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ARISTOTLE'S
METAPHYSICS BETA

EDITED BY

Michel Crubellier and André Laks



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edited by

MICHEL CRUBELLIER

and

ANDRÉ LAKS

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PREFACE

The 16th *Symposium Aristotelicum*, dedicated to Book *B* of Aristotle's *Metaphysics*, organized by Michel Crubellier and André Laks, was held in Lille from 20 to 24 August, 2002, in the premises of the Ecole Supérieure de Commerce de Lille. We would most especially like to thank the director, M. Jean Pierre Debourse, who graciously placed the premises of the Ecole at the disposal of the Symposium during this summer period, as well as the personnel of the Ecole who welcomed us. The organization of the colloquium would not have been possible without the financial support placed by the Institut Universitaire de France at the disposal of its member, André Laks, and without the logistical assistance of UMR Savoirs et Textes. Cécile Wartelle, doctoral recipient of University Lille 3, helped with the scientific organization of the Symposium, for which we deeply thank her. Our deepest thanks likewise go to Mme Valérie Delay, who organized for our colleagues, and served as guide for, a visit to the Musée de l'Hospice Comtesse.

Among the participants in the Symposium, whose list is reproduced on page viii, was Michael Frede, who died prematurely in 2007. At the conclusion of the *Symposium*, he had presented a rich and extremely suggestive synthesis, as was his habit, which was not meant for publication. The authors of the present introduction have drawn from it certain ideas, as indicated at the relevant points.

Michael Frede, through his recommendations and advice, had played an essential role in the organization of the *Symposia Aristotelica* for a number of years and, by his presence, contributed vigorously to maintaining the discussion at the highest level. There, as elsewhere, he will be missed.

A.L. and M.C.

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CONTENTS

16th Symposium Aristotelicum—Lille, 20–24 August 2002

List of participants viii

Introduction

MICHEL CRUBELLIER AND ANDRÉ LAKS I

1. *Aporia Zero (Metaphysics, B 1, 995^a24–995^b4)*
ANDRÉ LAKS 25

2. *Aporiai 1–2*
MICHEL CRUBELLIER 47

3. *Aporiai 3–5*
FRANS A. J. DE HAAS 73

4. *Aporiai 6–7*
ENRICO BERTI 105

5. *Aporia 8*
SARAH BROADIE 135

6. *Aporiai 9–10*
CHRISTIAN WILDBERG 151

7. *Aporia 11*
WALTER CAVINI 175

8. *Aporia 12 (and 12 bis)*
IAN MUELLER 189

9. *Aporiai 13–14*
STEPHEN MENN 211

Bibliography 267

Index locorum 273

Index of Modern Names 289

General Index 292

16TH SYMPOSIUM ARISTOTELICUM

LILLE, 20–24 AUGUST 2002

LIST OF PARTICIPANTS

Contributors

Enrico Berti, University of Padua
Sarah Broadie, St Andrews University
Walter Cavini, University of Bologna
Michel Crubellier, University Lille III
Frans de Haas, University of Nijmegen
Michael Frede(†), Keble College, Oxford
André Laks, University Paris Sorbonne
Stephen Menn, McGill University
Ian Mueller, University of Chicago
Christian Wildberg, Princeton University

Other participants

Keimpe Algra, Utrecht University
David Charles, Oriel College, Oxford
Ursula Coope, University College London
John Cooper, Princeton University
Andrea Falcon, University of Padua
Paolo Fait, University of Florence
Myriam Hecquet Devienne, University Lille III
Annick Jaulin, University Paris I
Sean Kelsey, University of California at Los Angeles
David Lefebvre, University Paris Sorbonne
Geoffrey E. R. Lloyd, Darwin College, Cambridge
Hendrik Lorenz, Corpus Christi College, Oxford
Jaap Mansfeld, Utrecht University
Carlo Natali, University of Venice
Pierre Pellegrin, CNRS, Villejuif
Cristina Rossitto, University of Padua
David Sedley, Christ's College, Cambridge
Annick Stevens, Free University of Brussels
Gisela Striker, Harvard University
James Warren, Corpus Christi College, Cambridge

Introduction★

MICHEL CRUBELLIER AND ANDRÉ LAKS

It is like looking into the cabin of a locomotive. We see handles all looking more or less alike. (Naturally, since they are all supposed to be handled.) But one is the handle of a crank which can be moved continuously (it regulates the opening of a valve); another is the handle of a switch, which has only two effective positions, it is either off or on. . . .¹

In the first chapter of Book *B* of the *Metaphysics*, Aristotle, after a brief introduction, enumerates fourteen or fifteen difficulties, or ‘*aporiai*’,² with which he states it is necessary to engage in order to obtain the knowledge Book *A* terms ‘wisdom’ or ‘philosophy’.³ These difficulties, a detailed treatment of which is given in the rest of the book (chapters 2–6) after chapter 1’s enumeration, are presented, with one exception, as so many well defined questions announced in the form of an alternative: ‘Is it . . . , or rather . . . ?’ We produce here below a list of these *aporiai*, deliberately simplifying the wording of Aristotle’s text, so that the reader might obtain a synoptic view of them:⁴

- 1 Does it belong to a single science, or to several, to consider all the kinds of cause?
- 2 Should wisdom comprehend only the principles of substances, or rather the universal principles of demonstration as well?
- 3 If wisdom pertains to substance, is there a unique science for all the types of substance?

★ Many thanks to John Palmer for his translation.

¹ Wittgenstein, *Philosophical Investigations* I, § 12.

² Fifteen, if one counts as a distinct difficulty *aporia* 12 bis (*B* 6, 1002^b12–32), even though it does not figure in chapter 1 and it presents various peculiarities, particularly that of not being a closed question of the form *poteron* . . . *ē* (see the analysis of I. Mueller, below p. 207–9, and below in this Introduction, p. 8).

³ *B* 1, 995^a24–5.

⁴ Here we leave aside the question of the similarities and differences between the treatment of *aporiai* in Book *B* and that in *K* 1–2 (see Madigan 1999, xxxviii–xl).

- 4 Does this science consider only substances, or rather also their essential properties and such predicates as 'same', 'other', etc.?
- 5 Do there exist only sensible substances, or are there rather others beside these? Of one type, or of many?
- 6 Are the elements and principles the kinds, or rather the primary immanent entities of which each thing is constituted?
- 7 If they are the kinds, are they the most universal kinds, or the species incapable of division?
- 8 Does there exist, or not, something besides matter that may be a cause in itself, is this something separate or not, and is it one or many; does there exist something distinct from the composite (of form and matter)? Does that exist for certain things and not for others, and, if yes, for what sort of things?
- 9 Are the principles limited numerically or specifically?
- 10 Are the principles of perishable entities and of imperishable entities the same or different? Are the principles themselves all imperishable?
- 11 Are being and unity the substance of things, and would each of them be unity, or being, without being something else, or rather must one attribute to them some underlying nature?
- 12 Are numbers, volumes, surfaces, and points substances or not? If yes, are they separate from sensibles, or do they exist within them?
- 12 bis Why would it be necessary to look for, besides sensibles and the 'intermediate entities' (mathematical objects), other objects such as the 'Forms'?
- 13 Do the elements exist potentially or in some other manner?
- 14 Do the principles exist in the manner of universals, or in the manner in which we say that individuals exist?

An exceptional case

The procedure consisting of launching a new inquiry by examining straight off points that present difficulty is very typical in Aristotle;⁵ but the *Metaphysics* list exhibits an exceptional character, even if only in virtue of its length (something which could suggest, though perhaps wrongly, a deliberate exhaustiveness⁶). It is true that the *De Anima* also enumerates, in its introductory chapter, eight or nine questions characterized as 'aporiai and misconceptions' (*aporiai kai*

⁵ For example the study of definition in *Posterior Analytics* II (cf. II 3, 90^a35–38); that of time in *Physics* IV (cf. IV 10, 217^b29–32); or even that of incontinence in *Nicomachean Ethics* VII (cf. VII 1, 1145^b2–7).

⁶ See Laks below, p. 35.

planai, 402^a21), which depend on certain fundamental uncertainties pertaining as much to the treatise's object as to the method to be followed to understand it.⁷ But the fundamental difference is that in Book *B* each *aporia* is systematically expounded via paired arguments *pro et contra*, while this development does not result in the problem's resolution; on the contrary, Aristotle maintains in each case a sort of equilibrium between the alternative or opposed theses. There is a deliberate intention to keep thought at a standstill and to compel it to remain in what would appear to be an impasse, something which has no equivalent in the *De anima*, nor in the remainder of the corpus. The corpus nonetheless contains numerous pieces of information capable of clarifying the usage Aristotle here makes of *aporia*.

Aporia as a dialectical instrument

The care with which the contrasting arguments are balanced and the constant repetition of the same procedure for each of the fifteen *aporiai* give the appearance of a practice governed by strict rules. In fact, even if Aristotle's usage varies, the lexical variation between the simple verb *aporein*, which signifies in the first place actually 'to be in difficulty' whether in the sense of financial difficulty or an incapacity to act, and the compound *diaporein* suggests a certain sort of systematization. *Diaporein* is 'to run through the difficulty from one end to the other' and to put it in a standard form, so as to gain from this a better understanding and thereby to put oneself in a position to resolve the difficulty.⁸ One might well think that such presentation of the question in a standard form, which would require perhaps certain methodological rules and criteria of success for its development and resolution (this would be the implication of the expression *diaporein kalos*)⁹, would constitute part of dialectic, in the Aristotelian sense of the term, that is to say, the technique of discussion.

This dialectical conception of *aporia* has a Platonic background. In the dialogues, *aporia* and *aporein* are very often associated with the experience of

⁷ *De Anima* I 1, 402^a22 ^b16. The list could even be lengthened if one included in it the question, formulated in 403^b3–5 and discussed immediately thereafter, of knowing whether the affections of the soul are all shared with the body or if there exist any that might be proper to the soul.

⁸ See further Laks, below p. 29 with n.10.

⁹ The expression, which occurs twice again in *B* (995^a28, 996^a17), has no true parallel in the rest of the corpus (at *Eudemian Ethics* 1215^a21, the wellness relates to the moment of leaving the *aporia*, not its formulation). It could even be simply aiming to distinguish a certain form of 'noble' difficulty (the difficulty of a thinker) from a less sophisticated difficulty. But there could be a continuity between the two meanings.

the person who finds himself submitted to Socratic examination and refutation, as for example in the *Meno* (80a), or again in this general description that Plato attributes to Protagoras in the *Theaetetus* (speaking, in actual fact, through the mouth of Socrates):

It is on themselves, not on you, that your interlocutors will place the blame for their trouble and their difficulties (*tēs autōn tarakhēs kai aporiai*); they will seek you out and will love you, even while they will hate and will run from themselves toward philosophy so as to become different in place of what they were before. (168a)

In this passage, moreover, one sees sketched an essential idea of *B 1*, namely that *aporia*, if well managed, can open the way to understanding and thereby be changed into its contrary, *euporia*.¹⁰ In Plato, the words '*aporia*' and '*euporia*' most often retain their concrete sense ('difficulty', 'resource'). But they assume a more technical and abstract force in the *Sophist*, when the Eleatic Stranger suggests that a good understanding of the *aporiai* on the subject of being is a necessary condition for correctly resolving the difficulty that he has himself raised regarding falsehood and non being.¹¹ Aristotle, moreover, refers explicitly to the Socratic and Platonic problematic of the *aporia* at the end of *Metaphysics A 2*, in a passage consisting of a sort of reflective variation on numerous themes of the *Theaetetus*.¹² Wonder is there particularly cited by Aristotle as a manifestation of the natural desire to understand that belongs to every human being (each of whom, as such, possesses a basic 'theoretical' attitude), while he presents it at the same time as a psychological experience corresponding to the objective intellectual situation that is *aporia*: 'one who experiences a difficulty and who feels wonder (*ho de aporon kai thaumazon*) thinks that he does not understand . . . , so that, if it is to escape ignorance that they have practised philosophy, then it is clearly for the sake of knowing, and not for any practical purpose, that they have pursued understanding.'¹³ Further on, Aristotle stresses that, if everything goes well, wonder should finally take on a new orientation:

That said, it must somehow be that the possession of this science realizes in us a disposition contrary to that which we had at the outset of our inquiries. For all people, as we have said, begin to inquire because of feeling wonder that something is so—as

¹⁰ The term figures in such a way in the *Philebus* (15c), perhaps with an allusion to the *Sophist* (see *infra*, n. 11). It becomes a sort of commonplace in the Aristotelian corpus.

¹¹ *Sophist* 243c; in this context, one perhaps sees appearing the use of *diaporein* to designate a methodical practice of *aporia*; cf. 217^a and especially 250e.

¹² M. Frede stressed this point in the comprehensive account that he presented to open the discussion during the last meeting of the Lille Symposium.

¹³ *Metaphysics A 2*, 928^b17–20.

with the tricks of the marvel workers, for those who have not yet understood the explanation; or they wonder at the changes in the sun's course or at the incommensurability of the diagonal (indeed, everyone finds it an astonishing thing that something may not be measured by a sufficiently small unit). But it must, as the proverb says, end up at its opposite and for the better, as is the case in these examples, once one has understood: nothing, in fact, would surprise a person trained in geometry so much as if the diagonal turned out commensurable.¹⁴

Aristotle, then, inherited from Plato the idea that *aporia* is inevitable and productive, and likewise the project of conducting it methodically to the point of a positive outcome. In the Platonic texts that employ the vocabulary of *aporia*, however, even in the more theoretical and technical texts like the *Sophist*, one does not see appearing the practice of a separate development of two opposed arguments. It is true that one finds elsewhere in the dialogues examples of a difficulty developed in the form of an alternative between two competing theses,¹⁵ though without mention of *aporia*; and these situations have to do, not with exercise or theoretical inquiry, but with genuine conflicts, in which the interlocutors are moved by deep ethical or political commitments. The Platonic passage most resembling the one we read in Book *B* of the *Metaphysics* is without doubt the first part of the *Parmenides*, which leads to the following dilemma (135a–c): if one does not posit the existence of forms of entities, then dialectic and philosophy are impossible; but the hypothesis of forms in itself engenders a number of unacceptable consequences (131a–134e)—in particular that the forms themselves will be unknowable to humans. But in the *Parmenides* the vocabulary of *aporia* does not appear except in an insignificant form.¹⁶

On the other hand, in the *Topics*, one finds a definition of *aporia*, which, even if Aristotle indicates it is faulty, is not unrelated to what we read in *Metaphysics B*: '*aporia* is the equality of contrary arguments' (*he aporia isotes enantion logismon*).¹⁷ It seems then that the regulated practice of *aporia* would have taken shape at some time between the late dialogues of Plato and some texts of the Aristotelian corpus which most probably belong to Aristotle's Academic period. One will

¹⁴ *Metaphysics A* 2, 983^a11–21.

¹⁵ See especially *Gorgias* 472d–473b and *Philebus* 11b–c.

¹⁶ At 130c, in the general sense of 'difficulty', regarding the question of knowing what there are forms of. On the other hand, the aporetic situation of 135a–c is described by means of a metaphor one finds again in *B* 1: 'one will no longer know where to turn one's thought' (135b–c, to be compared with 995^a34–36). Note again that the method that is supposed to allow escape from this difficulty does not resemble the diaporetic procedure of the sort Aristotle will practise; it is described as a *planē* (136d–e, 135e), a sort of purposeful wandering.

¹⁷ *Topics* VI 6, 145^b1–2. Aristotle's criticism concerns the nonconformity of this formulation to the rules governing definition: *aporia* is not an attribute of the reasonings themselves, the opposition of which is only the cause of one's experiencing it.

not be surprised at not finding much on the subject in the *Topics*, which is not supposed to describe the full range of dialectical situations and practices, and which concentrates principally on the search for premises. The treatise's general introduction nonetheless contains valuable evidence presenting *aporia* as a practice appropriated for philosophical inquiry: competence in the subject of *topoi* is useful 'with respect to the philosophical sciences, because, if we are capable of developing a difficulty in two opposed directions (*pros amphotera diaporetai*), we shall more easily discover what is true and false.'¹⁸ As for the rest, the definition we have cited is given in passing in the course of Book VI (on the subject of definition) only by way of example; the correction provides the occasion for an interesting explanation, which in fact corresponds to the diaporematic procedure of Book B: 'when, in pursuing the arguments on each side, it strikes us that all the considerations turn out the same (*homoios hapanta phainetai . . . ginesthai*) in each case, then we do not know what side to take (*aporoumen hopoteron praxomen*).'¹⁹ One finds an echo of this description from the *Topics* in the first book of the *De Caelo*: 'The demonstration of contrary theses constitutes an *aporia* regarding their subject; at the same time, what is going to be said may be more convincing to those who have first heard the justifications given for the competing claims'²⁰ (a passage the second part of which evokes likewise the last of the three comparisons employed in B 1 to justify the diaporematic procedure, namely, that of the tribunal which ought to hear both counsels' speeches before ruling).

The aporetic method so conceived is not unrelated to the critical exposition of the opinions of older thinkers with which Aristotle frequently opens the treatment of a given question. The second chapter of the *De Anima* expresses this parentage and lineage, even while maintaining a distinction between the two procedures:

¹⁸ *Topics* I 2, 101^a34–6. The other practical goals of the treatise are, recall, intellectual training, confrontation with the views of others, and the discovery of the proper principles of each science. This last goal is evidently of the highest degree of interest for philosophy, but it is common to all fields of scientific knowledge.

¹⁹ *Topics* VI 6, 145^b18–20. To be exhaustive, one would have to add to this list the definition of *aporēma* which figures in VIII 11: 'an *aporēma* is the dialectical deduction of a contradiction.' But this phrase is part of a passage (162^a15–18) that numerous modern editors take to be suspect, because Alexander does not comment on it. Moreover, it seems to presuppose a sense of the expression *sullogismos antiphasēōs* that does not correspond to what one reads elsewhere in Aristotle (on this point, see Brunschwig 2007, 293, n. 4). We may add, in so far as this pertains to our subject, that the description of the arguments of an *aporia* as 'deductions' is itself a cause for concern and that this definition would end up reducing the notion of *aporia* just to cases of refutational dilemmas, which is certainly too restrictive.

²⁰ *De Caelo* I 10, 279^b6–9.

