐσίαι in each species, so that the οὐσίαι are determinately many only in species, and indeterminately many in number, but not in the sense that any given οὐσία is one only in species, i.e. that it is not a separately existing individual but a non-separate universal. Both in B#13 and in M10 the vagueness of formulation of the Platonist side of the argument suggests that the Platonists are not interested in distinguishing these options, presumably because they think it is absurd to have indeterminately or infinitely many οὐσίαι of the same type, without some one οὐσία which they have in common (it then takes a further step to conclude that this οὐσία is separately existing). This might be because the Platonists take it for granted that the answer to e.g. "what is a horse, what is it to be a horse" is an οὐσία and that this is one for the species, or because they think that indeterminately or infinitely many οὐσίαι without some common οὐσία would be unknowable (this is the objection which Aristotle considers most serious and replies to at length in M10), or because the οὐσίαι whose στοιχεῖα they are interested in discovering are non-sensible intelligible οὐσίαι and they think it would be absurd for these to be infinitely many per type (this is connected with the previous objection, because the Platonists will presumably grant that indeterminately many things of the same type can be sensed, but not that they can be intellectually known without intelligible differentiae between them, so that infinitely many non-sensible things of the same type would not be intelligible, or cognizable at all). When Aristotle says in M10, "but if nothing prevents there from being many alphas and many betas, as with the στοιχεῖα of speech, and no alpha-itself and beta-itself beside the many, then as far as this goes the syllables of each kind will be infinitely many" (1087a7-10), it is not entirely clear whether he is putting this forward as a positive argument for his own position that the οὐσίαι are indeterminately or infinitely many per type, or as a reductio ad absurdum from the Platonist point of view of saying that the στοιχεῖα are many-per-type (but that, as the Platonists assume, the οὐσίαι composed of them, i.e. the ideas, are one-per-type). Perhaps it functions as both; in any case, Aristotle embraces the conclusion and tries to resolve the difficulties against it, arguing that many individuals of a type can be objects of intellectual knowledge, that the object of ἕξις-knowledge is a type but the object of ἐνέργεια-knowledge is some individual of that type (the ἕξις γραμματική knows the type alpha, but its actualization consists in recognizing some individual alpha as falling under that type).[140] Of course, this kind of example shows only that many sensible individuals of a type can be objects of intellectual knowledge (sensory acquaintance with this individual alpha will be needed to trigger actualization of my intellectual

[140]note on issues about the account of knowledge, from Lille paper

knowledge that it is an alpha), and will not show that many pure non-sensible individuals of a type can be intelligible or cognizable at all. So Aristotle must concede to the Platonists that pure non-sensible intelligible οὐσίαι are one-per-type, and so in the case of such οὐσίαι he too faces the dilemma whether their στοιχεῖα are one-per-type or many-per-type. But Aristotle can avoid this difficulty, because although he too posits pure non-sensible intelligible οὐσίαι (although these are not the οὐσίαι <u>of</u> sensible types like horse), he denies that they have στοιχεῖα, a denial which he will make explicit in N2. And while he too will posit pure non-sensible intelligible ἀρχαί, which though one-per-type must be ἀρχαί of many things at once, they will be non-constituent efficient or final ἀρχαί of sensible things, rather than constituent material or formal στοιχεῖα of Forms or mathematicals, and so the difficulty of M10 will not arise for them.[141]

Is N a heap?

<u>Metaphysics</u> N begins with a μὲν οὖν … δέ transition, "about this [kind of] οὐσία let [only] so much be said; but everyone makes the ἀρχαί contraries, as in natural things, so likewise in the unmoved οὐσίαι" (1087a29-31). "This [kind of] οὐσία" apparently means unmoved οὐσία, and the transition is apparently from an discussion of such οὐσίαι to a discussion of their ἀρχαί.[142] Since M9β-10 are already discussing ἀρχαί, it seems likely that the transition was originally from M1-9α to N. In a sense, M6-9α are already talking about ἀρχαί, namely the units as ἀρχαί of the numbers, but they are officially framed rather as a discussion of this kind of οὐσία, the numbers, raising difficulties about their ἀρχαί the units in order to refute the claim that numbers exist καθ᾽ αὑτά. So we can suggest that in M6-9α the primary focus is on numbers rather than ἀρχαί, and that in N the primary focus is on ἀρχαί rather than on numbers; N does also contain discussions of numbers and of other mathematically described intelligibles, and we will have to see how far this contrast can be maintained. We could also draw the contrast by saying that N is concerned with <u>contrary</u> ἀρχαί of intelligible οὐσίαι; and this would be a natural development of the argument of M6-9α. What M6-9α have brought out above all is that if numbers are to exist καθ᾽ αὑτά there must be many different units, and that there is no adequate way to explain and justify the existence of these starting simply from the one. The many different Academic responses to this difficulty all depend on deriving the units, and the numbers composed of them, from the one and some other ἀρχή contrary to the one, whether we describe this as a <u>matter</u> receptive of the one or more generally as a principle of pluralization, and the claims of this ἀρχή, in itself and as an ἀρχή of other things, now need to be investigated. As we have seen above, the transition from M6-9α to N, described in this way, follows a sequence of thought sketched in B#11. B#11, in creating an aporia against numbers existing καθ᾽ αὑτά, with difficulties if the one exists καθ᾽ αὑτό or if it does not, argues that if the one exists καθ᾽ αὑτό there will be no other ones besides the one-itself, and therefore no numbers, "for out of what besides the one itself will there be another one? For it must be not-one; and all the things that are are either one, or many each of which is one" (1001b4-6, cited above); and this is not simply a <u>reductio ad absurdum</u> but a description of a path of thinking onto which some philosophers have been forced, "that number