In our inquiry concerning the soul it is necessary, even while working methodically through the difficulties which we have to overcome in proceeding (*diaporountas peri hōn euporein dei proelthontas*, a formula which evokes fairly closely the beginning of *B 1*), to collect the opinions of all those who have articulated some view concerning it, so that we may take account of what has been fairly stated, and, if something is not correct, to be careful in this regard.²¹

Doxography and *aporia* are two means of beginning a philosophical inquiry, ones which can be rivals, but which can also be employed together.²² In particular, *aporia* presupposes, to a certain extent at any rate, the existence and the consideration of opinions on the question, but it is not reducible to this. Even if, in practice, doxography and *aporia* probably do not exist in pure forms, each of the two always being mixed with the other,²³ there is a distinction in principle. It is one thing to know what others have thought, to try to understand what they have wished to say and even, to a certain point, to sort out what is true and what false in this (here, certainly, reference to *aporai* could already be useful), while it is another thing methodically to construct a philosophical problem in the belief that this represents a step in the apprehension of a matter that is difficult to comprehend. Doxography is oriented toward the past, while *aporia* anticipates the pursuit of inquiry. In another way, one might say that doxography is optimistic while *aporia* is pessimistic. Despite a sometimes frankly sarcastic tone, Aristotelian doxography always displays a certain confidence in, or generosity toward, his predecessors. It rests on the idea that every suggestion is worth listening to: even when they have understood only obscurely, even when they have done nothing but ‘stutter’, the ancients could not have missed the truth entirely. But when one submits the contents of their statements to the test of argumentation and to a standard that requires philosophical coherence, one finds oneself in certain impasses, where the choice between two given theoretical positions presents itself as being at once necessary—or rather inevitable—and yet impossible. Aristotle audaciously affirms, though, that the formal structure of the difficulty, once well understood, can teach us something about the nature of the object that has given birth to the difficulty.

²¹ *De Anima* I 2, 403^a20–4.

²² The *De Anima* passage stresses this complementary character; one can find the same idea in the last phrase of Book *A* (‘On these questions, we have shown earlier what our view on them was; as for difficulties that one could raise on these same subjects, let us take them up anew: for it might well be that from this we shall gain some profit in relation to difficulties that are going to follow’, 993^a24–27), if one does not reduce it to a simple linchpin designed to connect two distinct treatises (on this point, see further Laks, below p. 29). It is to be noted that in the *Metaphysics* the examination of *aporai* follows the doxographical exposition, whereas in the *De Anima* it precedes it—something which perhaps signals that they ought to be simultaneous, as the *De Anima* suggests.

²³ Thus Aristotle refers to the doxographical exposition of *A 3 10* as a ‘diaporetic’ inquiry (*B 1*, 995^b4–5; see further Crubellier, below p. 47).

The form of the *aporiai* of Book *B*

If, then, the existence of a well regulated practice of *aporia* is clearly attested outside *Metaphysics B*, we possess no general methodological account of it, so that the best document (in fact, practically the only one) on which we can rely in giving such an account is precisely Book *B* itself.

A typical form of *aporia* appears evident enough in it, one characterized by three principal features:

- (1) there are certain definite questions, which give rise to two mutually exclusive theses;
- (2) the development of the *aporia* comprises two arguments, or series of arguments, which tell successively against each of the two conflicting theses;
- (3) Aristotle gives no indication as to his own preference for one thesis or the other.

Upon closer consideration, however, the characteristics we have just indicated, or the first two at any rate, are susceptible to certain more or less important variations from one *aporia* to another, and sometimes even to real exceptions.

(1) The two competing theses are called ‘contraries’ (*enantioi logoi*) in the definition of the *Topics* and in the passage of the *De Caelo*, and ‘rivals’ (*amphis betountes*) in *Metaphysics B* 1.²⁴ But in the actual presentation of each *aporia*, they appear almost always as contradictories. The most frequent formulations are: ‘Is it the case that *p*, or not?’ and ‘Is it the case that *p*, or rather not *p*, but *q*?’ Given that Aristotle is, in general, careful to distinguish contradiction from contrariety,²⁵ this variation is striking. It may be due just to his not having available an adjective for designating contradictories as he does have for contraries, but this fact itself is no accident: Aristotle seems to conceive of a contradiction as a whole (the pair of propositions produced by the application of affirmation and negation to the same propositional content²⁶), while the two contraries can be conceived separately. In this sense, the variation between contradiction and contrariety is certainly relevant to understanding the *aporiai* and their ‘diaporematic’ treatment. When the *aporia* is presented as a contradiction, the tension is maximal. It is perforce necessary to choose *p* or not *p*,

²⁴ *Metaphysics B* 1, 995^b 3–4.

²⁵ ‘There is no intermediary between contradictories, while there is one between contraries; it is then clear that a contradiction and contraries are not the same thing’ (*Metaphysics I* 4, 1055^b 1–3; see the similar distinction at *Δ* 10, 1018^a 20–31; *Categories* 10, 11^b 38–12^a 25).

²⁶ See *De Interpretatione* 10.

and if one can advance convincing arguments against one and the other proposition, one is at an impasse: this corresponds to the metaphor of the knot which one finds in *B* 1, 995^a 29–33.²⁷ But if the propositions are simply contraries, one will be able (a) to consider them separately and to work on the meaning of one or the other, to reinterpret it, and eventually to render it compatible with the objections that have been advanced during the discussion; or again, (b) since there exists a sort of intermediate space between the two, one will be able to look for a position somewhere in this region. Outside Book *B*, Aristotle effectively makes recourse to both these strategies in resolving certain *aporiai*, for example: ‘When, having made the distinction in the manner indicated, it seems that neither of the two <theses> is possible, one has need of an arbiter, and it is clear that in one way it is so and in another way not.’²⁸ The mention of an ‘arbiter’—rather than a judge²⁹—indicates that we are, in conformity with the third metaphor of *B* 1 (995^b 2–4), within the framework of a search for compromise, once the two parties have been heard.

One thus understands that, despite the presentation of the *aporiai* in the form of contradictions, most of them involve a certain asymmetry. For it is rare (perhaps even impossible) to be dealing with two theses that are both strictly contradictory and well defined. When the *aporia* has the form: ‘Is it the case that *p*, or not?’, its negative pole is less well defined than the positive pole. On the one hand, it often happens that the negation of a determinate predicate may be an indeterminate predicate:³⁰ a characteristic example is the opposition ‘one/many’, which structures several of the *aporiai* of *B* (such as #1 and #5). On the other hand, whenever a proposition has a complex structure, the negation, which ranges *a priori* over the proposition *p* as a whole, can be realized in actuality by the negation of different elements of *p*, thus giving birth to different variants of not *p* not necessarily compatible with one another.³¹ Most of the *aporiai* will thus have a well defined pole and another that is indeterminate: this is very clearly the case for #1, possibly #2, and for #3, #5, and #8, but also for those that present themselves as the critical examination of a thesis effectively advanced by other philosophers. In this case, the determinate pole corresponds to the thesis and the indeterminate pole to its negation(s): so #5, #10, #11, and #12, to which one must add #12 bis (even though it is introduced at first as an open question—‘why is it necessary to posit, etc.’—it is in effect then discussed

²⁷ The antinomies of Kant’s transcendental dialectic function in this way.

²⁸ *Physics* III 6, 206^a 12–14.

²⁹ On the difference between the arbiter and the judge, see *Rhetoric* I 13, 1374^b 20–2.

³⁰ Cf. *De Interpretatione* 2, 16^a 30–33; 3, 16^b 11–15; and 10, 19^b 8–12.

³¹ For an example pertaining to the second *aporia*, cf. below Crubellier, p. 64.

in the form of an alternative: *pro* or *contra* the introduction of separate realities such as the Ideas).

When it happens, however, that the *aporia* puts into play two propositions at once well defined and mutually exclusive, the necessity of choosing one or the other does not present itself except in virtue of a group of explicit or implicit presuppositions, which amounts to saying that the propositions are no longer strictly contradictory. A basic example will suffice for understanding this point: it is true that a number must be either even or odd, but only if one is dealing with integers. Such a situation occurs in the seventh *aporia*: if one admits (a) that the principles one is looking for are of the 'genus' variety, (b) that the 'genera' so understood are included within one another in a well ordered series, and (c) that, in accordance with the original meaning of 'principle' (*arkhe* = 'beginning'), it would not be reasonable for the principles to be found at a position somewhere in the middle of a series, *then* the principles one is looking for are necessarily either the most general genera or the most particular species. In such a case, the strategy for resolving the *aporia* consists in finding a way to make the group of presuppositions fit, that is to say, in correcting or in setting aside some part of them. If one chooses to reject them altogether, the *aporia* comes closer to being a refutational dilemma; and in fact, the seventh *aporia* functions as a refutational dilemma.³²

Besides #7 (which presupposes that the principles are certain genera), to this category belong: #2 (which presupposes that the desired science is the understanding of substances³³), #9 (which presupposes two types of unity, numerical and 'according to form', and which implicitly admits that there are no other types or that, if there are others, they are not relevant to the principles³⁴), and finally #13 (which takes for granted the Aristotelian distinction between 'potential' and 'actual').

The two remaining *aporai*, finally, present alternatives that do not permit reduction to a pair of the form '*p* or not *p*': #4 (which opposes 'substances' and 'the essential properties of substances') and #6 ('constitutive elements' vs. 'genera', as if there were no other possible ways of conceiving principles, for example as causes).

(2) With respect to the form of the argumentation, there is much greater homogeneity: one almost always has two series of negative arguments, ranged

³² Cf. below Berti, p. 132f. (likewise, Kant's antinomies are refutational dilemmas, the presupposition to be rejected in this case being the general postulate according to which we are able to understand what reality is in itself).

³³ In a sense this presupposition is common to the first five *aporai*.

³⁴ Even though, to be accurate Aristotle, in Book *A* (chs. 4 and 5), defends the idea that certain principles are *by analogy* the same for all things.

separately against each of the opposed theses. Why privilege in this way a negative development, rather than give arguments in favour of each of the competing theses? This is doubtless due to the fact that the examination of *aporiai* was conceived as preparatory work, as is evident from a passage in the *Topics*: 'In order to uphold a thesis, and a definition as well, it is first necessary to attack it oneself *in petto*; for it is clear that the arguments via which questioners would try to subvert the proposed thesis are those it is going to be necessary to confront.'³⁵

Be that as it may, this tactic ends up privileging the model of the *aporia* as a knot. This is the case for #1, #2, #3, #4, #7, #9, #10, #13 and #14, and also for #8, though the structure of the discussion is more complex—something perhaps attributable to the fact that the principal question ('is there a cause in itself distinct from matter, or not?') is afterward developed via a tree like structure of subordinate questions.³⁶ Besides this dominant model, there are certain cases (not surprisingly, found mainly among the 'doxographic' *aporiai*) in which the two series of arguments manifestly refer to a unique thesis: this the case for #12 and #12 bis (for which we have arguments in favour of the thesis, then objections against it), and also for #5 and #11 (where we have arguments first against the thesis, then against rejection of this thesis).

The only truly atypical case is #6, for which Aristotle gives first arguments *in favour* of the solution of constitutive parts, then arguments *in favour* of genera; but all the same he concludes the apparently positive argumentation by stressing that the principles *cannot* be both at once (998^b 11–14).

(3) The third rule (not to take a position) is, as such, strictly respected. This is certainly the case formally. If it happens that we have the sense that one of the two theses is presented in a more favourable or a less favourable light, this is doubtless because we approach the text with a certain familiarity with Aristotle's positive doctrine, or because we recognize in this or that argument of *B* an analysis or a criticism developed in another passage of the *Metaphysics*, or elsewhere in the corpus.³⁷

The fact that while Aristotle has obviously sought to give all the *aporiai* an identical form, he could not avoid certain important variations from one *aporia*

³⁵ *Topics* VIII 9, 160^b 14–16. See also this advice given later in Book VIII: 'regarding each thesis, whether it be affirmative or negative, one must consider the means of attacking it, and, as soon as one has found it, to inquire how to resolve [this objection]' (VIII 14, 163^a 36–^b 1).

³⁶ *B* I, 995^b 32–6.

³⁷ So, for example, Robin 1908, 616 n. 152, thinks that 999^a 6–13 expresses, in spite of the diaporematic character of Book *B*, Aristotle's true thought (see equally Berti, below p. 120f.); cf. Madigan 1999, xxxviii: 'For what it may be worth, my sense is that in *aporiai* 1–4, 5, 11, 12, 13 and 14 Aristotle is at least sure about which side of the *aporiae* is right, even if he may not see how all the arguments are to be handled, while in *aporiae* 6–8, 9, 10 and 15 it is not clear that he has reached a definite conclusion.'

to the other, may tend to suggest that relatively heterogeneous material—owing to the philosophical content, and perhaps also the prior history, of each problem—has been given shape in a merely external manner.

His intention to impose uniformity is, however, neither gratuitous nor arbitrary. The constitutive purpose of the aporetic method is, one might say, to set before the eyes of philosophical consciousness the difficulties that lead it to impasse. Toward this end, Aristotle's idea is to look for a typical model of impasse, just as the 'syllogism' provides a model for all types of inference. But here one must be on guard against a hope which is most probably illusory. For one might be tempted to think that the correct formulation of a problem will allow one to resolve it, or at least will put one on the way toward a solution by the regular application of a general method, as is the case in mathematical analysis. But apparently Aristotle did not believe that such a method could exist: each of the *aporiai*—or, rather, of those the resolution of which we are able to find outside of Book *B*—is resolved in a manner particular to it (obviously, it is not possible to show this here, as this would involve commentary on a good portion of the *Metaphysics*).

The *aporiai*, then, admit in fact different types of solution, and each leaves a certain latitude for its own resolution. This is so, paradoxically, because *aporia* is supposed to be a situation in which one has exhausted the resources of classical argumentation. This can apparently occur in two opposite ways, indicated in chapter *B* 1 by the two metaphors of the man in chains and the lost traveller. A problem, in the precise sense given the term by mathematicians, defines itself by a task that must be carried out: namely, the construction or discovery of a mathematical object that ought to satisfy certain conditions, which constitute the terms of the problem. If these conditions are too numerous and incompatible with one another, no solution exists that can fulfil them all; if, on the contrary, they are too few, the problem is underdetermined, and one finds oneself in the situation of a traveller who does not himself know in which direction to turn. In both these cases, one remains unable to move.³⁸

One can emerge from neither of the two situations except by making a decision: it is not immaterial that in Book VI of the *Topics*, to designate the way out of an *aporia*, Aristotle employs the verb *prattein*, which is connected with the sphere of action and intentional choice.³⁹ This idea is confirmed by a formula he employs to sum up the first five *aporiai*: 'On these questions, it is very difficult to

³⁸ It may seem that, in spite of what is said in *B* 1, Book *B* privileges the model of the bound man, since all the *aporiai* have the external form of an overdetermined knot. This is true, but the question may still be posed if you choose to escape the difficulty by rejecting as a whole all the presuppositions, and then you would be led back to the (underdetermined) situation of the lost traveller.

³⁹ VI 6, 145^b 18–20; text cited above on p. 6.

know how one must conjecture to hit upon the truth' (*pos dei themenon tuchein tes aletheias*).⁴⁰ The verb *theinai* ('to conjecture,' literally 'to posit') indicates a theoretical decision that, as such, is free, though not entirely arbitrary. In effect, the thesis, once posited, objectively involves a certain number of consequences, which one is no longer free to accept or to refuse. The examination of these consequences (and, as a result, the evaluation of the thesis) implies two conditions:

- one must submit oneself in advance to the requirement of agreement with reality;
- the conjecture must be advanced in a public space, where there exist shared presuppositions and norms regarding what can be accepted as true or as correctly inferred. Of course, none of these presuppositions or norms is intangible, neither are the definitions of 'reality' current among the public to which Book *B* addresses itself. Aristotle, though, has no intention of wiping the slate clean. One is in the typical situation of resorting to dialectic to establish the principles of a science:⁴¹ one cannot do so except by relying upon *endoxa*; these need to be submitted to critical examination, but the examination of each of them in turn must itself rest upon other *endoxa*, which furnish a provisional theoretical framework for the investigation.

Book *B* and the project of a primary knowledge

The principal presupposition, which is found in the background of all the other books and which endows Book *B* with its philosophical unity as well as its importance for an understanding of the *Metaphysics* as a whole, is of a programmatic nature. This is the project of a knowledge called 'wisdom,' a project which has been presented summarily and in a popular style in the first two chapters of Book *A*. This knowledge distinguishes itself from others both by virtue of its consummate character, because it proceeds to the extreme point of what there is to explain in ascending to the absolutely primary principles, and also by virtue of a certain epistemological quality, well captured in the manner whereby Hesiod is summarily excluded from the discussion of the tenth *aporia*: 'But it is not worth the trouble seriously examining what those who speculate by means of myth think; it is necessary to take into consideration those who express their views by means of argument,' etc.⁴² Wisdom actually explains (in that it makes the causes comprehensible) and shows why the facts that it

⁴⁰ *B* 3, 998^a20–21.

⁴¹ *Topics* I 2, 101^a36^b2.

⁴² *B* 4, 1000^a18–20.

explains could not have been otherwise than they are. It is capable of this because it gives universal explanations,⁴³ but this does not immediately imply that it ought to be a unique science that encompasses reality in its totality, as Plato probably thought; in fact, numerous *aporiai* envisage the possibility that there exist apart from this other sciences, possibly rivals of wisdom.

This project, in a certain sense, belongs to the entire human race, even if the Greek thinkers of the generations immediately preceding Aristotle were the first to give it precise form; but it is more accurately a Platonic project, since Plato is the one who made an explicit philosophical programme of it and placed it at the heart of his work. To this extent, as Michael Frede has pointed out,⁴⁴ the public to whom Book *B* is addressed, the small number of listeners or readers for whom these questions could have had meaning and importance, could be characterized as 'Platonic', in a fairly broad sense. This does not necessarily involve individuals who adhered to a well defined Platonic creed (supposing that such a thing existed); Aristotle simply addresses himself to people who had come by the teaching of the Academy or who had encountered the works of Plato.⁴⁵

The picture that emerges is of a group of questions, concepts, and results, which were the common property of a group of individuals, without however comprising a complete and coherent doctrine, and without one even being able to specify a set of theses, however limited, that would have garnered unanimous endorsement. One would instead have to say that each of them adhered to a collective project, or, more exactly, to a certain interpretation of this collective project, while most of them dealt with difficulties encountered by those involved in the development of this project—awareness of these difficulties having arisen even during Plato's lifetime (as evidenced by the *Parmenides* or the *Sophist*). Book *B* reflects, then, in its own way a crisis situation, or at the very least a situation of open discussion. In his final presentation, M. Frede insisted on the incertitude likely to have reigned over these debates. One

⁴³ See *A* 1, 981^a7–12.

⁴⁴ See *supra* n. 11.

⁴⁵ It has been noted (Jaeger 1934, 175 f.; Ross [1924] 1970, Introduction, p. xv and *ad A* 9, p. 191) that in Book *B* Aristotle on two occasions employs the first person plural in presenting the thesis of the existence of Forms, a fact that recalls *A* 9 and that has led to the proposal of an early date for *B*. One must, however, observe that in these two passages, this first person is followed almost immediately by a sentence in the third person that also refers to the theory of Forms. Thus in the discussion of the fifth *aporia*: 'How we say that the Forms are in themselves causes and substances has been said previously . . . ' is followed by, 'in effect, for them, the Forms are nothing other than eternal sensibles' (*B* 2, 997^b3–4 and 997^b11–12). Likewise, at the beginning of chapter 6: 'Why need one look for, besides the sensibles and the intermediates, other things such as those that we posit under the name of Forms?' and, further on, 'but if there did not exist . . . other entities such as some speak of the Forms as being', etc., followed by other third person references (*B* 6, 1002^b13–14 and 1002^b23).

generally admits, he remarked, that *B* raises questions regarding ‘metaphysics’, or regarding ‘first philosophy’, as if one knew what that is. But it would be more accurate to describe them as questions that bear on the very nature of *sophia*, that is to say, on the meaning of what Socrates or Plato himself had wished to achieve.

The *aporiai* thus mark out the territory of the desired ‘wisdom’, but without truly delimiting it—which is understandable, since a good number of the *aporiai* pose the very question of this delimitation. At the same time, they rely upon a certain number of points arising from more specialized philosophical theories, to wit:

(1) A rather precisely elaborated conception of what a science could and ought to be: a science treats a properly delimited domain of objects, which Aristotle calls its ‘kind’ or ‘genus’; the aim of the science is to demonstrate the essential properties of these objects, that is to say, to give explanations of them that make their necessity apparent in virtue of a demonstration conceived on the model of deductive inference. This conception of science resembles very closely what we can read at the beginning of the *Posterior Analytics*, but it has Platonic origins (in particular the epistemological developments of Books VI and VII of the *Republic*), and it ultimately rests on the development of particular sciences such as pure mathematics, astronomy, acoustics, as well as medicine and inquiries in the domain of natural philosophy.

(2) Elements of physics: the search for an explanation and the existence of rival explanations leads to a debate over what constitutes a good explanation, a debate which is already found present in Plato (see the intellectual autobiography of Socrates in the *Phaedo*, Book X of the *Laws*, or the *Timaeus*) and which Aristotle presents in Book *A* of the *Metaphysics* with the aid of his so called ‘theory of the four causes’. In the same way, a possible interpretation of the notion of ‘principles’ (initial elements of the desired science and foundations of all understanding) consists in their being represented as first causes.⁴⁶ Admittedly, that does not go beyond very general notions of physics; but there are also allusions to more specialized questions, for example, to the question of knowing how to account for the corruption of corruptible objects (#10); in the same way, the discussion of #8 puts to work a fairly developed analysis of the notion of change.

(3) Elements of dialectic, that is, of a formal and semantical analysis of theoretical discourse. For example, a doctrine of definition as constituted by ‘kinds’ and

⁴⁶ In the context of Book *B*, it features only as one possible interpretation competing with others, for example ones representing the principles as ‘elements’, whether it be as constitutive parts of the object itself or those of its definition (the ‘kinds’; cf. #6 and #7).

a succession of differentiae (#6 and #7), which is situated also somewhere between Plato (definitions via successive divisions) and Aristotle; or, again, the bringing into prominence of a group of predicates that have the particular feature of being able to be applied to practically any object whatsoever, such as 'one' and 'being', as well as 'same', 'like', and their contraries, 'anterior/posterior', etc. (cf. #5 and #12); or, again, the distinction between the substrate and its accidents (#5 and, in another way, #12).

(4) One could add to these dialectical considerations the conception of *ousia* that plays a large role in *aporiai* #2 and #5 and that seems already to anticipate Aristotle's positive ontology, although the content of this conception is not easy to determine precisely. In these *aporiai*, it seems accepted that the desired science involves, at its centre or as one of its essential components, the understanding of *ousiai*. But how must this term be understood? Is it only a matter of the intuitive notion of what is 'really real', or, more precisely, of the type of predicate that is set apart under this name in chapter 5 of the *Categories* (the substance/substrate, the support of other predications)? Certain *aporiai* (#3, #5, #12, perhaps also #10 and #11) take into account the hypothesis of the existence of several distinct sorts of substance; they make allusion to the distinction between sensible and intelligible entities, and even to the Academic doxography, which we know from elsewhere, regarding the different types of intelligible substances.⁴⁷

For the sake of completeness, it is necessary to indicate finally that one finds, among the presuppositions of the last *aporiai*, two typically Aristotelian distinctions that belong in fact to the most developed form of Aristotle's ontology: that between numerical and specific unity (#9; the same distinction is recalled in the antithesis of #12 bis⁴⁸) and, above all, the distinction between being in potentiality and being in actuality (#13). This does not mean that the problems into which these distinctions intrude can only be posed within an Aristotelian framework. It would probably be closer to the truth to suppose, on the contrary, that Aristotle intended to give shape, by means of these distinctions, to difficulties that he perceived in the theses of his predecessors and that his own concepts would permit to resolve in a particularly effective fashion.⁴⁹

Thus the project of *wisdom* mobilizes philosophical material that had been progressively developed, beginning with Plato, right down to Aristotle himself. This is why, despite the difference of form (doxographical in the one case,

⁴⁷ *Metaphysics* Z 2, 1028^b18–27; A 1, 1069^a33–36; M 1, 1076^a16–22.

⁴⁸ B 6, 1002^b30–2.

⁴⁹ A particularly clear example of this strategy is the way in which, in M 10, Aristotle deploys the distinction between potentiality and actuality, and that between numerical and specific unity, to solve the difficulty contained in the ninth *aporia*, a difficulty which is met with 'by those who assert that there are Ideas as well as by those not admitting them' (M 10, 1086^b14–16).

diaporetic in the other), Book *B* is in a sense the proper continuation of Book *A*. It takes up the story where the other left it off, since the sequence covered by *A* proceeded from Thales to Plato. In Book *A*, doubtless because he thinks that the views he reports are essentially obsolete, Aristotle contents himself with a doxographical exposition; by contrast, the themes treated in Book *B* are for him problems yet to be resolved that arise from the diaporetic method.⁵⁰ One thus better appreciates that the *aporiai* need not always necessarily correspond to historically attested doctrinal oppositions. Certain ones, we have seen, have a determinate doxographical basis; but in other cases nothing prevents one from supposing that the alternative between two opposed theses had been conceived—by Aristotle or by one of his contemporaries—as one of hypotheses purely for inquiry, with the aim of clarifying the discussion and fostering progress.

To a change in the mode of exposition is added an expansion of perspectives. While Book *A* mainly treated physical doctrines (or, in the case of Plato and the Academy, the attempt to give an account of physical phenomena by means of separate ideal entities⁵¹), the discussion of Book *B* adopts a new perspective on these questions by examining them (a) beginning with second order considerations regarding the end, and the conditions upon the possibility, of a genuine science, and (b) by means of concepts and theses developed in the field of dialectic. Thus one can see already functioning here the theoretical device that will be at work in Books *Z* and *H*.⁵²

Order of the *aporiai*, structure of the *Metaphysics*

To conclude, it remains for us to address the two questions of the internal order of Book *B* and of its relation to the other books of the *Metaphysics*. In effect, since the *aporiai* concern wisdom, if they range significantly over the relevant field of inquiry, and if they are sufficiently pertinent, then one can expect them to be taken up and resolved in the remainder of the treatise and the combination of these solutions to represent a large portion, or even the totality, of Aristotelian metaphysics. Book *B* would in this case furnish a privileged

⁵⁰ It is true that *A* 9 expounds and discusses in detail the ideas of the Academy after Plato. But it does so from a limited perspective only: it is concerned with examining how the successors struggled in attempting to maintain the existence of separate ideal realities despite the difficulties engendered by this thesis. One remains, then, within the doxography. In symmetrical fashion, it is to be noticed that the first *aporia* of *B* takes up the theme that was the main guiding thread of Book *A*, the question of the competition among the four principal forms of causal explanation—but this time in the form of an *aporia*.

⁵¹ See especially *A* 9, 992^a24^b 1.

⁵² See Burnyeat 2001, esp. 4–8.

point of entry into questions of literary and doctrinal unity that have been raised regarding the *Metaphysics*.⁵³

But the reader is immediately struck by the rhapsodic character of the exposition: why just these *aporiai*, all and only these, and in this order? About this Aristotle says nothing. No more than in the list of the categories, neither orderliness of construction, exhaustiveness, nor *a priori* deduction seems to be his main preoccupation. The introduction of *B* 1 gives a very general and imprecise indication of its contents (the *aporiai* take up ‘the theses that certain thinkers have adopted on the subject of these questions, and some points besides that have escaped their notice’).⁵⁴ In the initial list of *B* 1 as well as in the rest of the book, the transitional phrases between one *aporia* and the next are generally dry and paratactic: ‘and’, ‘again’, ‘besides’. Sometimes Aristotle insists on the importance or the difficulty of an *aporia*, with a phrase that can seem stereotypical;⁵⁵ there are also phrases that sound like the recapitulation of a sequence, in particular after #5 and after #13, and that represent the only—and, actually, not very explicit—indications regarding a possible structure for the book as a whole.

Are there in other respects connections between particular *aporiai*? It would be surprising if it never happened that the response to one *aporia* involves the response to another, and in fact it is easy to see that this is often the case: for example, question #5 (‘are there only sensible substances?’) is connected with questions #14 (on the ontological status of mathematical objects) and #11 (on being and unity); it echoes in turn question #3 (‘is there a single science for all the types of substances?’). But it is even more striking that these connections, discoverable upon reflection, are not more apparent in the text. The only clear indication of that kind is the transition introducing *aporia* #7, because it makes explicit reference to the issue in #6: ‘Are the elements and principles the kinds, or rather the primary immanent entities of which each thing is composed? *And if they are the kinds*, are they the most universal kinds, or the indivisible species?’⁵⁶ *Aporia* #12 bis is presented as a generalization of #12 (and perhaps

⁵³ Ross, *Introduction*, xvi, dismisses two extreme possibilities, that which considers *B* ‘a programme which Aristotle carried through fully in later lectures’, and that which considers it as ‘a mere sketch which he never followed up’, in favour of an intermediary position, according to which ‘he discussed some of the problems of *B* explicitly in the form in which they are raised in this book, while others he considered in a fresh shape and perhaps in new groupings, and others he laid aside or never felt himself able to solve’ (cf. also Madigan 1999, xxxvi–xxxviii).

⁵⁴ *B* 1, 995^a25–6. The reference of the pronoun *toutōn*, which we have rendered as ‘these questions’, remains imprecise: these are ‘the points on which one must begin to engage the difficulties’ (*peri hōn aporēsai dei prōton*, 995^a24–5).

⁵⁵ Such a mark is appended to the eighth *aporia*, in the initial list (995^b31–2), and at the beginning of *B* 4 (999^a24–25), which suggests nonetheless a particular importance; likewise with the eleventh (1001^a4–5).

⁵⁶ *B* 1, 995^b27–30; *B* 3 develops the formula, giving it a more clearly refutational colouring (‘even supposing that the kinds are principles’, 998^b14).

also of #11), which is certainly correct.⁵⁷ Finally, #8 and #12 are described as ‘the *aporia* which follows upon these (*ekhomene touton*)’, without it being easy to determine if this indicates a particular connection or only their succession in the series.

In fact, this situation should not be surprising. If one considers the rules governing the use of *aporiai*—in particular that the development of an *aporia* ought to make apparent the opposed reasons that maintain its balance, it follows that each is posed independently of the others, so that it is rather the connection between #6 and #7 that gives the impression of being exceptional (doubtless due to the fact that these two *aporiai* reveal—or somewhat poorly conceal—a tactic of refutation by means of dilemmas). In other words, the *aporiai* cannot be really traversed in a well ordered course. In order to appreciate this specificity of Book *B*, it may be useful to compare it with another text that also presents *aporiai* preliminary to the study of first philosophy, the brief work of Theophrastus entitled *Metaphysics*. In Theophrastus, the questions are not systematically developed in the form *pro et contra*; and their order suggests a certain natural progression in the questioning. There is a branching structure, which implies that some answers are at least envisaged and provisionally assumed. In certain cases, an answer can in turn give rise to new questions or be employed in the discussion of subsequent questions.⁵⁸ That contrasts strikingly with the impression of stop–start, increased by the return of similar or related questions, that emerges from the reading of Book *B*.

All this contributes to making difficult, and in any case uncertain, any attempt to produce a systematic classification of the *aporiai*. The one we propose here combines criteria of content (the object which the questions concern and the presuppositions to which the arguments comprising their development refer); of logical, or, more precisely, dialectical form; and of literary form (for example, the presence, or lack of, doxographical and historical development). The result is a description of Book *B* as formed from three strata, which appear ‘successive’ in a manner certainly not genetic. These three strata are in fact doctrinally ‘homogeneous’, in that they combine all three of the elements

⁵⁷ See below Mueller, p. 207.

⁵⁸ For example, the response affirmative to the first question (‘must one suppose a connection between the intelligibles and natural entities?’), 4^a9 16, determines in practice the response to the following questions, which concern the identification of the first principles: ‘are they mathematical objects (since they ought to be eminently intelligible), or of another, even higher nature?’ (4^a16 16). They are probably not mathematical entities, since mathematical objects’ connection with nature is dubious. These two initial responses themselves give rise to numerous other questions: ‘how many such principles are there?’ (4^b6 18); ‘how do they communicate movement to natural entities?’ (4^b18 6^a14); ‘to what extent can one derive natural entities from these principles’ (6^a14 16 22); etc. (on the logic of the work’s development, see Laks and Most 1993, xxi ff., with the summary at xxvii ff.).

stemming from Plato and the ancient Academy, as well as others which belong to Aristotelianism in its classic form. But each possesses a certain number of salient features, which involve definite problematic or more formal characteristics that allow one to identify them, even if certain contours remain fluid and their degree of coherence variable.

(1) An initial group of four *aporiai* (#1–#4) has in common reference to the epistemological doctrine of the *Posterior Analytics* and the problematic of the extension of the domain of the ‘desired science’. This is immediately clear for *aporiai* #2–#4, all three of which are presented in accordance with the formula: ‘does the desired science *concern only* or *equally as well* ?’ One can reduce #1 to a problematic of this type, if one admits that the question of the different types of causality can be reduced to a question of extension (cf. the way in which, in case of plurality, one demands *which* of the sciences thus distinguished is *sophia*—this applies to #1 as to the other three). We are inclined to include #5 in this group, even though it does not refer to the *Posterior Analytics*, particularly because there is an uncertainty about its position⁵⁹ (in *B* 1, #5 precedes #4); but also because #3 (‘is there a single science for all the types of substance?’) seems to presuppose #5 (‘is it necessary to distinguish different types of substances?’). Finally, the transitional phrase at the beginning of #6 comprises a recapitulation (*B* 3, 998^a20–21), which suggests that the *aporiai* that are going to follow are considered distinct from the first five. This break between *aporiai* #1–#5 and all the others has often been noted and interpreted in terms of their content: these *aporiai* concern the desired science itself (its nature, its extent, its structure), while the others concern more or less explicitly what can or ought to be the principles of such a science.

The group thus obtained would have besides the following particularity: either the *aporiai* that constitute it have been discussed in Book *A* (#1 and #5), or else they are discussed in detail, sometimes explicitly, in *Γ* (the least certain case would be #3). One finds nothing of this sort in the two other strata. The existence of this group would then accord well enough with a hypothesis of continuity between *A*, *B*, and *Γ*, such as Michael Frede suggests, that is to say that one could imagine that the five *aporiai* were conceived at the same time as the general plan for Books *A*–*Γ* (without *α*); but this does not require admitting that there would have existed at one time an independent treatise, a sort of *Ur Metaphysik* composed of *A*, *B* 1–2, and *Γ*.

⁵⁹ Such uncertainties regarding the place of an element in an enumeration can in effect play the role of a formal criterion allowing for delimitation of sequences within this enumeration. The idea is that if two *aporiai* A and B appear in the order (A, B) in the initial list, and in the order (B, A) in the development, they are in some way simultaneous and most probably belong to the same level of the text (it is clear that this formal criterion presupposes the hypothesis of levels, and thus could not play more than an auxiliary role; within its own limits, it would nonetheless appear plausible).

(2) The second group is more difficult to characterize. As we have seen, #6 and #7 are directly connected, since #7 presupposes a response to #6 in terms of 'kinds'. These two *aporiai* deploy a distinction between two ways of giving an account of an object (its description by means of its constitutive parts, and its definition), a distinction that seems to have an Academic background. One finds it also in Books *Z–H*, though without explicit reference to the alternatives constituting these *aporiai*. Moreover, the commentators (as Enrico Berti here) consider there to be no properly Aristotelian response to these two *aporiai*.

Aporia #8, the importance of which is underscored in both *B* 1 and *B* 4, is described in *B* 4 as 'coming after these', without our knowing exactly what this is supposed to mean. It seems to present an evidently Aristotelian variant (in contrast to #5 and #11–#12 bis) of the Platonic option of favouring an explanation by means of terms that are non material and non empirical (the form and the end). It introduces—even if merely as a term of comparison by which it differentiates itself—the Aristotelian notion of matter;⁶⁰ nevertheless, it can be considered as an alternative to the Platonic thesis of kinds, relying on a properly physical analysis of change (whereas #7 deploys only a dialectical doctrine of definition).

Aporia #9 also appears to presuppose a typically Aristotelian doctrine, that of the two types of unity, numerical and specific. Furthermore, when it is first presented in *B* 1 (996^a1–2), Aristotle mentions two options concerning the principles—'those which are contained in statements' and 'those which are in the underlying realities'—that correspond fairly closely to the alternative presented by #6. As it is otherwise distinguished from *aporiai* #10–#12 bis by the absence of doxography, it appears reasonable to attach #9 to the group comprising #6–#7 and #8.

The second group would then also comprise *aporiai* that are not explicitly discussed in *A* or *Γ*. It contains, on the one hand, the recollection of a debate internal to the Academy (#6–#7) and, on the other hand, certain Aristotelian paths toward resolving these difficulties (#8–#9). These have a more technical and complex character than *aporiai* #1–#5.

(3) *Aporiai* #11, #12, and #12 bis have in common a broad reliance on doxographical development. Furthermore, #12 bis is explicitly presented as a reflection on the background or the grounds that could have led to the theses evoked in #11 and #12. These *aporiai* examine what one could call 'transcendental' solutions, certain theoretical moves that would seem to have a contingent

⁶⁰ See *B* 1, 995^b32–33: 'Does there exist, or not, a certain cause in itself *distinct from matter*?'; and likewise, in the argument in favour of this thesis (999^b12–16). Aristotle employs an *a fortiori* argument drawn from the existence of matter.

or peremptory character, moves one would not be obliged to make (Aristotle stresses this at the beginning of #12 bis: ‘why must one even inquire into’ principles of this sort?)—but when made, if one accepts them, seem to settle once and for all the questions relating to principles.

Even though it does not concern exactly this theme, we are inclined to attach #10 (on the principles of incorruptible and corruptible entities) to this group, first because its discussion also proceeds from a doxographic report, and next because this problematic could also be Academic.