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[141]note on trying to sort out the references to #15 interlaced with the references to #9 in M10, esp. on the question of knowability, as in the Lille paper, and question of whether Aristotle reverses himself on what he means by καθόλου, following B#9 and #15

[142]discuss the alternatives that have been proposed: taking "this οὐσία" to mean <u>sensible</u> οὐσία (who? Jaeger? maybe also Berti?), or emending οὐσίας to ἀπορίας (Bonitz, pretty desperate) (discussion where?--probably Jaeger 1912)

comes to be, as some say, from the one itself and from something else that is not one" (1001b19-21, cited above), such as "inequality" (b23). And although N1 starts by raising difficulties against any pair of contrary ἀρχαί of unmoved οὐσίαι, it quickly specializes to the case of the one and a principle of pluralization contrary to the one, first "the unequal" and then various alternative proposals.

In trying to understand how N functions in the larger projects of MN and of the Metaphysics, the overwhelming question is whether N does in fact have some particular function which the various arguments within N would subserve, or whether N is just a pile of scraps. Admittedly M (or at least M1-9α) produces a much stronger impression of overall structure, of discussing a fixed list of questions, than N does (although it is not always clear how well each individual argument in M functions in that structure). And there is something tempting in the view of Jaeger and Ross that Aristotle intended to replace M9β-N with M1-9α: N would then be preserved, not because it still has a function in Aristotle's final conception of the Metaphysics, but as a pile of notes that Aristotle intended either to rework into components of the ordered structure of M or to discard. Certainly Jaeger and Ross cannot be right that, on Aristotle's final conception, M1-9α would be sufficient (and a self-contained treatment of the "three investigations" announced in M1): Aristotle would obviously want to have a systematic investigation of the στοιχεῖα of unmoved οὐσίαι, and these would be, above all, the one and a contrary ἀρχή. So we can say that N, or at least those parts of N that deal with the one and a contrary ἀρχή, do have a function in MN and in the Metaphysics; but we can still wonder whether N has an internal argument-structure in support of this function, or whether it is just a pile of notes waiting to be reworked into a structured argument against Academic theories of the one and a contrary ἀρχή. Or, since there seems to be a fairly coherent and self-sufficient argument against Academic theories of the one and a contrary ἀρχή, or of being and a contrary ἀρχή, occupying N1-N2 1090a2, we might wonder whether the parts of N after that still have a function, whether they add something to the argument that has already been made.

Obviously I do not claim that N is perfectly polished; it is likely enough that various individual sentences or arguments would have been deleted on further revision, and others filled out and connected better. But I think we can discern in N, not only a number of clearly worked out argument-blocks, but also an overall strategy of argument to which these argument-blocks contribute. One key, here as in much of MN, is to understand Aristotle not simply as refuting the Academics but as responding to debates within the Academy, especially between Speusippus and his Platonist opponents. Jaeger was sensitive to these aspects of N, but did not describe them adequately, when he said that in the "early" M9β-N, when Speusippus was head of the Academy and Aristotle was an emissary of the school in Assos rather than its competitor in Athens, Aristotle was positioning himself as a reformer of Platonism and defender of true Platonism against Speusippus, and so took Speusippus rather than Platonism as his main target. It depends, of course, on what we mean by "Platonism." In N, as more broadly in MN and in the Metaphysics, Aristotle is hostile to all versions, Platonist or Speusippean, of the project of finding the ἀρχαί as στοιχεῖα of mathematically described unmoved οὐσίαι. As elsewhere, he thinks that Speusippus has acute criticisms of difficulties of the specifically Platonist version of the project, and he uses and develops Speusippus' criticisms of Plato, while also arguing that Speusippus' revised version of the project does not succeed, typically either because Speusippus' criticisms apply against Speusippus' own account as well as against Plato's, or because in cleaning up Plato's inconsistencies Speusippus has eliminated the functions that the οὐσίαι and ἀρχαί would serve for Plato, and thus the motivations for positing them. As elsewhere, Aristotle