One might be tempted to set apart #13 and #14, because they presuppose (like #9, admittedly) certain typically Aristotelian theoretical distinctions, and because they are handled quite rapidly, without stopping for a doxography. But two indications suggest attaching them nevertheless to the group of #10–#12 bis: on the one hand, the order of the sequence #12–#13–#14 changes between *B* 1 and *B* 5–6; on the other hand, in the discussion of #12 bis (1002^b 30–31), the distinction between the two types of unity, numeric and specific, is suggested as a means of escaping (one part of) the *aporia*’s awkward implications. It could be, then, that these two brief *aporiai* indicate certain Aristotelian paths for escaping the snares represented by the preceding *aporiai* that the tradition (represented by the doxographical evidence) did not know how to get out of.

Of the three strata thus distinguished, the first seems to respond nearly enough to the need for a preliminary exposition on the nature of the ‘desired science’ (cf. *ABΓ*). The second introduces (with #6) an alternative between a naturalistic style of explanation and another that is dialectically inspired; it picks up (in a more positive way) the question of non-material explanatory entities as a way of escaping this dilemma. The third asks the reader to evaluate the Platonic option advocating explanation via the Forms, and it offers in turn certain elements of a more technical solution for escaping the difficulties of this thesis.

We come now to our last question. Are the fourteen or fifteen philosophical problems that have been presented in Book *B* in the somewhat artificial form of an aporetic knot found, this time freely discussed and resolved, in the rest of the *Metaphysics*? And (a stronger version of the same hypothesis) do they constitute on their own the programme for Aristotelian metaphysics as a whole and, therefore, also for the treatise? The relatively unsystematic character of the exposition of the *aporiai* in Book *B* accords with neither the strong version nor even the weaker version, though this does not mean that the *aporiai* of Book *B*, which itself anticipates the surge of new *aporiai* in the aftermath of the inquiry inaugurated by Book *A*,⁶¹ have no echo in the rest of the *Metaphysics*. We have

⁶¹ *B* 1, 995^a 26–7.

seen that #1 is presented as taking up, in aporetic form, the principal question raised in the course of the historical exposition of Book *A*. The subsequent *aporiai* are explicitly recalled and discussed, and even clearly resolved, in Book *I*. This is particularly the case for #2 (the question of the principle of non-contradiction, of its value and its metaphysical significance), the discussion of which occupies the group of chapters *I* 3–6 (plus the appendix of chapters 7 and 8), and also, somewhat less clearly, for #4 (the question of the place of the ‘essential properties’ studied by the dialecticians) at the end of *I* 2 (particularly 1004^b 5–8 and 1004^b 17–28); finally, #3 is perhaps the object of a reference in this same chapter, at 1004^a 2: ‘there are as many parts of philosophy as there are substances’ (or types of substance). So, in a way, Book *I* may look like the continuation of the methodical development of the *aporiai*. But it would appear more difficult to maintain this hypothesis for the remaining books. One finds there three explicit references to Book *B*: the ninth *aporia* is discussed and resolved in *M* 10, and the eleventh is summarized with its arguments,⁶² then resolved, in *I* 2. There is, finally, an allusion to #5 in *M* 2,⁶³ but it is simply a matter of picking up an argument from the original *aporia*, without any reference to its structure. As for the rest, the possible connections are more vague. One can certainly find in all the other books elements of responses to questions posed in *B*—which is not at all surprising, since they are dealing with the same material. But it seems that the resolution of these *aporiai* is no longer Aristotle’s main preoccupation. He engages with this one or that no more than incidentally, and in doing so he treats it no more methodically than is useful to him in the context of his argument at the moment.

In the final calculation, *euporia*, which itself houses new *aporiai*, possesses a momentum of its own, which the *aporiai* of Book *B*, contrary to what the systematic vision of the diaporetic method that opens chapter 1 tends to suggest, do not actually contain. The reader of the *Metaphysics* cannot but be glad of this.

Translated by John Palmer

⁶² *I* 2, 1053^b 10–24.

⁶³ *M* 2, 1076^a 38 b 1.

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1

Aporia Zero (Metaphysics B I, 995^a24–995^b4)★

ANDRÉ LAKS

The first chapter of Book *B* consists of two parts, the first of which (*B* 1A) contains a few brief considerations about the nature and use of *aporiai* ('puzzles', according to one standard rendering of the word), while the second (*B* 1B) provides an enumeration of the 14 (or 15) 'puzzles', set in the standard form of a simple disjunctive question (*poteron . . . e . . .*), that are going to be taken up and developed in the following chapters (*B* 2–6). These adduce arguments for or rather against each of the branches of the disjunction. I shall not consider here this enumeration in itself, since its analysis must be conducted in connection with each of the corresponding developments in subsequent chapters, but its existence is implied in some of the interpretive decisions that concern the first part of the chapter, on which I shall concentrate.

A preliminary remark concerns the translation of the word *aporia*, which is a source of embarrassment, because none of the possible vernacular candidates exactly captures what is straightforwardly conveyed by the Greek term in accordance with its etymology, namely the absence of any issue (*a poros*), there being no way out or way forwards, and the corresponding desperate mental state in which one finds oneself, having nowhere to turn one's mind to reach a definite opinion on some subject. This explains why the word often remains untranslated, or is translated as *aporia*.¹ Certainly, the strict etymological

★ Many thanks to John Cooper, who revised the English of this essay and sent me extremely helpful comments on the first draft. So also did Michel Crubellier, Michael Frede, and Silvia Fazzo. I would like to also thank Myriam Hecquet, who helped me to correct the manuscript.

¹ Apparently, '*aporia*' in English is more artificial than '*aporie*' in French, which would be a perfectly acceptable rendering. Besides 'puzzle', we find in English 'difficulty', 'embarrassment'. Other languages have obvious equivalents; 'Zweifeln', in German (Bonitz), comes from a Latin tradition stemming from Boethius' translation of the word for the *Categories* and definitively settled for the *Metaphysics* by H. William of Moerbeke, who adopted *dubitatio*. On the latter point, see Lambert 2001, esp. 413 and 428f., and more generally Loredana Cardullo 2003, 172f.

sense is not required by all occurrences of *aporia* in Greek literature, where a weak translation may often do perfectly well: in the very course of our passage, Aristotle uses the term *duskhereia*, which means ‘difficulty’, as a substitute for *aporia* (995^a33).² But other passages certainly need the stronger notion, and there is little doubt that for the most part our passage is one of those. For not only does Aristotle’s analysis in B1A draw on a metaphor which is obviously related to the etymological sense (the metaphor is that of a person who is tied and, being tied, cannot move forward), but the very point of the metaphor vanishes if the strong sense is not presupposed. For what Aristotle wants to show—without some sense of paradox—is that being stuck in an *aporia*, if only this is construed in a correct manner, is precisely what makes progress possible in the most fruitful way. That is why I shall use words such as ‘impasse’ (the advantage of which is that it echoes the formation of the Greek word) and ‘blockage’ (which is more forceful, not being of Latin origin), although it is not possible to be completely consistent in this.³ I take it, moreover, that Aristotle, in construing intellectual ‘impasses’ not as the collapse of all intellectual progress, but as the condition of fruitful inquiry, is himself offering a solution to a celebrated impasse concerning the very nature of inquiry, which is that of Plato’s *Meno*. Hence the title of my contribution, *Aporia Zero*, which is meant to suggest that the present section is in some sense on the same footing as the chapters it introduces, in spite of the fact that the Platonic impasse it responds to does not display the typical formal features of an Aristotelian impasse and is also the only impasse to find its solution within the limits of Book Beta. The puzzle here bears on the very nature of what an impasse is.

Here are the text and translation of the relevant portion of chapter 1, divided into six segments which themselves fall into two groups, of which the first bears on the content of the impasses (1 and 2), while the second deals with the aporetic procedure (3–6). I shall discuss each segment separately as far as possible, but some of them, and especially Segments 3–5, need to be first considered together.

² The same scale of use, from technical to non-technical, seems to also affect, more surprisingly, the compound *diaporein* (more surprisingly, because the prefix by itself lends to the term a technical ring: to elaborate through the *aporia*), to judge by its occurrences at 995^b5 in Book *B* (see *infra*, p. 28f. and note 30), and at 982^b15, in Book *A* 2. The latter passage suggests, at least, that the *diaporeia* follows upon an initial *aporia* (which in this case results from the astonishment caused by the natural phenomena).

³ I shall accordingly also use ‘*aporia*’ or else ‘puzzle’, and speak of ‘aporetic procedure’, etc. Owens 1978, while recognizing that “‘impasse’ would probably be the nearest [rendering of *aporia* in English]”, nevertheless does not adopt it, for the reason that ‘this word does not cover the most frequently used instance of “*aporia*” in Aristotle, which is a philosophical conception or opinion or proposition’ (p. 211, n. 1). I must confess I do not understand this claim.

1. Ἀνάγκη πρὸς τὴν ἐπιζητουμένην ἐπιστήμην ἐπελθεῖν ἡμᾶς πρῶτον περὶ ὧν ἀπορῆσαι δεῖ πρῶτον·
2. ταῦτα δ' ἐστὶν ὅσα τε περὶ αὐτῶν ἄλλως ὑπειλήφασί τινες, καὶ εἴ τι χωρὶς τούτων τυγχάνει παρεωραμένον.
3. ἔστι δὲ τοῖς εὐπορῆσαι βουλομένοις προὔργου τὸ διαπορῆσαι καλῶς· ἡ γὰρ ὕστερον εὐπορία λύσις τῶν πρότερον ἀπορουμένων ἐστί, λύνει δ' οὐκ ἔστιν ἀγνοοῦντα τὸν δεσμόν· ἀλλ' ἡ τῆς διανοίας ἀπορία δηλοῖ τοῦτο περὶ τοῦ πράγματος· ἡ γὰρ ἀπορεῖ, ταύτῃ παραπλήσιον πέπονθε τοῖς δεδεμένοις· ἀδύνατον γὰρ ἀμφοτέρως προελθεῖν εἰς τὸ πρόσθεν.
4. διὸ δεῖ τὰς δυσχερείας τε θεωρηκέναι πάσας πρότερον, τούτων τε χάριν καὶ διὰ τὸ τοὺς ζητοῦντας ἄνευ τοῦ διαπορῆσαι πρῶτον ὁμοίους εἶναι τοῖς ποῖ δεῖ βαδίζειν ἀγνοοῦσι,
5. καὶ πρὸς τούτοις οὐδ' εἴ ποτε τὸ ζητούμενον εὔρηκεν ἢ μὴ γιγνώσκειν· τὸ γὰρ τέλος τούτῳ μὲν οὐ δῆλον τῷ δὲ προσηπορηκότι δῆλον.
6. ἔτι δὲ βέλτιον ἀνάγκη ἔχειν πρὸς τὸ κρίναι τὸν ὥσπερ ἀντιδίκων καὶ τῶν ἀμφισβητούντων λόγων ἀκηκοότα πάντων.

Translation⁴

1. It is necessary, with a view to the knowledge which we are looking for, first to go into the subjects of the impasses we must experience first;
2. these include both the divergent opinions that some have held about those matters and, apart from those, any that may have been overlooked.
3. Now for those who wish to advance freely it is useful to develop the impasses well, for the subsequent free advance is a release from what previously had been matters of impasse, and it is not possible to obtain release if you do not know what is binding you. But the impasse in thinking shows this in the matter at hand: for in so far as our thought is stuck in an impasse, it is in a state similar to that of those who are in bonds; for in both cases it is impossible to progress forward.
4. This is why one must have considered all the difficulties beforehand, both for these reasons and also because people who inquire without developing the impasses first are like those who do not know where they have to go,
5. and in addition to that, because he does not even know whether he has found what he is looking for or not; for the end is not clear to such a man, whereas to him who has already experienced the impasses it is clear;
6. Moreover, he who has also listened to all the contending arguments, as if they were those of the parties to a case in court, is necessarily in a better position for judging.

⁴ The translation is mine. It differs in significant ways from *The Revised Oxford Translation* (Barnes 1984). Justifications will be found in the commentary.

Segment I

The first sentence of *B* 1 raises some problems linked to the relationship of Book *B* with Books *A* and *a*. Those problems bear in the first place on the history of transmission of the Aristotelian corpus, but they also involve some interesting questions about the scope and the nature of the impasses to be proposed and investigated.

At first sight, Book *B* looks like a self contained piece, whose redaction might even have been independent of that of any other book or group of books. This at least is the conclusion that one might be tempted to draw from the absence of any transitional particle in the first sentence, as in the case of books *Z–H* and of Book *A*.⁵ Other considerations, however, suggest that *B* in its present shape (including chapter 1, transitional particle or not) belongs to a larger ensemble. This results, among other things, from the last sentence of Book *A*, which runs: ‘but let’s go back again to whatever puzzles might arise about these very topics; for perhaps from these [puzzles] we might make some advance in connection with the later puzzles’ (993^a25–27).⁶

The expression *epanethomen palin* (‘let’s go back again’) implies that some puzzles have already been raised in the course of Book *A*. As a matter of fact, having stated, at the end of *A* 7, that the thinkers whose opinions have been reported in the preceding chapters ‘seem to testify that we have determined rightly both how many and of what sort the causes are . . .’, Aristotle goes on: ‘let us next discuss the possible puzzles with regard to the way in which each of these thinkers has spoken, and with regard to how things are about the first principles’ (988^b20f.).⁷

This task is most probably that to which Aristotle announces the return at the end of *A* 10. It should be noted, however, that in stating the first *aporia* at *B* 995^b4–6, which bears on the problem of whether it belongs to more than one science or to a single one to inquire into the causes, Aristotle says that the question has already been the object of an aporetic (or more precisely ‘diaporetic’) treatment in Book *A*.⁸ The reference is not entirely transparent (it seems to be to *A* 2⁹), and the exact scope of the compound verb *diaporein* may

⁵ Cf. Frede and Patzig 1988, II, 10, ad 1028^a10; Frede 2000, 54.

⁶ ὅσα δὲ περὶ τῶν αὐτῶν τούτων ἀπορήσειεν ἂν τις, ἐπανέλθωμεν πάλιν· τάχα γὰρ ἂν ἐξ αὐτῶν εὐπορήσαιμεν τι πρὸς τὰς ὕστερον ἀπορίας.

⁷ πῶς δὲ τούτων ἕκαστος εἴρηκε καὶ πῶς ἔχει περὶ τῶν ἀρχῶν, τὰς ἐνδεχομένας ἀπορίας μετὰ τούτου διέλθωμεν περὶ αὐτῶν (Revised Oxford Translation modified).

⁸ περὶ ὧν ἐν τοῖς πεφροισμασμένοις διηπορήσαμεν.

⁹ Cf. especially 982^b7f.: ‘Judged by all the tests we have mentioned, then, the name in question falls to the same science; this must be a science that investigates the first principles and causes’.

be felt to be a problem,¹⁰ but it clearly confirms that Aristotle considered that a part of the aporetic procedure had already been undertaken in the first book.

There is a complication, though, for Aristotle here (*A* 10, 993A26 f.) distinguishes between a former and a later set of *aporiai* ('for perhaps from these [puzzles] we might get some advance in connection with the later puzzles'). How are we to identify each set? The matter is further complicated by the presence of Book *α*, in the traditional state of the transmission, between books *A* and *B*.

This additional complication can be pretty easily disposed of, however. Although Alexander's attempt to relate the former set of *aporiai* to Book *α*, and the latter one to Book *B*, has been taken up by some modern commentators,¹¹ it is clearly a somewhat artificial attempt to save Book *α* as part of the original project: but even if chapter 2 of Book *α* may be considered to be answering an *aporia* concerning the number of causes (is it finite or infinite?), the book as a whole can hardly be said to engage in *aporiai* in a way which would match the announcement in *A* 10.¹² Theiler wanted to solve the problem by deleting the words 'in connection with the later puzzles' (*pros tas husteron aporiai*), which create the difficulty, by setting up a second group of *aporiai*: according to him, this was the marginal gloss of a reader who mistakenly took the *aporiai* mentioned at 993^a25 to refer to Book *α*.¹³ Jaeger had formerly proposed that we see in *A* 10 a section that was originally meant to occupy the place of *A* 7, so that the first set of *aporiai* would correspond to the critical remarks against the Platonists developed in *A* 8–9, whereas *B* would, once again, correspond to 'the later puzzles'.¹⁴ But if we refuse both to athetize and to change the order of the text, we are left with Ross' view, according to which it is the first set of *aporiai* which refers to *B*, while the 'later puzzles' allude to further difficulties that might appear further down the road.

Szlezák, who does not commit himself to any of these proposals, raises against Ross's solution an objection which is of direct interest to us here. If the clause 'but let's go back again to whatever puzzles might arise about these very topics' were an announcement of *B*, says Szlezák, the puzzles developed there 'would have to deal with the views of Aristotle's predecessors or else with the doctrine of the four causes itself, which is only true to a small extent of Beta'.¹⁵ This is

¹⁰ On the difficulty, see M. Crubellier in this volume, p. 47. On the expected meaning of *διαπορία* as 'une exploration des différentes voies qui s'offrent à nous', see Aubenque 1961, 4.

¹¹ Alexander, *In Metaph.*, 136, 14 17; 137, 5 9; cf. among others Tricot 1953, xxi and 105, n. 4.

¹² See Szlezák 1983, 251. One may add that chapter 2 does not use the word *aporia*, and that its tone is rather assertive, see 994^a1 2.

¹³ Theiler 1958, 268 (1969, 280).

¹⁴ Jaeger 1912, 14 21.

¹⁵ Szlezák 1983, 252, n. 67 (my translation), referring to Alexander, 174, 22 f. Szlezák has a second objection, namely that the expression *pros tas husteron aporiai* sounds too definite to refer to puzzles which remain indefinite, but this does not seem to me to carry much weight.

because the ‘simplest way’ of taking the demonstrative ‘about these very topics’ (*peri auton touton*) at 993^a25, according to Szlezák, is to refer it to ‘the views of Aristotle’s predecessors and their lack of clarity’, while it would require some ‘violence’ to refer it ‘to the doctrine of the causes itself’.¹⁶ Szlezák’s wish to cut off the phrase ‘about these very topics’ as much as possible from the Aristotelian doctrine of the four causes is due to his (justified) rejection of any announcement of Book *a* at the end of *A* 10, but we should wonder whether this is necessary, or for that matter true. For it does seem that the emphatic demonstrative, in the last sentence of *A* 10, refers precisely to *the four causes* of the natural philosophers, which Aristotle has *found*—this is the topic of *A* 10—to be the same in number and in nature as his own four causes—with the difference, of course, that his predecessors ‘babbled’ whereas he, Aristotle, gave the fully articulate picture.¹⁷ (As we shall see in a moment, the second sentence of *B* (= Segment 2) presents a problem of reference that is not unrelated to that raised by the end of *A* 10, and of some importance for a general characterization of Beta.). On the other hand, it seems clear enough that the first sentence of *B* fulfils the announcement made in the last sentence of *A* 10, both because of the verbal echo (*epanethomen palin/ananke . . . epelthein*), and because it also suggests, through the expression *aporesai . . . proton*, a distinction between a former and a later set of puzzles—something that does not seem to have been noticed.

Aristotle first justifies his return to raising puzzles about certain topics by stating that to do so ‘is necessary with a view to the knowledge which we are looking for’. The knowledge in question is the wisdom (*sophia*) which was characterized at the beginning of Book *A* as bearing on a special kind of principles and causes (982^a2 f.), namely the first principles and the first causes (982^a26, 982^b9 f.), also called *hai ex arkhes aitiai* (983^a24). In some sense, this characterization already determines the nature, *phusis*, of the knowledge in question (983^a21). However, the pure formality of this first determination does not yield any understanding of its concrete content, even less so as the four causes have already been dealt with elsewhere, namely in the *Physics*.¹⁸ Aristotle is now about to consider them in a new perspective, the one that we

¹⁶ Szlezák 1983, 251: ‘Die Aporien *περὶ τῶν αὐτῶν τούτων* (993^z25) sind in dem Zusammenhang nach einfachsten auf die Ansichten der Vorgänger und ihre mangelnde Klarheit zu beziehen. Aber auch wenn man diese Worte etwas gewaltsam auf die 4-Ursachenlehre selbst beziehen wollte, könnte man die Ankündigung der Wiederaufnahme von Aporien zu diesem Thema allenfalls mit *a* 2 verbinden.’

¹⁷ 993^a16–19. It seems to me that we have to distinguish the reference of *περὶ τῶν αὐτῶν τούτων* at 993^a25 from that of *περὶ τούτων* in ^a24. The latter refers to the opinions that the predecessors have held on the subject matter at hand, namely the four causes. The former, to the subject matter itself.

¹⁸ Cf. *A* 3, 983^a33, where it is stated that this treatment has been adequate (*hikanos*). If I am right (see above, n. 17), the phrase *peri men oun touton dedelotai kai proteron*, in the next to last sentence of Book *A* (993^a24 f.), says something different.

call ‘metaphysical’. In his commentary, Alexander adopts a proleptic reading of this passage, according to which the wisdom in question is theology or theological science.¹⁹ But if one sticks to the order of the inquiry, there is no doubt that what at the end of Book *A* remains an extremely general framework must still be filled out. One obvious function of the ‘impasses’ developed in Book *B* is to help us to figure out what kind of questions are going to form the content of the knowledge adumbrated in Book *A*, and to draw a sketch of what the metaphysical landscape looks like. In some sense, the distinction between the approach developed in the *Physics* and the underspecified knowledge Aristotle is now after consists precisely in the fact that the latter has as its point of departure a set of problems (the impasses) that are not considered by the former (hence, at the end of *A* 10, the broadening in the transitional clause ‘but let’s go back to *whatever puzzles* might arise about these very topics’). They have, however, another, more procedural function, which is also alluded to in the last sentence of *A* 10 (‘for perhaps from these [puzzles] we might make some advance in connection with the later puzzles’). The formulation, which refers to some further difficulties along the way, rather than to the expected solutions, sounds curiously paradoxical; but dealing with the ‘impasses’ is clearly meant to be a necessary first step towards clearing the way, and thus towards securing the knowledge in question.

This is clearly asserted in the first sentence of Beta.²⁰ However, two related interpretative questions must be settled in order to understand what exactly is at stake here: the first concerns the meaning of the verb *epelthein*, the second, how we are to understand the two *protons*.

I begin with this last point. Although the repetition of *proton* might in principle be only emphatic, this is not the most plausible assumption to make, given the economy of Aristotle’s style in general, and the high concentration of these introductory lines in particular. In fact, the natural hypothesis to adopt is that the two *protons* have distinct functions inasmuch as the verbs they modify, namely *epelthein* and *aporesai*, themselves have different references. Independently of the question of what *epelthein* exactly means, to which I shall return in a moment, one such distinction is suggested by the use of the preposition *peri*, in *peri hon*. The reference of the suppressed antecedent of the relative pronoun (which is taken up, at the beginning of the next sentence, by the demonstrative *tauta*) might be described as constituting the *subject matter* of the impasses, by

¹⁹ ‘*Ἡ μὲν ἐπιζητούμενη ἐπιστήμη καὶ προκειμένη νῦν αὐτῇ ἐστὶν ἡ σοφία τε καὶ ἡ θεολογική*, p. 171, 5 f. On Alexander’s interpretation of Aristotle’s *Metaphysics*, see Bonelli 2001 and Movia 2003. There is very little about Book *B* in particular.

²⁰ The preposition *πρός* at *B* 1, 995²⁴ thus acquires a quasi-verbal force, which one might be tempted to translate: ‘in order to acquire the knowledge we are inquiring after . . .’.

contrast with some verbal action called *aporesai*, the exact meaning of which I shall also come back to in a moment.

Now if we admit a distinction of this kind, it might seem extremely tempting to distribute the two moments represented by *epelthein* and *aporesai* across the two sections which actually constitute the remainder of the book, namely *B* 1B, where, as mentioned above, the impasses are simply listed, and the whole of chapters 2–6, where the same impasses are elaborated.²¹

The last sentence of chapter *B* 1 seems to speak in favour of this view, for it can be read as taking up, by way of closure, the second sentence of the chapter, with the recurring distinction between the subject matter (*peri men touton*) and what you make of it (the verb *diaporesai*, which is used here, would give ex post the meaning of the simple *aporesai* in the previous sentence):²² ‘on all these subjects, it is not only difficult to advance freely in the truth, but it is not easy either to develop well the impasse argumentatively’ (*περὶ γὰρ τούτων ἀπάντων οὐ μόνον χαλεπὸν τὸ εὐπορήσαι τῆς ἀληθείας ἀλλ’ οὐδὲ τὸ διαπορήσαι τῷ λόγῳ ῥᾶδιον καλῶς*, 996^a 16–18).

Although Alexander does not distinguish between *aporesai* and *diaporesai* and although he substitutes the former for the latter rather than the other way round, this is more or less his view about 995^a 24 f., for having equated *epelthein* with *exarithmesasthai*, he paraphrases: ‘he says that it is necessary first to go through and enumerate the topics one should first puzzle about and after that puzzle about them. And this is what he does’ (*φησὶ δὲ ἀναγκαῖον εἶναι . . . πρῶτον ἐπελθεῖν καὶ ἐξαριθμήσασθαι περὶ ὧν ἀπορήσαι δεῖ πρῶτον, εἶτα ἀπορήσαι περὶ αὐτῶν καὶ οὕτως ποιεῖ*).²³

I think, however, that this distribution will not do. That *epelthein* does not usually mean ‘enumerate’ is probably no real argument against this interpretation, for this sense can be derived from the sense ‘go over’, ‘traverse’, which is well attested—not to mention that if Alexander took it that way, we too have to admit that it is linguistically possible.²⁴ But there are two other reasons for giving the verb a more general sense. First, *epelthein* certainly echoes the imperative *epanelthomen* at the end of *A*, which obviously announces the whole development of a set of *aporiai*, and not some kind of initial summary.²⁵

²¹ Aristotle may have technically described this elaboration by the verb *diaporēsai* at 995^a 28; see, however above, n. 8.

²² An Aristotelian ring-composition, so to speak. About the special care with which introductory developments are composed in Aristotle, see Fazzo 2003. For *aporesai* at 995^a 25 as a means of research (as opposed to an existential state, which fits the later occurrence at 995^a 32) see Aubenque 1980, 48.

²³ Alexander, *In Met.*, 171, 11–14.

²⁴ See LSJ, s.v. *ἐπέρχομαι*, III.

²⁵ The use of *epelthousi* in *A* 3, 983^b 4 should also be compared. It announces the whole of the section comprised between *A* 3 and *A* 9.

Second, one does not see why Aristotle would insist on the necessity of an initial summary, as opposed to the aporetic development. Now if we extend the scope of *epelthein* to the whole of Book *B*, rather than restrict it to the second part of *B* 1, then *aporesai* in the clause *peri hon aporesai dei proton* need not refer distinctively to the aporematic procedure (as opposed to the simple statement of the impasses). As a matter of fact, it is probably significant that the verb *diaporesai* is introduced only in the next segment (3). It is to *this* sentence (rather than to the first two) that the end of *B* 1 specifically refers, as is shown by the return of the formula *diaporesai kalos* (995^a24) at 996^a17. What the verb *aporesai* refers to in segment 1 is of a more general nature (and that may be the reason why the simple verb is used, and not the compound): contrary to what Aubenque claims, it describes the experience of being stuck in the difficulty.²⁶ One reason that Aristotle might at this point have to make the distinction between the subject matter of the impasses and the fact of being stuck in them is precisely that he wants to say something in turn about each of these two correlated aspects. This will be the topic of Segments 2 (subject matter of the impasses) and 3 (experience of being stuck).

We may now go back to the function of *proton* in the clause *peri hon aporesai dei proton*. The adverb does not imply, analytically so to speak, the idea that impasses are by themselves something we have *first* to deal with, if we want to go beyond them, namely by developing the corresponding solutions. Not that this idea is not Aristotelian: on the contrary, this is precisely the core idea that is going to be developed in Segments 3–5 (in accordance with the previous occurrence of *proton* with *epelthein*). But the clause under consideration may also be taken, and is indeed more plausibly taken, together with the end of *A* 10, to draw a distinction, among a given range of impasses, between some which come first and are primary, and others which come later and hence are derivative.

Alexander does not consider such a possibility, and modern interpreters have generally opted for the other, analytical interpretation of *proton*. This is, no doubt, because what the following sentences are doing is working out the structural link which obtains between the impasse and its solution in terms of what comes first and what comes later (cf. *husteron/proteron*, 995^a28 f., cf. also the *proteron* of 995^a34, and *proeporekoti*, 995^b2). On the other hand, we should recall that the last sentence of Book *A*, with which the first sentence of Book *B*

²⁶ The reason why Aubenque thought it had to refer to some means or procedure (see above, n. 22), that is basically to the diaporematic procedure, is probably that Aristotle uses here the verb *dei*. But 'must' need not imply taking a deliberate step, such as is required if we recur to a means. It can also refer to an objective constraint. I assume it is the case here.

is directly linked, whatever understanding we adopt of exactly what the link is, explicitly distinguishes a first set of impasses, which bear on the (first) causes (*ex auton*, 993^a26), from later ones (*tas husteron aporiai*, 993^a27). It is virtually certain that the expression *peri hon dei aporesai proton* must be read by way of a contrast with the latter expression.

Segment 2

The second sentence briefly defines what the aporetic material consists in, both on the level of its content, and through two further formal features—provenance and exhaustiveness.

I begin with a small but interesting grammatical problem. It is commonly (albeit tacitly) assumed that the anaphoric pronoun in *peri auton*, at 995^a26, refers to <*tauta*> *peri hon* at ^a25. Having said that we have to confront those matters which we need to confront in the initial set of impasses, Aristotle would be now telling us, by way of specification, that among these matters are the views some people held on those very matters. But if *auton* picks up the (antecedent of the) relative, it must also pick up *tauta hosa* at ^a26, since this (expressed) *tauta* picks up the former, elided one. Now it would seem that *tauta hosa* and *peri hon* need to have a different extension, if the sentence in which they appear is to be a well formed sentence: the subject of the impasses cannot be, strictly speaking, what other thinkers have thought about those very subjects. If we exclude the idea that the neuter plural refers *ad sensum* to the singular *ten epizetoumenen epistemen*, which is possible in principle but would be extremely awkward, we might consider the possibility that *auton* does not refer to anything in the former sentence, but rather to the demonstrative *peri ton auton touton* in *A* 10 at 993^a25, and thus refers to the latter's own referent, that is, the (four) causes. Now this reading too raises questions, both material and philosophical. In the present state of the transmission, *B* 1 obviously cannot directly follow upon *A* 10, because of the presence of Book *α*; and then, as noticed above, there is the absence of any connecting particle in the first sentence of *B*. The suggestion I am making would imply, then, that *peri auton* at *B* 1, 995^a26, is the remainder of a stage in the transmission of the Aristotelian corpus where *B* 1 connected directly with *A* 10, before the later addition of Book *α*. But there is also the question whether by having *peri auton* at the beginning of Beta standing for the causes, we (not to speak of Aristotle) are not restricting in a rather misleading way the scope of the impasses which are listed in *B* 1B and developed in *B* 2–6, not all of which can be said to concern causes.²⁷ Now this would indeed be a

²⁷ J. Cooper insisted on this point in his comments.

misleading description of *B* if Aristotle meant by it that every single *aporia* of *B* deals with the causes at a specific level, for this obviously is not the case. But one might legitimately wonder whether the *aporai* in *B* do not nevertheless all have to do with first causes in the sense that they all revolve around questions relating to the first principles. Of course, causes and principles are not the same; one might even say that the distinction is fundamental for Aristotle's specific project. But is not the precise scope of the new science exactly what is at stake here? Some (provisional) fuzziness at this point might even be philosophically interesting. The alternative is to admit that the fuzziness does not affect Aristotle's description of his own enterprise, but only the grammar of the sentence. We would have to say, then, that the object of the opinions Aristotle is here interested in is, in fact, those very topics about which Aristotle thinks *impasses* must be formulated first, and these would have a broader scope than the restricted puzzles about the causes.²⁸

Now back to the features mentioned above. The two questions of provenance and exhaustiveness are in fact closely related, and interestingly so. Most of the aporetic material is in some sense constituted of views which have already been put forward by some other thinkers (*hosa*. . . *hupeilephasitines*). But the emphasis is simultaneously put on some encompassing totality (*hosa te*. . . *kan ei ti*., cf. *pasas* 995^a 34, *panton*, 995^b 3, *hapanton* 996^a 17) which suggests not only that the historical material is to be supplemented, but also that the point at stake here is properly systematical. The totality in question is formed by the conjunction of (a) what some have thought in a certain way, namely *allos*, about a certain set of topics, defined by the referential expression *peri auton* and (b) what they may have overlooked in this respect.

Whatever answer we give to the question raised above about the range of *peri auton*, it does not affect the substantial point, which is that the *impasses* which open up the way to the foreshadowed knowledge turn in some way upon matters already discussed in another perspective in Book *A*. It is significant, in this respect, that the first *impasse* that gets listed at the beginning of *B* 1B refers to the previous treatment of the puzzle in Book *A*.²⁹

The conjunction of (a) and (b) clearly indicates that the totality which is aimed at cannot be found on the sole basis of already existing opinions, even

²⁸ This is how Cooper in his written comments takes it: 'The last sentence of *A* 10, which does refer to *aporai* one might experience *about causes*. . . , does not pretend to be telling us about all the *aporai* that we may need to get involved in in our further inquiry into the nature of *sophia*, beginning in *B*. In fact, the beginning of *B* then takes one step back, and gives us the wider scope we in fact need. We can see that it does give us a wider scope, somehow, since the very first *aporia* listed takes us back to *A* 1 2, i.e. to a point before we have developed any *aporai*, even in the weak sense . . . '.

²⁹ See above, text to n. 8.

though properly selected opinions do form the bulk of this aporetic material. Aristotle's attitude towards his predecessors is thus significantly different from the one he adopted in Book *A*, where the drive towards some kind of completeness, if unmistakable, is directed more towards the historical evidence than towards systematical content.³⁰ One can even detect some kind of reversal here. In reviewing his predecessors' opinions, from *A* 3 onwards, Aristotle is officially looking for a historical confirmation that he himself had not neglected any kind of cause in his *Physics*.³¹ Here, by contrast, he stresses that available opinions have to be supplemented if necessary. This shift of perspective can explain why references to individual thinkers are the exception in the course of the diaporematic procedure (no proper name is mentioned in the summary of *B* 1B, and insistence on a specific doctrine, such as Empedocles' in *impasse* #10, requires special explanation³²). Nonetheless, Aristotle's historical optimism still manifests itself in the asymmetry between the two members coordinated by *te . . . kai . . .*: *kan ei ti* emphasizes the rather exceptional character of the case ('if by chance it so happens that . . .'). In fact, Aristotle explicitly mentions only one such omission in the course of Book Beta, namely in *impasse* #10 (where *paraleiptai*, at 1000^a5, echoes *pareoramenon* in our sentence). But there certainly are some further *aporiai* that could not possibly have been formulated before Aristotle, if only for the reason that they rely on typically Aristotelian concepts and problems.³³

In order to characterize more precisely the use Aristotle makes of the opinions of his predecessors in the formulation of his aporetic material, it is most important to understand the adverb *allos*, which qualifies the verb *hupei lephasin*. As far as I can see, there are two possible interpretations, the first of which may come in two versions.

Alexander considers the following alternative:

. . . either 'not adequately or appropriately but erroneously',³⁴ or because some hold one view, others another; for what mostly generates puzzles are the topics on which

³⁰ It is striking, however, that in discussing Aristotle's reference to Book *A* at 995^b5, Alexander does not hesitate to present the critical doxography of *A* 3–10 as part of an *aporetic* development (*περί δὲ τῶν αἰτίων δὴ πρῶτην φησὶν ἀπορίαν εἶναι ἧς μνημονεύει. διηπόρησε δὲ περὶ αἰτίων ἐν μὲν τῷ μείζονι Α ζητῶν πόσα τὰ εἶδη τῶν αἰτίων, καὶ τὰς τῶν ἄλλων δόξας ἐκθέμενος περὶ αἰτίων καὶ πρὸς αὐτὰς εἰπὼν, ἐπιστώσατο εἶναι τέσσαρα αἰτίων εἶδη*, 174, 14–18). This presupposes a rather weakened sense of what an *aporia* or a *diaporia* is, but it should be added that Aristotle's own use of the verb *diaporein* in this context is somewhat misleading.

³¹ See *A* 3, 983^b1–6.

³² See below, Wildberg's contribution.

³³ Besides the four first *impasses*, which bear on the problem of the universality of the principles, there is that which bears on the pair *dunamis/energeia* (#13). One should not forget, however, that in some of these cases at least, there must have been an ongoing Academic discussion.

³⁴ The structure of the sentence shows that *deontōs* is no real alternative to *prosekontōs*.

diverging opinions are offered by those who deal with them (. . . ἡ τὸ μὴ προσηκόντως ἢ δεόντως ἀλλὰ διημαρτημένως, ἢ ὅτι ἄλλοι ἄλλως· ταῦτα γὰρ μάλιστα ἀπορίας παρέχει, περὶ ὧν προκαταβέβληνται διάφοροι δόξαι ὑπὸ τῶν πραγματευσαμένων περὶ αὐτά, 172, 5–7)

The first interpretation either relies on the special use of *allos* in the sense of ‘in vain’ (LSJ, *s.v.* ἄλλως),³⁵ or else supposes that Aristotle is saying that the aporetic material is constituted of opinions which are ‘different from his own’.³⁶ Now taking *allos* to boil down to ‘erroneously’ has some serious disadvantages. First, the interpretation encourages a purely pedagogical reading of the aporetic procedure, whereby Aristotle’s opinion is already settled on everything. This might be true in some cases, but in others is less true, or even false.³⁷ Moreover, it fits badly with the fact that, as noted above, at least some of the opinions featuring in the impasses are Aristotle’s own.