wants to save the genuinely valuable part of Platonism that Speusippus has abandoned, unmoved intelligible οὐσίαι as the source of order in the natural world and the good as the first ἀρχή of all things. However, while these patterns of argument can be discerned elsewhere, it remains true that Speusippus comes much more prominently to the fore in N than he does elsewhere (except in rather localized parts of M6-9α, mainly M8 1083a20-b1 and M9 1085a31-b34), and Jaeger can hardly be blamed for noticing Speusippus' presence here in N, even if his explanation for that presence though chronology was a mistake.

I see three main sections in the argument of N, namely N1-N4 1091a29 (the last 17 lines, N3 1091a12-N4 1091a29, might be described as an appendix), N4 1091a29-N5 1092a17 (the next four lines, N5 1092a17-21, are an apparently parenthetical remark perhaps occasioned by something in this section), and N5 1092a21-N6. While there is more to be said about the structure of each of these sections and about how they function in the larger project, it is easy enough to describe what the second and third sections, N4 1091a29-N5 1092a17 and N5 1092a21-N6, are about. N4 1091a29-N5 1092a17 is a tightly organized argument against Plato's identification of the good ἀρχή with the one as a στοιχεῖον of the numbers: following the now familiar strategy, Aristotle develops Speusippean arguments against Plato, says that it is also unacceptable to conclude with Speusippus that the good is not among the ἀρχαί, and concludes instead that the main cause of the unacceptable consequences is in commitments that Speusippus shares with Plato: "all these things follow, partly because they make every ἀρχή a στοιχεῖον, partly because they make the contraries ἀρχαί, partly because they make the One an ἀρχή, partly because they make numbers the first οὐσίαι and separate and forms" (N4 1092a6-8, cited above). Then N5 1092a21-N6, granting for purposes of argument that the one and some contrary (whether a Platonist unequal or a Speusippean plurality) are ἀρχαί, argues that no acceptable account can be given of how these ἀρχαί can combine to yield the numbers (N5 1092a21-b8), or of how numbers can be causes to sensible things (N5 1092b8-N6); in other words, Aristotle argues that even if there is an upward way to the one and some contrary as ἀρχαί, there will be no acceptable way back down, not even to numbers and much less to sensibles. Both N4 1091a29-N5 1092a17 and N5 1092a21-N6 are making clearly demarcated contributions to the task of MN within the Metaphysics, i.e. the task of showing that neither the Platonist nor the Speusippean version of the path to ἀρχαί as στοιχεῖα of mathematically described unmoved οὐσίαι can satisfy the expectations of wisdom as sketched in Metaphysics A. What I have called the first section, N1-N4 1091a29, has a much more complicated internal structure, and it is not so obvious how its different components are supposed to fit together in developing any one argument, or what contribution they would collectively make to the larger task of MN; and there is something to be said for dividing this section into two sections at N2 1090a2. But the transition at N2 1090a2 is motivated by what came before, and I will try to show what sense N1-N4 1091a29 might make as a continuous discussion.

Ignoring the rest of N, we can say that N1-N4 1091a29 are a self-contained investigation of the claim that there are two contrary ἀρχαί of unmoved οὐσίαι, namely a one-itself and something else which explains the plurality of such οὐσίαι (whereas the one by itself would not explain why there would be more than one thing). The discussion thus picks up on the argument of B#11 that if there are numbers καθ᾽ αὑτό, there must be not only a one καθ᾽ αὑτό but also something else which is not one, out of which, together with the one, the units and numbers arise. It also picks up on the investigation in Iota of attributes of being, unity and sameness and equality in one column, plurality and otherness and difference and contrariety and inequality in the other column. We saw in discussing Iota that Iota's investigation of these attributes is