Alexander’s second interpretation looks more promising. The appearance of a rather harsh elliptical use of the phrase *alloi allos* (‘some in one way, others in another way’) disappears if we bear in mind that it was important for Aristotle to substitute the selective *tines* (‘some’, as opposed to ‘all’) for the vaguer *alloi* (‘some’, as opposed to ‘others’).³⁸ And, as Alexander himself remarks, there is an intelligible link between the variety of existing opinions on a given subject matter, and the inability to choose between the alternatives. What is interesting, however, is that the mere difference of opinions is not yet enough to trigger an impasse: the opinions must be incompatible, so that they can be distributed across the two members of a disjunction of the form *poteron . . . e . . .*.³⁹ The reduction of diverging opinions to this kind of disjunction (the impasse) and the development of arguments against each of those would thus constitute an elaboration of prior divergences, which taken by themselves are no more than divergences. That the two levels, doxographical and aporetic, must nevertheless be conceived as distinct, is also clearly suggested by a passage in *De Anima*, 403^b20–24:

³⁵ M. Crubellier has drawn my attention to the fact that the adverb takes this sense when modifying intentional verbs, the idea being ‘differently than I wanted or aimed at’. Some of the renderings we find in the LSJ, such as ‘without any grounding’, or even ‘erroneously’, would thus be too strong. One should note, however, that the adverb *διημαρτημένως*, which substitutes for *ἄλλως* in Alexander, is correctly rendered by ‘erroneously’, although it also originally conveys the idea of ‘missing the mark’.

³⁶ Thus Aubenque 1961, 9: ‘différentes de la nôtre’.

³⁷ Alexander, in fact, thinks of the ‘impasse’ as a purely dialectical device. On the other hand, Aubenque (1980, 6 f.), referring to Tricot’s commentary, strongly rejects this idea. On this question, see *infra*, p. 40.

³⁸ I owe this elegant explanation to M. Crubellier.

³⁹ Cf. *Top* VI 6, 145^b18–20, where an impasse is presented (against those who define it as ‘an equality of contrary arguments’, b₂) as the *effect* from such an equality. Aubenque 2003, 9 seems to drop the difference he had commented upon in 1980, 6.

For us who are inquiring about the soul it is necessary, while developing impasses about the matters on which we must advance freely as we progress, to take also into consideration the opinions of our predecessors who have asserted something about it, in order to accept what has been said rightly, and, in case it was not right, to exercise caution.⁴⁰

Commenting upon this passage, Aubenque notes that ‘although the two approaches [doxographical and aporetic] are not explicitly identified, their simultaneity is clearly asserted’ and that ‘in practice, they are most of the time indistinguishable’.⁴¹ But the reverse seems to be true: it is because the two approaches are in principle distinct that their simultaneity has to be stressed. The verb *sumparalambanein* points in this direction: what we should do is develop the impasses (*diaporein*), and, independently of this, make use of available opinions as auxiliaries for the inquiry (*sun*) whenever they happen to be useful. The *B 1* passage takes a much stronger view about the relationship between critical examination of existing opinions and aporetic procedure in that it admits of a direct link between the two (which does not mean that it collapses them any more than does the *De Anima* passage). In this respect, however, *B 1* is fortunately supplemented in turn by a remark in a further parallel passage in the *De Caelo*, which makes it clear that from Aristotle’s point of view existing opinions are so to speak by nature contrary to one another—a feature expressed by the fact that contrariety sets the form of the questions which are addressed to their holders (*whether* the cosmos is ungenerated or generated, indestructible or not):

‘This being settled, let us talk after this about whether [the universe] is ungenerated or generated, and whether it is indestructible or destructible, reviewing first the assumptions of the others: for demonstrations of the contraries are impasses about the contraries’ (279^b 4–7).⁴²

Independently of chronological considerations, the clause that constitutes the second segment of our *B 1* passage can be viewed as occupying an intermediate position between the *De Anima*, where the relation between aporetic procedure and doxographical attention is one of sheer juxtaposition, and that of the *De Caelo*, which posits a strong internal link between the two, on the basis of the mediation provided by the notion of contrariety.

⁴⁰ Ἐπισκοποῦντας δὲ περὶ ψυχῆς ἀναγκαῖον, ἅμα διαποροῦντας περὶ ὧν εὐπορεῖν δεῖ προελθόντας, τὰς τῶν προτέρων δόξας συμπαραλαμβάνειν ὅσοι τι περὶ αὐτῆς ἀπεφύησαντο, ὅπως τὰ μὲν καλῶς εἰρημένα λάβωμεν, εἰ δέ τι μὴ καλῶς, τοῦτ’ εὐλαβηθῶμεν.

⁴¹ Aubenque 1980, 8, n. 13.

⁴² Τοῦτων δὲ διωρισμένων λέγωμεν μετὰ ταῦτα πότερον ἀγέννητος ἢ γενητὸς καὶ ἀφθαρτος ἢ φθαρτός, διεξιελθόντες πρότερον τὰς τῶν ἄλλων ὑπολήψεις· αἱ γὰρ τῶν ἐναντίων ἀποδείξεις ἀπορίαι περὶ τῶν ἐναντίων εἰσίν.

Segments 3–6: some general remarks on the structure

Segments 3, 4, 5, and 6 offer four reasons for the necessity of ‘first considering all the difficulties beforehand’, according to the formula that closes the first and most elaborate of them (διὸ δεῖ τὰς δυσχερείας τεθεωρηκέναι πάσας πρότερον, 99^b33). The clarity of this concluding formula contrasts with the way in which the development is introduced at 99^a27, namely through the particle δέ, which prompts the following remark by Alexander: ‘it would be more appropriate if instead of *esti de* what was written were *esti gar*’ (εἴη δὲ ἂν καταλληλότερον, εἰ ἀντὶ τοῦ ἔστι δεῖ εἴη γεγραμμένον ἔστι γάρ’, 172, 13f.).

Now it is perfectly possible to take the clause that way, as a justification, that is, of the necessity to engage in an aporetical procedure as stated in Segment 1, whether we take the justification to bear on *dei aporesai* (as on Alexander’s interpretation), or on *ananke epelthein* (as on the interpretation suggested above): δέ does occasionally function like γάρ in Aristotle as elsewhere.⁴³ On the other hand, the flow of the three first sentences of the text seems to me to be a different one. Having stated in Segment 2 what the aporetical *material* consists in, Aristotle adds in Segment 3 a specification (δέ= ‘besides’) concerning the way in which one should develop (‘go through’) the *aporia* (*diaporesai*), namely ‘well’ (*kalos*), and gives a justification for that (namely that the quality of the result, in this case of the solution, depends on its being well developed). Since this justification in turn provides an adequate justification for engaging in the aporetical procedure, it is then presented as such through the *dio kai* sentence which introduces Segment 4 at ^a33.

What is the criterion, then, of a good aporetical development? Given Aristotle’s insistence that the review of problems must be complete (see above), one could think for example of exhaustiveness as one of the features Aristotle is thinking of. It is pretty clear, however, that what Aristotle has in mind concerns each of the particular impasses, rather than the set they form. Now one cannot say that Aristotle is very explicit about what makes the development of any impasse a good one, apart from the fact that we should recognize the nature of what ‘binds’ us when we are in a state of *aporia*. But what is the relationship between impasse on the one hand, inquiry and solution

⁴³ See Denniston 1934, 169. S. Fazzo pointed out to me other passages where Alexander would prefer a γάρ to a δέ: *In An.Pr.*, 66, 29–67, 1; 129, 9; *In Met.* 54, 11–13. There seems to be a general palaeographical problem with the two particles (see Barnes 1999, 46), even if the respective abbreviations are clearly distinct (I would like to thank Ph. Hoffmann for indications on this point).

on the other? One might think that there is some link between the force and pertinence of the arguments developed against each branch of the aporetic disjunction in the second part of *B* 1, on the one hand, and the elaboration of a way out of the fetters it constitutes, on the other. To say more than that would mean engaging in a systematical confrontation between the initial formulation of the impasses in Book *B* and the formulation of their solutions. But this is a task which obviously exceeds the present exposition, and even an interpretation of Book *Beta* as a whole, since it engages the interpretation of the whole of the *Metaphysics*.⁴⁴

One question that arises in this context is that of the quality of the arguments which are put forward in the remainder of Book *B*, some of which can be questioned, and often have been. Alexander, for one, not only reduces the impasses to a pedagogical artefact, but also insists on the lack of intrinsic strength of their constitutive arguments:⁴⁵ ‘These are the impasses that are dealt with in Book *B*, whose arguments are built on available opinions and in accordance with the plausible. For it is not even possible not to use dialectical arguments when one argues against opposites. And it would be impossible to solve them, were it not so’ (236, 26–29).⁴⁶

Alexander is certainly right in one respect: for there to be a solution, there must be a flaw somewhere in the arguments put forward by one of the two parties; on the other hand, it is not clear that at least some of the impasses are not extremely serious ones, even if we were to resist Aubenque’s idea that at least some of them simply cannot be solved.⁴⁷ The problem is all the more difficult as the notion of an ‘impasse’ is itself complex, and virtually contradictory—it must be strong enough, in order to be identified as an impasse, but it must also display a certain weakness, in order that it be possible to get out of it. Perhaps we should not wonder too much about this. Aristotle himself emphasizes the special difficulty of certain impasses,⁴⁸ which implies that some others might be easier to get around. More generally, we should allow some discrepancy between the theoretical claim and its instantiations.

⁴⁴ Some indications to this effect, however, will be found in the following chapters. See also above, Introduction p. 22 f.

⁴⁵ An interpretation against which Aubenque 1980 rightly reacts.

⁴⁶ *Ταῦτα τὰ ἐν τῷ Β ἡπορημένα, ἐξ ἐνδόξων τὰς ἐπιχειρήσεις ἔχοντα καὶ κατὰ τὸ πιθανόν· καὶ γὰρ οὐδὲ οἶόν τε εἰς τὰ ἀντικείμενα ἐπιχειρῶντας μὴ λογικαῖς ἐπιχειρήσεσι χρῆσασθαι· οὐδὲ γὰρ ἂν λύεσθαι δύναντο, εἰ μὴ εἶχεν οὕτως.*

⁴⁷ Aubenque 1980, 15–17 and his more general 2003 article, which revolves on a kind of *aporia* that he calls ‘essential’ (see esp. p. 10 f.).

⁴⁸ So for example at 999^a24 f. (#8).

Not all of the four justifications attribute the same degree of necessity to the aporetic procedure. In spite of Aristotle's use of the expression *pourgou* ('useful', lit.: 'serving for or towards a work', LSJ) at the beginning of the first justification in Segment 3 in order to qualify the procedure, what follows shows that Aristotle has something stronger in mind, since he goes on to assert that 'it is not possible' to untie bonds the nature of which remains unknown.⁴⁹ The same is true of the second justification, which is closely associated with the first one in Segment 4, and of the third one (in Segment 5), which implies, symmetrically, that the impasse is necessary for identifying and recognizing the 'goal' of the inquiry. By contrast with the first three justifications, which complement one another, the fourth one in Segment 6 is endowed with a lesser degree of necessity, inasmuch as what is at stake here is the preferable: 'it is necessarily better that . . .' (*ὅτι δὲ βέλτιον ἀνάγκη ἔχειν . . .*).⁵⁰

It is interesting that the descending scale of justifications has a counterpart in the 'parallel' passage in the *De Caelo*, 279^b7–12, which continues after the lines quoted above: 'At the same time, what is going to be said might be more credible if we hear beforehand the justifications of the competing arguments. For to appear to pronounce the judgment in a solitary way would be less fitting. For those who want to judge the truth adequately must be arbiters, and not parties to the dispute.'⁵¹

In this case too, the judicial model, according to which a judge—or more exactly an arbiter—must first hear all the parties, comes as a supplementary argument after a more fundamental one (*hama de kai . . .*, cf. *eti de . . .* in the *B* passage), the point being to take into account the efficacy of the procedure (*mallon d'an eie pista*) rather than the intrinsic force of the arguments. Again, the subordinate position of the argument suggests that it does not represent Aristotle's first choice.

⁴⁹ *λύειν δ' οὐκ ἔστιν ἀγνοοῦντας τὸν δεσμόν*, cf. further down *διὸ δεῖ . . .* One might wonder whether *προὔργου* might not have a stronger meaning than the one which is usually attributed to it, for the word formation suggests by itself a certain 'functionality' (and hence necessity, in some sense of the term) in the framework of a finally structured whole. It is significant, I think, that the expression appears at *PA* 653b28 in a strongly teleological context, and that at *Metaphysics A* 3, 983^b4, the only other occurrence of the term in the Aristotelian corpus (!), one possibility of accounting for the presence of the indefinite *τι* after *προὔργου* would precisely be that it weakens its meaning to the sense of 'useful', which is expected at this point (*δῆλον γὰρ ὅτι κακείνοι λέγουσιν ἀρχὰς τινὰς καὶ αἰτίας· ἐπελθοῦσιν οὖν ἔσται τι προὔργου τῇ μεθόδῳ τῇ νῦν· ἢ γὰρ ἕτερόν τι γένος εὐρήσομεν αἰτίας ἢ ταῖς νῦν λεγομέναις μᾶλλον πιστεύσομεν*).

⁵⁰ It is noteworthy that Syrianus in his presentation reproduces only the latter, less stringent argument (cf. I, 14 16 Kroll).

⁵¹ *Ἄμα δὲ καὶ μᾶλλον ἂν εἴη πιστὰ τὰ μέλλοντα λεχθήσεσθαι προακηκοῦσι τὰ τῶν ἀμφισβητούντων λόγων δικαιώματα. Τὸ γὰρ ἐρήμην καταδικάζεσθαι δοκεῖν ἦττον ἢ ἡμῖν ὑπάρχει· καὶ γὰρ δεῖ διαιτητὰς ἀλλ' οὐκ ἀντιδίκους εἶναι τοὺς μέλλοντας τὰληθὲς κρίνειν ἱκανῶς.*

Segment 3

The analysis of what a good aporetic development is relies on a comparison between an impasse on the one hand, and bonds or fetters on the other, a comparison which itself is prompted by the identification of the contrary of *aporia*, namely *euporia* (lit. 'easy advance') as a *lusi*, a term that means both 'release' and 'solution'. Aristotle exploits here in a systematic way the proper sense of the term *poros* ('passage', 'way'), which features metaphorically in the pair *aporia/euporia*. Hence the explicit mention of the specific field of application in the formula 'the impasse *in thinking*', which illustrates, in the language of *Poetics* 21, a transfer from one species to another. The paralysis which thought experiences is similar to that of prisoners (Aristotle is probably thinking specifically of these), who are deprived of their liberty of movement. Hence also the use of a *prima facie* rather contorted expression, *deloi touto peri tou pragmatos*, which I interpret as clarifying the nature of the transfer: *pragma* being the object of thought,⁵² both cases (*amphoteros*) display the same structure (cf. *deloi*, 'to show', 'to indicate').⁵³ As for the pronoun *touto*, I do not think that it refers to *ton desmon*, as suggested by Ross and Aubenque, following Alexander.⁵⁴ The problem with this suggestion is not the rather common grammatical licence this would imply, whereby a neuter refers to a masculine. It simply seems better to assume that what Aristotle is claiming here is that an intellectual blockage displays the same structure as a physical blockage (not the bond, that is, but rather the relationship between knowledge of and release from the bond), but that it does so at the level of *to pragma*, i.e. of how things are in reality (*τοῦτο = λύειν δ' οὐκ ἔστιν ἀγνοῦντα τὸν δεσμόν*, the proposition, that is, which describes the element which is common to both meanings, primary and metaphorical, of the term 'impasse').⁵⁵

I suggest two small departures from Jaeger's and Ross' text. The first concerns *ἀγνοοῦντα*, which is the reading of the best manuscripts, but to which

⁵² This use of *pragma* is akin the category identified by Hadot 1998, 62 f., as 'ce dont on parle', 'le sujet en question'. Hadot's study does not quote our passage, however.

⁵³ For *ἀμφοτέρως*, see *Poetics*, 21, 1457^b 16, where Aristotle analyses the substitution of 'draw' (*ἀρύσαι*) to 'cut' (*ταμεῖν*): *ἄμφω γὰρ ἀφελεῖν τι ἐστί*.

⁵⁴ Aubenque 1980, 5, n. 5 (cf. Alexander, 172, 32f. Hayduck).

⁵⁵ M. Crubellier suggested to me that *τοῦτο* should refer to *λύσις*, 'but the impasse experienced in thinking shows how to resolve the problem at the level of the thing itself'. Madigan 1999, 25, is more or less on the same line ('the *aporia* of thought shows how to untie the knot'). The *γάρ* clause which follows would then give, by way of a parenthesis, a justification for the metaphor, while the consequence of the strong interpretation of the *ἄλλα* clause would be drawn in what I have isolated as Segment 4. It seems to me, however, that the flow of the sentence which results from the articulation of the particles does not favour this reading.

editors, in order to secure the congruence with *τοῖς . . . βουλομένοις* in ^a 27 (and *τοῖς δεδεμένοις*, ^a 32), prefer the plural *ἀγνοούντας* which is found in *A*^b as well as in the lemmas of Alexander's and Asclepius' commentaries.⁵⁶ It seems to me that, by contrast with the generalizing and categorial plurals for the two substantive expressions, the singular participle yields a concreteness which is quite appropriate in order to evoke the situation of the person who must find a way out of a definite impasse: 'whenever one does not know . . .'.⁵⁷ The second modification concerns the punctuation of the sentence; since *ἀλλά* introduces a confirmation of the truth of the proposition *λύειν δ' οὐκ ἔστιν*, rather than its positive counterpart,⁵⁸ the structure of the sentence becomes clearer if one prints a semicolon, rather than a simple comma, after *δεσμόν*.

The state envisaged here results less from the sheer disjunction (as formulated in B1A) than from its sharpening by stating the arguments of the parties, which corresponds to the fetters: thought is really stuck, as a prisoner is.

There is a fundamental difference, however, between an ordinary prisoner, and someone whose thought is imprisoned. Whereas the former does not generally make his own bonds, the latter is in a position to do so. Along the lines of the Vichian principle *verum factum*, one may think that *he* knows all the better the bonds that tie him, since he has tied them himself. But what does it mean to *know* the bond? The knowledge bears on the aporetic material and the way it is structured, to be sure, but also presumably on its weak points. This might help to understand the paradoxical nature of the impasse, which in some sense also has to show the way out.