directed toward resolving disputes about a one-ἀρχή, contrary ἀρχαί, plurality- or otherness- or inequality-themselves, and especially disputes about whether these things can exist apart from the particular genera and their appropriate matters; and, as we have already seen in discussing several of these disputes, passages in N1-N4 1091a29 (or more specifically in N1-N2 1090a2) seem to draw the consequences for the ἀρχαί from the investigations of Iota, and can be taken to represent the critical account of the ἀρχαί that Iota was designed to support. In particular, the first paragraph of N, N1 1087a29-b4, argues that no contrary can be an ἀρχή in the strict sense (because contraries presuppose a ὑποκείμενον which must be prior to the contraries, not itself one of the contraries as the Academics suppose). Then N1 1087b4-33 introduce the main body of the discussion by specializing from contraries in general to the one-itself and some contrary ἀρχή ("the contraries which they call στοιχεῖα", b12-13), and surveys the different descriptions that have been proposed for the contrary στοιχεῖον (plurality, otherness, the unequal, the indefinite dyad, great and small, much and few, exceeding and exceeded). Then N1 1087b33-1088a14 apply the account of the one from Iota 1-2, arguing that the one in any genus is a measure appropriate to that genus, and therefore that there is no one-itself.[143] After this the argument becomes harder to survey. We can start by saying that N1 1088a15-N2 1090a2 follow up this criticism of the one-ἀρχή by criticizing accounts of the ἀρχή contrary to the one which is supposed to account for pluralization, and that N2 1090a2-N4 1091a29 ask why we should believe in the existence of separate numbers and raise difficulties about how such numbers can be generated and how they can be causes to posterior things. But we need a more fine-grained description of the (initially chaotic-seeming) sequence of topics in N1 1088a15-N2 1090a2, in order to understand both the internal logic of this passage and the reasons for the transition to N2 1090a2-N4 1091a29, and, in particular, to see why N2 1090a2-N4 1091a29 do not simply duplicate N5 1092a21-N6, as on this level of description they might seem to.

A crucial observation is that Aristotle in N1 1088a15-N2 1090a2 does not treat all the descriptions of the ἀρχή contrary to the one on an equal footing, as we might expect him to from this structural description. Rather, throughout this passage he concentrates on the description of this ἀρχή as the unequal, mentioning the Academic alternatives to this description only in the parenthesis N2 1088b28-35, on the people (probably including Xenocrates) who agreed that the ἀρχή other than the one was an indefinite dyad but avoided some objectionable consequences by refusing to call it the unequal. This is on the face of it curious, since at N1 1087b27-33 he had said that of all the descriptions of the ἀρχή contrary to the one, the most plausible is that it is plurality (although this too is rejected on the ground, taken from Iota 6, that the plurality should be contrary to the few rather than to the one).[144] But here we have merely another instance of Aristotle's strategy of exploiting disagreements among the Academics: as elsewhere in MN, he focusses on attacking the original Platonic position, doubtless helping himself to earlier criticisms of Plato by Speusippus and perhaps by other people, and ignoring or mostly ignoring ways that other Academics had modified the Platonic position to avoid the objections; only then does he tack on an argument that Speusippus or other Academics remain liable to the objections that they have brought against Plato, or that they resolve the inconsistencies only at the cost of undercutting the motivations of the doctrine. Aristotle concentrates here on attacking the unequal as an ἀρχή, because it is easier to attack than Speusippus' or Xenocrates' modifications, and

[143]refs to previous discussions of all this

[144]more fully, if we supply from Iota 6, that plurality in the sense of excess is contrary to the few rather than to the one, and that plurality in the sense of the genus is opposed to the one as thing measured to the measure rather than as a contrary; see discusssion above

because it reveals what he suggests is the basic error at the origin of the Academic discussion of ἀρχαί, which is concealed in Speusippus' and Xenocrates' more sophisticated accounts. The unequal is a πρός τι, and so Aristotle can argue, both that a πρός τι cannot exist καθ᾽ αὐτό and therefore cannot be an ἀρχή, and also that the principle of pluralization must be appropriate to each category, so that a πρός τι cannot explain the plurality of quantities, much less of οὐσίαι. These objections would not apply if the ἀρχή is plurality (which might be argued to be an οὐσία and is at any rate not a πρός τι), nor would they apply if the ἀρχή is an indefinite dyad but not the unequal, which is what Aristotle is admitting in the parenthesis N2 1088b28-35 (on Aristotle's arguments against positing a πρός τι like the unequal as an ἀρχή, and on the context in intra-Academic disputes, see Iγ2c above).[145]

Aristotle also tries another strategy of argument which is also directed primarily against the unequal, on the ground that the unequal is negative or privative: for Aristotle to say that something is πρός τι (and thus falls under being-as-said-of-the-categories in the sense of Δ7) is in conflict with saying that it is negative or privative, but (as Aristotle says also in Physics I,9) Plato treats the great and small as a privation or a not-being, and Aristotle draws some arguments from the assumption that the ἀρχή is a πρός τι, and other arguments from the assumption that the ἀρχή is negative or privative.[146] As in B#11, but more fully, he polemically assimilates the Academics' problem of how to generate plurality out of the one to Parmenides' λόγος "never shall this prevail, that things that are not are" (cited in full N2 1089a4), interpreted as an argument "that all the things that are will be one, being itself" (N2 1089a2-3, very close at B#11 1001a29-b1). (The argument that Aristotle is reconstructing for Parmenides could be simply that if "τὸ ὄν" signifies some this, call it X, then if Y is not X, Y is οὐκ ὄν, and if such a Y exists, then τὸ μὴ ὄν is--this seems to be the argument at B#11 1001a31-b1. But the argument may also be that, under the same assumptions, Y before it comes to participate in being must be not-being, as the others of Parmenides Hypothesis 3 before they come to participate in the one must be many and infinite in plurality, and that not-being cannot come to participate in being. This gives a more specific argument, i.e. an argument that there is no being beside being-itself that would not also show that there is no fire beside fire-itself, if it is possible for what is not fire to come to participate in fire, but not possible for what is not to come to participate in being, or presumably in anything else either; and this seems to be the argument presupposed when Aristotle says that "they," i.e. Plato, thought it necessary to solve Parmenides' argument and "to show that what is not is, for in this way, out of what is and something else, the things that are would be, if they are many," N2 1089a5-6.)[147] Both the aporia inherited from Parmenides and the aporia about

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[145]N2 1088b28-35 says "There are some who make the στοιχεῖον alongside the one an indefinite dyad, but they feel difficulties [δυσχεραίνουσιν] with 'the unequal,' reasonably, on account of the impossibilities that result; but these people get rid only of those difficulties [δυσχερῆ] which necessarily result for those who posit [such στοιχεῖα] on account of making the unequal, i.e. the relative, a στοιχεῖον; but those which result even apart from this opinion will necessarily befall them too, whether they make form-number or mathematical number out of these [στοιχεῖα].". what seems disturbing is that Aristotle does not seem to indicate what the difficulties are "which result even apart from this opinion"; certainly he has made no attempt to give them any special prominence in his argument

[146]cite, in full, N2 1089b4-8, and cp. 1089b15-20. note discussion of privativeness in Iγ2c above, cp. Iota 5 on the equal (rather than the great and small) as a privation, and also Hermodorus and Sextus' "Pythagoreans"

[147]currently I have many parenthetical discussions of Aristotle's interpretation of Parmenides' λόγος, scattered all over the book: there needs to be one real discussion and then a bunch of cross-references. note questions of how the Sophist interprets Parmenides, how far Aristotle follows the Sophist's interpretation of Parmenides, how he interprets the Sophist's solution and whether he misconstrues it, perhaps deliberately, in N2 {you may here also need some Auseinandersetzung with Palmer?}, Parmenides against plurality of beings, Parmenides on being or on the one, Parmenides against γίγνεσθαι ἁπλῶς and γίγνεσθαι ἐκ μὴ ὄντος, how far Aristotle might be following

generating plurality out of the one-ἀρχή can be represented as asking how there can be many things if there is a being-itself and one-itself, and in both cases Plato's solution can be represented as positing a not-being (and the not-one, if it is a privation, is a not-being) as a material ἀρχή which comes to participate in being-itself or in the one-itself. Elsewhere, notably in Physics I,2-3, Aristotle explains Parmenides' argument as arising from the elementary mistake of assuming that τὸ ὄν signifies one and the same thing across all the categories; and so he applies the same diagnosis here in N2, saying that "there are many reasons for their being led astray into [positing] these kinds of causes, but especially that they were posing the aporia in an archaic manner [τὸ ἀπορῆσαι ἀρχαικῶς]" (1088b35-1089a2). If they had distinguished the senses of being according to the categories, they would not be tempted to posit a single ἀρχή to account for all pluralization of being: different ἀρχαί would be needed to explain pluralization in different categories and across the categories, a πρός τι could not explain pluralization in other categories, and we would need something else to explain pluralization in the category of πρός τι itself. Likewise, if they distinguished the senses of not-being, they would see that a single not-being could not explain the pluralization of being in different categories: the relevant sort of not-being to explain differentiation in a given genus is what is potentially but not actually all the things in that genus, and this will not be the same across genera, certainly not across categories, and a πρός τι cannot be even potentially an οὐσία (N1 1088b1-2, N2 1089b15-20). Furthermore, it is not open to the Academics to posit a δύναμις as a material ἀρχή of unmoved οὐσίαι, since such οὐσίαι are necessary and eternally whatever they are, and have no potentiality to perish back into their matter or into their constituent στοιχεῖα; and this means that they cannot have matter, or more generally στοιχεῖα, because whatever is composed of στοιχεῖα, and is thus a whole of parts, is both one and many: Plato in the second part of the Parmenides had pointed out the aporiai and apparent contradictions to which this gives rise, but Aristotle thinks that the only genuine solution is if the whole is actually one and potentially many, and this is not possible in unmoved οὐσίαι but only in sensible things. Although Aristotle is apparently led to make this point (N2 1088b14-28) as a digression provoked by the complaint that his opponents' material ἀρχή, as a πρός τι, cannot be potentially οὐσία, the digression nonetheless makes an important contribution to the overall argument of N, as giving a general argument against the whole project of seeking the ἀρχαί as στοιχεῖα of unmoved οὐσίαι, which is what N is investigating.[148]