Segments 4 and 5

The second justification (*kai dia to . . .*, Segment 4) results from a systematic consideration of the conditions under which an inquiry can develop. It is, as a matter of fact, strictly symmetrical to the first one (3). Exactly as the release, which is the goal of the inquiry, depends on the knowledge of the initial *bond*, the inquiry itself cannot even begin if one does not know the *direction* in which it has to proceed. Again, there is a comparison (*homoious*, after *paraplesion*), and the image is once more that of walking (*poi dei badizein*), as with *poros* earlier. The two images are not entirely consistent, in spite of their homogeneity: the impasse, which was first presented as an absolute *impediment* to the progress of

⁵⁶ Asclepius, 139, 1 Hayduck (in the lemma); Alexander, 172, 23 Hayduck. Note, however, the singular in Asclepius' commentary, p. 139, 2.

⁵⁷ Cf. Aubenque's talk of being in an impasse as an 'existential situation' (1980, 9 and 2003, 8). The singular in Segment 6 is to be explained differently (see below).

⁵⁸ For non-strictly-speaking adversative uses of *ἀλλά*, see Denniston 1954, 9ff.

thinking, is now taken to be the condition of its *orientation*.⁵⁹ On the other hand, the juxtaposition and confrontation of the two images help us better to understand the paradoxical tension lying at the heart of the impasse which, when it is well developed, becomes all the more the condition of the deliverance because it imprisons more radically.

This second justification prompts in Segment 5 an additional consideration (*πρὸς τοῦτοις*) which is akin to it, in so far as it also concerns the goal or the end (*telos*) of the inquiry (see also *οὐδέ*, which introduces a special case within the same train of thought), although it is also possible to look at it as a synthesis of the two first justifications, inasmuch as it concerns both the 'solution' and the 'inquiry' (the solution is found, without this being known). In any case, it completes the systematic overview of the possible functions of impasses from the point of view of a logic of research: not to know where one is going also means that, were somebody to move along nonetheless, he might 'light upon' the solution without being able to recognize it (*γιννώσκειν*). This is what one might call the Xenophanean problem, by reference to Xenophanes' fr. B 34, 3f.: 'even if he happened to say what is perfect, he himself does not know it'.⁶⁰

That Aristotle is probably thinking specifically of this fragment at this point can perhaps find some confirmation from a small textual problem. E is the only manuscript to read *οὐδ' εἴ ποτε* (which is the text printed by Ross), whereas *JA*^bAsc. has *οὐδέ ποτε*.⁶¹ Jaeger, embarrassed by the succession *εἰ...ἦ...*, emends to *οὐδὲ πότε<ρον>*, whose trace would be conserved as such in J etc., whereas *οὐδ' εἴ ποτε* in E would be nothing but a secondary emendation. The grammatical argument is probably not decisive (it did not bother Ross, for one); but the point is that the formula *οὐδ' εἴ ποτε*, which in any case is more vivid, suggests that what we have to do with is a quasi quotation of Xenophanes' fragment (*οὐδ' εἴ ποτε* taking up *εἰ γὰρ καὶ...*).

It is interesting that this fragment is also lurking behind the second question that Meno puts to Socrates in Plato's *Meno* at 80d, which runs: 'and even if you happened to bump into it (*εἰ καὶ ὅτι μάλιστα ἐντύχοις αὐτῷ*), how would you know that it is that, which you did not know?'. As a matter of fact, I think that there are good reasons to assume that what Socrates then reformulates as an

⁵⁹ I do not think that Madigan 1999, 24, is right to insist that 'it would be a mistake to press the details of the metaphors, as though Aristotle had freighted them with philosophical points'.

⁶⁰ *εἰ γὰρ καὶ τὰ μάλιστα τύχοι τετελεσμένον εἰπών, αὐτὸς ὁμῶς οὐκ οἶδε.*

⁶¹ In fact, as M. Crubellier pointed out to me, Ross' and Jaeger's apparatus does not reflect the real state of affairs: in fact, the reading *οὐδ' εἴ ποτε* is the better attested: 'it features in half of the manuscripts of branch β and in all manuscripts of branch α I have been able to consult, except J (that is E, E¹ and V^d). Moreover, it is presupposed by the two older Latin translations (the *Vetus* and the *Vetustissima*), as well as by the Arab translation'.

‘eristical argument’⁶² constitutes the background of Aristotle’s various justifications for the aporetical procedure, which may be construed as offering a systematic answer to the problem it raises. For these justifications are linked together by the question of how an inquiry can proceed under the condition of ignorance—ignorance of the impasse (the bond), ignorance of the goal of the inquiry (*agnoein* twice, and then *me gignoskein*). Aristotle’s analysis of what an *aporia* is offers a kind of conceptual ‘coup’ consisting in making the impasse itself—quite different from any doctrine of reminiscence—the condition of its own overcoming: far from being reducible to what impedes the progression of thinking (for this is also what it is), it is, rather, the condition both of the starting of inquiry and of the obtaining and recognition of its solution.⁶³ It should be noted, however, that in the first chapter of the *Posterior Analytics*, Aristotle, explicitly referring to Meno’s puzzle (*to en toi Menoni aporema*), says that in order to avoid it, we have to admit that we already know in some way about the object of our inquiry,⁶⁴ and that *B*, the aporetical Book, comes after *A*, which has already given some indications about the object of the knowledge being inquired after (*he epizetoumene episteme*). Strictly speaking, then, we need something else other than an impasse, and even other than an aporetical elaboration (*diaporia*), in order to get out of it.

Conclusion: how are we to characterize *B* 1A?

In a seminal article presented at a previous *Symposium Aristotelicum*, P. Aubenque characterized the first part of *B* 1, especially lines 994^a24–33, as one of the few methodological passages in the Aristotelian corpus to bear on the concrete, effective procedure of his thought, as opposed to the ideal form it should take, as least if one starts from the idea that there is no other science than demonstrative science.⁶⁵ But it seems to me that to speak of an opposition

⁶² ὁρᾷς τοῦτον ὡς ἐριστικὸν λόγον κατὰ γεις, ὡς οὐκ ἄρα ἔστιν ζητεῖν ἀνθρώπῳ οὔτε ὁ οἶδε οὔτε ὁ μὴ οἶδε; οὔτε γὰρ ἂν ὁ γέ οἶδεν ζητοῖ· οἶδεν γάρ, καὶ οὐδὲν δεῖ τῷ γέ τοιοῦτῳ ζητήσεως· οὔτε ὁ μὴ οἶδεν· οὐδὲ γὰρ οἶδεν ὅτι ζητήσει, 80e. On the difference between Meno’s and Socrates’ formulations, see Moline 1989.

⁶³ Aristotle might be building here on a feature inherent to what a Socratic *aporia* is, cf. Aubenque 2003, 8: ‘L’aporie est littéralement l’absence de chemin, mais aussi en même temps ce qui empêche le cheminement de se clore. Le fait de n’avoir pas de réponse à la question nous oblige à reposer la même question sous une autre forme ou à poser des questions adjacentes. L’aporie, qui est l’absence d’aboutissement, est en même temps le moteur du cheminement’. The most striking formulation of the paradoxical character of an *aporia* is given in Theophrastus’ *Metaphysics*, 8b15. One of the epistemological functions of sensation, says Theophrastus, is to create impasses in thought, impasses ‘thanks to which, even if [thought] is unable to progress, nevertheless some light appears in the absence of light, while we search further’.

⁶⁴ *An. Post.*, I, 71^a24–30.

⁶⁵ Aubenque 1980, 35.

between the real path of inquiry and the demonstrative ideal distorts the perspective. It would be more appropriate, I think, to say that Aristotle is here sketching, on the basis of a purely conceptual analysis, and at a very high level of generality, an *ideal* situation that does not claim to present an effective method. No one has described better than Aubenque the distance that often (if not always) separates the ideal picture which is traced here of how thinking progresses from its effective implementation in Aristotle's work.⁶⁶ Impasses and their elaborations (the *diaporía*) are not always preliminary to the inquiry: they may well be coextensive with them, as happens for example in *An. Post.* 3, 90^a36–91^a12.⁶⁷ In one famous and decisive case at least, which is that of the question 'what is being?' (which is no doubt to be counted among the 'further impasses' that Aristotle mentions at the end of *A 10*), the *aporia* seems to be doomed to remain without issue in the future, as it has been in the past, at least if one follows Aubenque's interpretation.⁶⁸ By the same token, *euporia* may refer not to the moment when 'the path becomes free' and 'when inquiry may begin' (which is how Aubenque reads 99^a29), but also to 'the end of the path'.⁶⁹ Besides, a *euporia* has degrees, from (1) the definitive solution to (4) the indefinite putting off of the solution, through (2) the plausible solution and (3) the recognition of the legitimacy of the *aporia*, when both parties are right. All these remarks are well taken. But what they show is only that the initial remarks of *B* should not be taken as having a methodological scope. They define, rather, what the relation of an impasse to its solution should *in principle* be. Again, what this relation really *is* cannot be decided except on the basis of a complete interpretation, not only of the remainder of Book *B*, but of the *Metaphysics* as a whole.

⁶⁶ This is the point of Aubenque's 1980 article.

⁶⁷ See Aubenque 1980, 10 f.

⁶⁸ 'Dans le cas de la recherche sur l'être, Aristote semble dire que l'on ne peut se reposer sur aucune *euporia*, mais qu'il faut chercher toujours', 1980, 17. Cf. also Aubenque 2003, 16 ff.

⁶⁹ Which is the way Aubenque interprets *EN VII*, 1146^b6 8 (Αἱ μὲν οὖν ἀπορίαι τοιαῦταί τινες συμβαίνουσιν, τούτων δὲ τὰ μὲν ἀνελεῖν δεῖ τὰ δὲ καταλιπεῖν ἢ γὰρ λύσις τῆς ἀπορίας εὕρεσις ἐστίν).

2

Aporiai I–2

MICHEL CRUBELLIER

1. First *aporia*

1.1 *The question*

B 1, 995^b4–6:

The first problem concerns the subject which we discussed in our prefatory remarks. It is this—whether the investigation of causes belongs to one or to more sciences.

B 2, 996^a18–20:

First then with regard to what we mentioned first, does it belong to one or to more sciences to investigate all the kinds of causes?

K 1, 1059^a18–21:

That wisdom is a science of first principles is evident from the introductory chapters, in which we have raised objections to the statements of others about the first principles; but one might ask the question whether wisdom is to be conceived as one science or as several.

The mention of ‘prefatory remarks’ refers certainly to book *A*. But there is a difficulty about the verb *diaporesai*, which normally means to give an account of a philosophical problem in a precise technical form, the very form that is displayed throughout in book *B*, so that we would particularly expect *diaporesai* to have that technical meaning here. Now, what we can find in book *A* differs appreciably from this pattern. Chapters 3 to 7 give an account, mainly historical in its form, the explicit aim of which is to make sure that there is no other type of cause distinct from the well known ‘four causes’ which were listed and described in the *Physics* (*A* 3, 983^b5–6, repeated in chapter 7, 988^a21–22). As to chapters 8 and 9, they appear to gather objections against the various doctrines of Aristotle’s predecessors, without any systematic or general design (but I will have occasion to reconsider this first sight description).

The statement of the *aporia* in Book *K*¹ differs from the one in Book *B* by the fact that the types of causes are not mentioned; neither do they appear in the three lines (1059^a21–23) that give the arguments against both sides of the *aporia*. This might be explained as a loss of information resulting from the excessive compression of the argument in the résumé. But it may also be the case that the author of *K* wished to join the first four *aporiai* together under the general heading of the unity or multiplicity of the science called wisdom.

What does the question about causes mean? Aristotle does not believe that ‘causes’ are items which could be the objects of one or several sciences (as there is a science of animals, a science of numbers, or a science of the rainbow). Causes as such are not objects, and objects which are ‘causes’ are causes only owing to an intelligible relation that they bear to another object, namely, a relation of explanation. The ‘four causes’ are the four possible types of explanation. For a science, they are not objects, but rather norms, and these different norms happen to be rival or complementary, as the case may be. Thus it makes sense to ask whether a given science will take a given explanatory norm into account or not, and, for instance, whether wisdom will admit of all four Aristotelian norms. Aristotle was undoubtedly concerned with such questions, as we can see in the passage of the *De Anima* which compares the alternative descriptions of wrath given by the *phusikos* and the *dialektikos*, or the chapter of the *Physics* where he claims that natural philosophy has to consider all four causes.² But even such reflections as these do not answer the question raised here, because here it bears on the principles (*αἰτίαι* being continually treated as equivalent to *ἀρχαί* throughout the discussion in chapter 2), which are a quite different matter. The question in *Physics* II 7 is: which type(s) of explanation is (are) admissible or required in natural philosophy? Not: of which kind are the principles of natural beings? Even if the first question may naturally lead to

¹ The authenticity of Book *K* has been much discussed. This is not the place to take a fully argued stand on this question, but it might be useful to explain here in a few words what use I shall make of the parallel passages in *K*. I have been much impressed by Pierre Aubenque’s case against authenticity (Aubenque 1983). Through a detailed comparison of both texts, Aubenque brings out a number of odd mistakes which are best explained by the supposition that the author of Book *K* had before him the text of Books *B*, *Γ*, and *E* in the same form as we have it, and that in such places he misinterpreted the letter of the text. Ross incidentally made the same remark (1970 (1924) I, 229, about 996^b26–7), but he did not draw any general conclusion from it. The main point, if this hypothesis is correct, is not that *K* 1–8 is not from Aristotle’s own hand (for we should still give some credit to a second-hand report of genuine Aristotelian doctrines), but that it is a second-hand résumé of a text that we possess besides in its complete form. If this is so, I think that we should rather consider Book *K* as a kind of paraphrase composed by an ancient commentator (and not a particularly clever one). Besides, I am not able to offer a more precise guess about who wrote that text, when and why, any more than on the relation between the two parts of Book *K*.

² *De Anima* I 1, 403^a26 ff.; *Physics* II 7.

the second one, they are independent in principle. And indeed it might be the case that natural philosophy should admit of all four types of explanation, while there was no common science for all kinds of principles.

Thus if one assumes, as it seems to emerge from the discussion of Book *A*, that the ‘principles’ which wisdom has to discover and understand must be causes rather than elements,³ the question is whether these principles are ‘first causes’ belonging to any one of the four types of causes, or to some, or just one, of them. To borrow Stephen Menn’s illuminating phrase, Aristotle wants to know which kind of cause(s) are the first principles, or in other words: which route of causal analysis will lead to wisdom. Book *a* sets out arguments which show that for every type of explanation, regression in causal analysis necessarily leads to a stop, that is, to a first cause that may be called an *arkhe*—with one interesting qualification in the case of the material cause: there, the analysis does not go on *ad infinitum*, but it does not come on to an ultimate first principle. It ends in a loop with the four simple bodies, fire, air, water, and earth, since these may always come out from one another.

1.2 First objection against the thesis

B 2, 996^a20–21:

How could it belong to one science to recognize the principles if these are not contrary?

K 1, 1059^a21–23:

If as one, it may be objected that one science always deals with contraries, but the first principles are not contrary.

This argument has been severely criticized by the ancient commentators. They reconstructed it in the form of a second figure syllogism, following the interpretation of the author of Book *K*:

- if one and the same science knows several objects, these objects must be contraries;
- principles are not contraries;
- thus principles cannot be the objects of one and the same science.

But the major premise of this syllogism is quite questionable from an Aristotelian point of view, and indeed it must seem highly dubious to any

³ At several places in the *Metaphysics*, wisdom is introduced as ‘the science of first principles, first causes and first elements’, but the notion of first principles as first elements is mainly connected with the doctrines of Plato and the Academy. The question is not considered as completely settled in Book *B*, since two of the later *aporiai* (namely the sixth and seventh) are based on the assumption that the principles should be elements.

person who has some notion of what a science is. If one were to try to derive it from another proposition well known to Aristotle's readers and probably currently admitted in the Academy, namely that contraries are objects of one and the same science, this could only be done by committing a blatant paralogism, the conversion of an affirmative universal ('every A is a B') into an affirmative universal ('every B is an A').

This interpretation, and the objections to which it is obviously open, raise a methodological problem that is peculiar to *Metaphysics B*. If all the *aporiai* in Book *B*—as one may reasonably infer from the fact that Aristotle, in chapter 1, sets out every one of them in the form of a strict disjunction—are meant to present two opposite theses, we must be prepared to find non Aristotelian premises, or paralogisms, or both, in the arguments he introduces to support these theses.

(I want to stress the 'if...', because this general rule, which is commonly taken for granted, has been questioned, precisely in the case of the first *aporia*, by Ross and, more sharply, by Stephen Menn. It will be seen later on that, although I hold that this *aporia* too conforms to the standard pattern, I am not far from siding with them as to the substance of the case.)

If, then, such is the case, a scholar trying to explain Book *B* will find himself in a delicate situation. When we have to complete an elliptic argument, or to interpret an obscure passage, it seems that a sound method should rest on two basic rules: (1) seek for consistency with the general doctrines of Aristotle and the rest of the Corpus; (2) show charity, if not reverence, towards our author, and consider that an interpretation is more likely to be true (historically) when it is more logically correct. In the case of the *aporiai*, we cannot rest so confidently on these rules, and we may feel that any interpretation will become arbitrary and risky. The Ancients, and especially the Neoplatonist commentators of Book *B*, Asclepius and Syrianus, had no such scruples when they had to deal with the *aporiai*. They leant on the allegedly 'dialectic' character of the book and they were quite ready to detect paralogisms or deliberately false assertions in it. Of the three pictures of an aporetic issue sketched by Aristotle in chapter 1 (99^s28^{-b}4), they gave their preference to that of the judge in office, and sometimes one can feel that they are themselves very eager to give their verdict. We Moderns, who have read Kant's Transcendental Dialectic, are more receptive to the metaphors of the tied man and of the lost traveller. We feel inclined to think that the *aporiai* were real difficulties to Aristotle's eyes, even if he did not consider them completely insoluble.

Now, there are some reasons in favour of our conception, and thus of a positive interpretation of the *aporiai*. The development of an *aporia* does not necessarily consist in proving separately two contradictory assertions. First,

thesis and antithesis, although they must be incompatible with each other, are not always strictly contradictory. Even when they are phrased in the form of a pair of contradictory propositions (as is the case with the numerous *πότερον* . . . *ἢ* . . ., or phrases such as *μίας* . . . *ἢ* *πλείονων*), both propositions often share a common presupposition (for instance, the assumption that the sought after ‘principles’ are a kind of cause, or that wisdom is to be understood as the science and the principles of substances), so that they are not bound to the Law of Excluded Middle: you can deny both of them, once you have rejected their common presupposition. This point is important, since most of the arguments adduced by Aristotle in chapters 2–6 are not meant to be direct proofs of one of the opposite theses; on the contrary, he develops objections against both of them. However, it is true that the presuppositions (as in the examples given above) are often propositions to which Aristotle seems to hold strongly, so that the *aporia* may be described as a destructive dilemma, with the result that the Aristotelian position is in danger, and the real problem behind the *aporia* is to find a way out of the dilemma in order to save the presupposition in question.