Aristotle presents all this in N1 1088a15-N2 1090a2, not only as refuting his opponents, but as diagnosing the fundamental error that led them astray in the first place,[149] and as explaining their confused turning from one formulation and pseudo-solution to another. And yet his arguments in N1 1088a15-N2 1090a2, with almost the sole exception of the general argument of N2 1088b14-28 against στοιχεῖα of eternal unmoved οὐσίαι, apply only against the unequal and not against Speusippus' or Xenocrates' substitute material ἀρχαί. Much of his argument, to much of his audience, would seem like an ingenious but useless application of favorite Aristotelian devices (the categories, δύναμις and ἐνέργεια, and so on) to refuting long-dead theories and solving long-solved sophisms, supplemented by an attempt to smear the living by association with the dead (with Plato and indeed with Parmenides). This is precisely why Aristotle needs to add N2

Parmenides Hypothesis 5 rather than the Sophist, or (maliciously?) conflating them. need to discuss Physics I,2-3, a text in the Sophistici Elenchi (ref?), also briefly Physics I,9 and maybe some texts of GC I. for some of this I may just want to write up a separate paper on Aristotle's solution to the aporia against coming-to-be, and make all references to that

[148]notes to where I discuss these argts in more depth

[149]compare the psychohistory in M9β of how Plato went astray in positing universals as individuals beside the sensibles, thus landing himself in the aporia of M10

1090a2-N4 1091a29 in order to make N1-N4 1091a29 into a complete argument against the Academic claim that there are two contrary ἀρχαί of unmoved οὐσίαι, a one-itself and a principle of pluralization.

At least N2 1090a2-N3 1091a9 are primarily directed against Speusippus (unlike their apparent duplicate N5 1092a21-N6, against Speusippus and the Platonists equally). Platonists and Pythagoreans are mentioned for comparison with Speusippus and to strengthen the force of the challenge against Speusippus; and most of the critical discussion of the Platonists here seems to be directed not against Plato himself but against Xenocrates, who like Speusippus is immune to most of the arguments of N1 1088a15-N2 1090a2. The fundamental challenge against Speusippus is the question stated at the outset, "from where should we derive our confidence that the numbers exist" (N2 1090a2-4). Aristotle grants that the Platonists and the Pythagoreans have answers to this question, but Aristotle's point in making this concession is to argue that Speusippus, in overcoming the oversimple and objectionable confidences of the Platonists and the Pythagoreans (that the ἔκθεσις of a universal term is enough to show that it exists individually beside its instances, that sensible things have numerical attributes because the cosmos consists of numbers), has also eliminated the grounds for believing in numbers existing καθ᾽ αὑτά (1090a2-N3 1090b5).[150] Speusippus might retreat to the argument from bodies to their limits, as οὐσίαι of bodies and as prior to bodies, as in B#12, but if this argument worked at all--and Aristotle argues that it does not, that limits are not οὐσίαι--it would establish surfaces and lines and points existing <u>in</u> the sensible bodies and not separately from the bodies (1090b5-13).[151] In all this the point is that since Speusippus denies that numbers or magnitudes are either materially present in bodies or formal causes to bodies, he has no means to argue from bodies to their existence. But why is Aristotle making this point now? Most immediately, the question of N2 1090a2-4, why we should believe that the numbers exist (i.e. exist καθ᾽ αὑτά) is provoked by the immediately preceding argument of N2 1089b32-1090a2 that the opponents' principle of pluralization (apparently still the unequal) can at most explain the pluralization of <u>quantities</u>, such as units and numbers, and not of οὐσίαι as claimed, unless, of course, these quantities are οὐσίαι, which is said to be liable to objections (1089b36-1090a2). So, in a sense, there is a very natural transition to challenging the grounds for positing numbers as οὐσίαι, and this is a natural continuation of the whole previous argument of N: if the one and some contrary are στοιχεῖα of unmoved οὐσίαι, it seems that the only οὐσίαι they can combine to compose would be the numbers or perhaps magnitudes, and if we have no ground for positing these things as οὐσίαι, we have no grounds for positing their στοιχεῖα as ἀρχαί (if numbers or magnitudes exist derivatively from something else, their στοιχεῖα can also exist derivatively from something else). However, that sequence of thought would lead us to expect that the investigation of the grounds for positing numbers would be directed mainly against Plato, as the whole previous argument against an ἀρχή contrary to the one has been, whereas in fact the new investigation is directed primarily against Speusippus. There are two reasons for this. One reason is that (as Aristotle promptly admits) Plato in fact has a plausible answer to why we should posit numbers as οὐσίαι, whereas Speusippus is vulnerable here. But another reason is that Plato's account of the ἀρχαί of numbers has already been refuted enough already, whereas Speusippus was immune to most of these refutations, and we need to develop some other strategy of argument

[150]on ἔκθεσις see on M9β and B#15. Aristotle wants to show both that the Pythagoreans did hold this crude view, against Academic apologists for the Pythagoreans, and that their reasons for believing in numbers καθ᾽ αὑτά vanish when this crude view is improved away

[151]discussed in discussing M2-3 above? also note discussion of B#12

against him.

After the arguments we have discussed, at N3 1090b13, Aristotle passes to another argument against Speusippus: "someone who is not too easily satisfied [μὴ λίαν εὐχερής][152] might further investigate, about all number and the mathematicals, into [the fact that, on Speusippus' account] the prior ones do not contribute anything to the posterior ones: for if number did not exist, nonetheless the magnitudes would still exist, for those who say that there are only the mathematicals [sc. and not ideas], and if these did not exist, the soul and sensible bodies [would still exist]; but from the phenomena it is not likely that nature is episodic like a bad tragedy" (1090b13-20). This is again meant as an argument that for Speusippus we have no good reason to posit separately existing numbers; Aristotle has made an easy transition, from arguing that since for Speusippus numbers contribute nothing causally to sensible things we have no reason to posit them, to arguing that since for Speusippus numbers contribute nothing causally even to the subsequent mathematical things (namely geometrical magnitudes) we have no reason to posit numbers even if we concede the separate existence of geometrical magnitudes. This argument against Speusippus is occasioned by Speusippus' criticism of the Platonists, a criticism which Aristotle thinks is perfectly legitimate and which he himself has taken over from Speusippus: "even if one assumes that number comes to be, as some say, from the one itself and from something else that is not one, nonetheless it must be investigated why and how what results is sometimes a number and sometimes a magnitude, if the [στοιχεῖον which is] not one is the same nature, inequality: for it is not clear how magnitudes would come to be either out of the one and this or out of some number and this" (1001b19-25, cited above). But Aristotle now turns the point against Speusippus: if, with Speusippus, we resolve this difficulty in Plato by positing different ἀρχαί for numbers and magnitudes, then we preserve consistency but lose the motivation for positing numbers.[153]

The objection to Speusippus' "episodic universe," to his positing a radical plurality of ἀρχαί, in turn probably comes from Speusippus' Platonist opponents in the Academy: as we have seen, someone who is apparently Xenocrates, "wanting to posit both forms and numbers, but not seeing how, if we make the ἀρχαί the same, mathematical number will exist besides the form-number, made the same number both a form-number and a mathematical number" (M9 1086a5-8), which presupposes that he found it objectionable to solve the problem by positing independent ἀρχαί for different domains of reality. The anti-Speusippeans try to show instead how everything can be derived from the one and the dyad,[154] generating different types of magnitudes from different numbers (two, three, four) and the single material ἀρχή. Usually Aristotle will say that this involves arbitrary fabulation and does violence to real mathematics, and he makes this complaint here too (N3 1090b27-30). But usually he admits that the anti-Speusippeans at least avoid the complaints against Speusippus, of positing too many domains of reality and of positing without sufficient motivation things that make no causal contribution.

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[152]the word is intended ironically: Speusippus, the specialist in δυσχέρεια, has not been δυσχερής enough here--d add this occurrence to your discussion above of δυσχέρεια and the characteristic Speusippus-vocabulary. also construal: I suppose it could be "someone who is not too easily satisfied about number etc."

[153]cross-ref earlier discussion of M3, where Aristotle was in a different way turning this argument against Speusippus (to apply it to the different species of magnitudes). also: Speusippus may not accept Aristotle's claim that, if numbers did not exist, geometrical magnitudes would be unaffected: after all, if triangle is "plane figure bounded by three straight lines" or the like, then triangle could not exist without three, and three would be prior by Plato's test. Aristotle can however reply that this shows nothing about a separate number three, but only about a three immanent in three lines or three points

[154]cp. Theophrastus' comment, in his Metaphysics, about what was distinctive to Xenocrates

Here, in a virtuoso flourish, he argues that the anti-Speusippeans are liable to complaints much like those that they correctly bring against Speusippus. For what is the status of the things like the tetrahedron generated from the four and the material ἀρχή? They are evidently not ideas, since the ideas are numbers rather than magnitudes, but they are also not sensible things, and what else are they? "Will these be ideas, or what is their manner [of existence], and what do they contribute to the things that are? They contribute nothing, just as the mathematicals contribute nothing. But neither will any theorem hold of them, unless we are willing to overturn mathematics and make up our own doctrines; but it is not hard to take up any old hypotheses and stretch out a long story" (1090b24-30; have I cited this or parallels before?).

Aristotle concludes (1090b31-1091a9) that the original Platonic position, on which it is mysterious what ἀρχαί the mathematicals come from (or, if they come from the same ἀρχαί as the idea-numbers, why they are distinct from the idea-numbers and many-per-type instead of one-per-type), the Speusippean position on which there are different ἀρχαί for different types of mathematically described unmoved οὐσίαι, and the anti-Speusippean reaction which tries to derive them all from a single pair of ἀρχαί, all succeed in refuting each other, and thus in refuting the common project. The conclusion here is thus quite close to the conclusion of M6-9α (M9 1085b34-1086a18), although it is worked out more fully here in N3, and it is clear that Aristotle is working up the same basic material to fill a similar niche in the argument in both cases. Here it serves as a conclusion to N2 1090a2-N3 1091a9, concluding that neither Speusippus nor the anti-Speusippeans in the Academy have an acceptable alternative to the Platonic account of the unequal as a στοχεῖον of numbers contrary to the one, which had been Aristotle's main target of criticism in N1 1088a15-N2 1090a2. Thus N1 1088a15-N3 1091a9 together function as a refutation of any Academic version of a στοιχεῖον contrary to the one which could explain the plurality of mathematically described unmoved οὐσίαι, and, starting from the beginning, N1 1087a29-N3 1091a9 together function as a refutation of any Academic account of two contrary στοιχεῖα of mathematically described unmoved οὐσίαι.

This stage of the argument is now complete, and Aristotle could now go on to N4 1091a29-N5 1092a17, against Academic accounts of the place of the good among the ἀρχαί, and N5 1092a21-N6, arguing against a downward way from the one and its contrary ἀρχή to numbers and to sensible things. However, having said that the Academic accounts are arbitrary inventions doing violence to real mathematics, Aristotle cannot resist adding that "the στοιχεῖα themselves, the great and the small, seem to cry out that they are being forced: for they [sc. the στοιχεῖα] cannot in any way generate number, except the [number] which is doubled from the one [i.e. the successive powers of two]" (1091a9-12). This is an abridgment of a technical point that Aristotle has made more precisely elsewhere,[155] recalled here briefly to support the claim about arbitrary distortions of real mathematics. But it also reminds Aristotle of a more general point, that there is trouble not just in the technical details of generating odd numbers, but in any generation of numbers, since numbers are supposed to be eternal; and this leads Aristotle into N3 1091a12-N4 1091b29, which stand as a kind of optional appendix to N1 1087a29-N3 1091a9, before Aristotle begins the next main topic at N4 1091b29. The argument proceeds in a familiar way, by contrasting the crude and unacceptable but at least well-motivated attempt of the Pythagoreans to generate numbers as part of a cosmogonic story, against the sophisticated Academic attempts to separate arithmetic from physics, which leaves them generating eternal numbers (thus generating eternal things from some previous condition, like the unequal before the great and small are equalized), which is incoherent. "Since [the Pythagoreans] are world-making and want to speak

[155]refs., primary and to my own earlier discussion of generating numbers by doubling and adding one

physically, it would be fair to examine them [in talking] about nature [ἐξετάζειν τι περὶ φύσεως], but to dismiss them from the present μέθοδος: for we are seeking the ἀρχαί in things that are unmoved, so that it is also this kind of numbers [sc. unmoved ones] whose generation we must investigate" (N3 1091a18-22, mostly cited above, with discussion of a textual problem); but there can be no such generation, and Aristotle brushes away Academic apologetic attempts, either to allegorize the Pythagorean generation of numbers away from its cosmogonic setting, or to say that Plato's generation of numbers (as also his cosmogony in the Timaeus) was merely for the sake of illustration.[156]

[156]add in the appropriate places a note against Cook Wilson on "ἀσύμβλητοι ἀριθμοί", and a note against Annas' use of Frege against the self-predication of numbers, noting that in the modern set-theoretic treatment of the ordinals the number n is indeed a standard set of n elements; carried over from Iβ3. look at Cleary's Aristotle and Mathematics esp. c5 (maybe also cc3-4). this will be mainly on M2-3