One might go further and point out that there is no compelling reason to assume that all these objections are meant to be formal refutations: they might be just the assessment of some obstacles that we will have to remove if we intend to hold to the presupposition. Thus we are not obliged to reconstruct every argument as a conclusive syllogism. Indeed, it is safer not to do so, especially when that would lead us to posit untenable assertions as premises.

To come back to our passage: it would not be absurd to suppose a ‘false’ (i.e. un-Aristotelian) premise if, and only if, it could be considered as ‘endoxical’ and plausible. But clearly this is not the case with the alleged premise that what is not (in some way) a pair of contraries could not be an object of scientific knowledge. Far from being commonsensical, it has been drawn in a sophistical way from a scholarly tenet.

An alternative way to give a syllogistic form to the argument, while making its contents more plausible, would be to give the phrase ‘the kinds of causes’ a stronger sense implying the so called principle of the ‘incommunicability of genera’. The objection would then run thus: ‘Since the different kinds of explanation embodied in the ‘four causes’ do not share anything with one another, while a science is always the knowledge of some determined genus, then how could they fall under one and the same science?’ Aristotle would then admit of just one exception, namely in the case of two ‘contrary’ explanatory principles—such as a form and the privation of form. These are known by one and the same science, since the knowledge of privation implies the knowledge

of the relevant form, and the knowledge of the form contains (virtually at least) the knowledge of its privation. This interpretation requires us to take *episteme* in the specific sense (well attested in Aristotle's writings) of an act of knowledge, rather than a discipline connected with a definite set of objects.

But it is probably simpler to consider that this objection has not necessarily the force of a formal refutation. Then one may point out that the thesis, *The first principles of things, or at least some of them, are contraries*, was an opinion commonly held among pre Aristotelian natural philosophers, and often mentioned—sometimes with sympathy—by Aristotle himself.⁴

Now, Ross's translation (which I have given above) keeps the ambiguity of the Greek participle in the phrase *μη ἐναντίας οὐσας τὰς ἀρχάς*. It may mean 'Since the principles are not contraries' as well as 'When the principles', etc. The author of *K*, followed by the majority of ancient and modern commentators, has chosen the first interpretation. But the other one cannot be so easily excluded. In fact the relations between the four causes are complex and diverse. Some of them are not contraries, while 'formal' and 'material' causes, at least, might be described as contraries in a certain sense. Clearly this is not Aristotle's own opinion, since he insists that matter is something more than the mere privation of form. But he happens to interpret in these terms the enigmatic Platonic doctrine of first principles, for instance in the *Physics* (I 9). This might afford an explanation for the fact that material cause is never mentioned in the discussion of the first *aporia*.

If this is true, the point of the objection is that Aristotle's own list of causes goes beyond the binary scheme of his predecessors. Thus he is confronted with a difficulty that they did not have to meet. He must find a new model for the relation between the principles corresponding to his four kinds of causes, and account for the possibility of fitting them together in one and the same science. So that, in the phrase *πὼς ἂν εἴη*, the interrogative *πὼς* should be perhaps be taken at face value rather than as the rhetorical expression of a denial.

Or, to put the same difficulty in other words: Aristotle has to determine which of these types of causality are relevant for wisdom, and which are not. This leads us to the second objection.

⁴ See for instance *Metaphysics N* 1, 1087^a29–31, *Physics* I 5, 188^a19 (although this text suggests that the conception of principles as contraries is not sufficient), and *Metaphysics Γ* 2, 1004^b27–1005^a6, where Aristotle uses this thesis to support the idea that there is a science which investigates being *qua* being. One may be tempted to infer from this fact that this last passage gives Aristotle's own solution to the first *aporia*. But that would be wrong, since the development of the argument in *B* 2 rests precisely on the assumption which our passage leaves aside, as we shall see.

1.3 Second objection against the thesis

B 2, 996^a21^b1:

Further, there are many things to which not all the principles pertain. For how can a principle of change or the nature of the good exist for unchangeable things, since everything that in itself and by its own nature is good is an end, and a cause in the sense that for its sake the other things both come to be and are, and since an end or purpose is the end of some action, and all actions imply change? So in the case of unchangeable things this principle could not exist, nor could there be a good itself. This is why in mathematics nothing is proved by means of this kind of cause, nor is there any demonstration of this kind—‘because it is better, or worse’; indeed no one even mentions anything of the kind. And for this reason some of the Sophists, e.g. Aristippus, used to ridicule mathematics; for in the arts, even in the industrial arts, e.g. in carpentry and cobbling, the reason always given is ‘because it is better, or worse’, but the mathematical sciences take no account of goods and evils’.⁵

The overall scheme of this objection is clear. First, it establishes as a general rule that neither explanations by means of a moving or productive cause nor teleological explanations can find a place in the case of unchanging objects, then it brings the example of mathematics in support of this claim. The example itself leans on the mention of the blame Aristippus had turned against mathematicians, namely that they had nothing to say about good and evil—which were supposed to be one of the most important concerns of every human being.

The claim that mathematics does not admit of teleological explanations may be found elsewhere in Aristotle, for instance in *Parts of Animals* I 1 (641^b11–13). And even if in *Metaphysics* M 3 (1078^a31–^b6) Aristotle seems to dismiss Aristippus’ criticisms, he does not go back on the thesis itself. He says only that mathematicians have something to say about the good and the beautiful, not because they have recourse to such concepts for their own purposes, but because they are able to define order, proportion, and definiteness, which are species of the genus ‘good’, and may indeed be used as types of teleological explanation, but only in other fields distinct from mathematics.

⁵ This objection is missing in *K* 1. However, one can find a few lines later (1059^a34–8, after the exposition of the first four *aporiai*) a passage that many commentators have connected with our second objection. But this passage is hard to understand: neither its syntax nor the succession of ideas are clear, and its role in the context of Book *K*, as well as in comparison to the text of Book *B*, is problematic, since it does not appear to be a part of the discussion of any one of the *aporiai*. It has been supposed that this state of affairs was the result of a dislocation in the text of *K*; but these lines would not fit easily into the context of lines 1059^a18–23. I am inclined to think that it was meant to introduce a second series of *aporiai* after the first four, which the author of *K* seems to bring together more closely than is the case in Book *B*, by relating them to the general topic of the existence of non-physical or non-sensible entities. Of course, the author might well have borrowed the idea of this ‘introduction’ to our passage.

Beside mathematical objects, the class of unchanging objects includes the Platonic ideas (if there are such things as these, of course), and the Aristotelian Prime Mover as well as the intelligences of the celestial spheres. But the extension of this class does not need to be specified here, since the arguments presuppose only the general and abstract notion of an object that does not share in any kind of motion or change. In the case of the 'starting point of change' (*arkhe kineseos*), the claim that such a cause does not apply to unchanging objects is an analytical truth and, as such, self evident. In the case of the final cause, the relevant thesis is concluded from a syllogism which links up several middle terms in the following order: the notion of *good* implies that of a *goal*, a goal implies *action*, and action implies *motion* or *change*. There is only one difficulty with this polysyllogism: the scope of final cause seems to be restricted to action, whereas any kind of natural process, for Aristotle, is also directed towards an end. It does not matter very much, since natural processes too involve change, so that Aristotle's conclusion is essentially the same as it would have been if, instead of *praxeis* (lines 26 and 27) he had considered the whole series *τὰς γενέσεις καὶ τὰς πράξεις*. He uses this phrase a few lines later (996^b22–23, cf. also *A* 7, 988^b6–7). But are we to suppose that *praxeis* here stands for the whole series? I do not know any parallel to such a use.

We should rather consider the possibility that the argument originated in a context which was not Aristotelian. Stephen Menn suggests that it may have come from Speusippus. This is a plausible guess, since we know that Speusippus held that there are different levels or realms of being, each one with its own principles, and that he raised some objections against the idea that the good itself is the principle of natural phenomena.⁶

Now, how does this argument bear against the unity of wisdom? The case of 'unchanging objects' is not just any counter example. It echoes the philosophical turn made by Plato when he claimed that there are some unchanging, non-sensible objects, which are subject only to their own laws, characterized by their exactness and intelligibility, and independent of time and physical processes, and that these objects provide an adequate and sufficient explanation of nature. In Book *A*, Aristotle does not consider Platonism as just one stage among others in the development of the progressive discovery of the four causes. Plato opened a crisis in natural philosophy when he called into question the value of some modes of explanation as compared to others, and, more deeply, raised the question of the criteria by which we are to assess the explanatory value of a theory. Socrates' intellectual biography in the *Phaedo*, the doxographical passage

⁶ Several levels of being, see *A* 10, 1075^b37–1076^a4, *N*3, 1090^b13–20. Against the idea of the good-itself: *A* 7, 1072^b30–1073^a3, see also *N*5, 1092^a9–17.

of the *Sophist*, and the opening of Timaeus' discourse bear witness of this 'Platonic turn'.⁷ Plato's challenge is the keystone of Book *A*'s recapitulation of the history of natural philosophy, so that this book may truly be read as a *diaporia*, that is, the systematic examination of a philosophical problem, and thus we should not have been surprised to read in chapter 1 that the first *aporia* had been set out and discussed in Book *A*.

For once it is assumed that these unchanging objects exist, and that they are essentially different from other things, there are three possibilities open to us:

(a) We might simply bring back the explanation of the phenomena to the principles of supra sensible realities. That would amount to some radical version of idealism, which would secure the unity of wisdom at the cost of making the whole world of our experience a realm of mere appearance. It fits roughly in with Eleatic philosophy, or at least with Eleatic philosophy as described by Aristotle in the first book of *Generation and Corruption*.⁸ But here this option must be immediately ruled out, because there are types of explanation that simply do not apply to non sensible objects, while—as Aristotle seems to assume tacitly—they are nevertheless real explanations.

Alternatively (b), we could admit that the realm of changing, natural things has its own principles, distinct from, and irreducible to, the principles of non sensible objects. The consequence would be the existence of several 'wisdoms', each of them concerned with one distinct level of reality. This is the 'episodic', scrappy universe of Speusippus, who 'generates one kind of substance after another and gives different principles for each'.⁹

(c) Or we could try to link or join together, in our explanations of the world, the formal ideal causes with those that take into account the fact of change in its different aspects. Aristotle seems to have considered that this was the real programme of Platonic philosophy, even if Plato himself did not carry it out, or not aptly: 'In general, though philosophy seeks the causes of perceptible things, we have given this up (for we say nothing of the cause from which change takes its start), but while we fancy we are stating the substance of perceptible things, we assert the existence of a second class of substances' (*A* 9, 992^a24–7).

I would like to add two more comments about this construal of the second objection:

1. One might think that the sentence *ἐν τοῖς ἀκινήτοις οὐκ ἂν ἐνδέχουτο ταύτην εἶναι τὴν ἀρχήν* precludes option (c), since it says that there is no such

⁷ *Phaedo*, 96a ff., *Timaeus*, 27e–29d, *Sophistes*, 242b–250d.

⁸ *Generation and Corruption* I 8, 325^a2–23.

⁹ *A* 10, 1075^b38–1076^a1.

principle as a goal or a starting point ‘among unchanging things’. We would then be left with (b), i.e. Speusippus’ thesis, which amounts to the most radical version of the antithesis, and thus the second objection would be in fact a real refutation. But is it right to assume that the phrase ἐν τοῖς ἀκινήτοις excludes the possibility that unchanging objects play the role of a moving or final cause for natural changes? In fact the complete phrasing of the argument does not support such a radical conclusion. It says only that since they do not change, these objects cannot *have* such causes, but this is not enough to rule out the possibility that they could *be* such causes for changing objects. The example of mathematics matches with the interpretation proposed here: Aristotle says that mathematicians do not prove anything *by means of* such principles as the good, but, as we know from the passage of Book *M* quoted above, he thinks that they are able to describe and analyse aptly some characteristic forms of finality—a claim which strongly recalls Plato’s *Philebus*.¹⁰

2. Although the origin of the argument and its very phrasing may be distinctly Academic, it is important to underline that the *aporia* expresses a difficulty which Aristotle himself has to face because of his own theory of the four causes. The crucial point is that he has no general definition of what it is to be a cause: the most general characterization he is able to give is that a cause is an answer to a *why* question. In the places where he gives an account of the four causes (and particularly in *Physics* II 3 and the parallel passage of *Metaphysics* Δ 2), he proceeds by giving a list of the different types of *aitiai*, at which he seems to have arrived through a process of induction, or grouping together more particular cases under a limited number of ‘headings’ (κεφαλαιούμενοι, Δ 2, 1013^b 30). He insists on the fact that his list is complete: this is very important to him, both with regard to the particular sciences, in order to make them complete, and still more to wisdom, since it reaches its first principles by following the lines of causal explanation. But he acknowledges straight out that his four causes have been discovered empirically, as it were. Since, on the other hand, he insists that the same object or fact is liable to several explanations at the same time in a non accidental way (1013^b 3–9) and he contrasts the richness of explanations offered by his natural philosophy to the poor, simplifying doctrines of his forerunners, he has to propose a model of the relations between these different kinds of causality and the principles on which they rest. I will come back later to this question, which lies at the bottom of his solution to the *aporia* as a whole, but first we must consider the objection he proposes to the antithesis.

¹⁰ *Philebus*, 64c 65a.

1.4 *Objection against the antithesis*B 2, 996^b1–26:

But if there are several sciences of the causes, and a different science for each different principle, which of these sciences should be said to be that which we seek, or which of the people who possess them has the most scientific knowledge of the object in question?¹¹ The same thing may have all the kinds of causes, e.g. the moving cause of a house is the art or the builder, the final cause is the function it fulfils, the matter is earth and stones, and the form is the definition. To judge from our previous discussion of the question which of the sciences should be called wisdom, there is reason for applying the name to each of them. For inasmuch as it is most architectonic and authoritative and the other sciences, like slave women, may not even contradict it, the science of the end and of the good is of the nature of wisdom (for the other things are for the sake of the end). But inasmuch as it was described as dealing with the first causes and that which is in the highest sense object of knowledge, the science of substance must be of the nature of wisdom. For since men may know the same thing in many ways, we say that he who recognizes what a thing is by its being so and so knows more fully than he who recognizes it by its not being so and so, and in the former class itself one knows more fully than another, and he knows most fully who knows what a thing is, not he who knows its quantity or quality or what it can by nature do or have done to it. And further in all other cases also, we think that the knowledge of each—even among things of which demonstration is possible—is present only when we know what the thing is, e.g. what squaring a rectangle is, viz. that it is the finding of a mean; and similarly in all other cases. And we know about becomings and actions and about every change when we know the source of the movement; and this is another cause, opposed to the end. Therefore it would seem to belong to different sciences to investigate these causes severally.

K 1, 1059^a23:

If it is not one, what sort of sciences are those with which it is to be identified?¹²

¹¹ τοῦ πράγματος τοῦ ζητουμένου (line ^b4) may create some ambiguity, since it could refer either to τὴν ζητουμένην at line 3 (the ‘sought-for object’ would be the object of the ‘sought-for science’) or to the example that follows, i.e. the house. In the latter case, the phrase would just mean ‘the object of the present inquiry’, that is to say, any object of scientific inquiry. I think that this interpretation is the better one. It is to be noticed that the manuscripts A^b, M, and C have only τοῦ πράγματος, a fact which gives some support to it. Besides, and in spite of all the fascinating developments that Pierre Aubenque drew from the supposition that for Aristotle wisdom is ‘longed for’ and still to come, I am not sure that ἡ ζητουμένη ἐπιστήμη must mean anything more than ‘the science that is the object of our current inquiry’.

¹² This sentence is particularly elliptical. It has perhaps a parallel in ποίας δεῖ ταύτας τιθέναι; at lines 25–6, but that does not help very much to understand it. In any case, ταύτας means a plurality of sciences, and the question ποίας; means either that we should have to list them precisely, or—and this would match better with the argument in Book B—that we have to determine which of them best deserves the title of ‘wisdom’.

Here again, the general meaning of the objection is clear enough. It consists in raising a difficult, even unanswerable, question to anyone who would claim that there are several sciences dealing with first principles: if this is so, how will you be able to arbitrate between the conflicting pretensions of each of them to be the true wisdom? Three sciences, and thus three kinds of principles, together with the three relevant styles of explanation, are considered in turn: a science of the ultimate ends (^b10–12), a science of forms or substances, in a sense which anticipates that of Book *Z*, since ‘substance’ here seems to mean ‘that which can be defined’ in a given object (^b12–22), and a science of the principles or starting points of change (^b22–24, with a difficulty as to the exact determination of the end of this section, as we shall see).

But the text is somewhat more complicated in its detail. Its composition shows two successive periods. The first one, with the correlative *ἢ μὲν* (^b10) and *ἢ δέ* (^b13), goes from lines 10 to 18. The second is marked out by the parallelism of the two temporal clauses *ὅταν εἰδῶμεν* . . . at lines ^b20 and ^b22, and it extends to line 24. This stylistic division is linked with a difference in contents: for while the first section (^b10–18) makes use of the prenotions about wisdom that Aristotle has set out at the beginning of Book *A* (namely, that wisdom is an ‘authoritative’ science, and the science of what is most knowable¹³), the claims of explanation by moving or productive causes do not rest on these opinions—at least, not directly: for lines 18–24, putting this explanation in competition with the one by means of forms, amounts to saying that, in its own sphere, it is necessary in order to achieve full knowledge, so that the moving cause too may be described as prominently knowable. But it is worth noticing that Aristotle does not claim the status of a universal principle for this explanation. *Περὶ δὲ τὰς γενέσεις*, ^b22–3, is opposed to *ἐν τοῖς ἄλλοις* as the particular case or exception is opposed to a general rule. On the other hand, he underlines the irreducible originality of this mode of explanation, and claims that one cannot do without it. This is the core of the criticism he addresses to the well known passage of the *Phaedo* where Socrates, having ruled out the current explanations of natural philosophers of his time and confessing that he is unable to attain with certainty the ultimate ends of natural phenomena, says that he has found a ‘shelter’ in the *logoi*, that is, in an explanation based on the Forms and the *τί ἐστι*: ‘In the *Phaedo* the case is stated in this way—that the Forms are causes both of being and becoming; yet when the Forms exist, still the things that share in them do not come into being, unless there is some efficient cause’.¹⁴ Thus the text gives the distinct impression that the first criterion drawn from the opinions

¹³ ‘Leading science’, see 982^b4 7, ‘the most knowable’, 982^a28 ^b4.

¹⁴ *Metaphysics A* 9, 991^b3 5 (*M* 5, 1080^a2 5); and in the same vein, *GC. II* 9, 325^b9 24.

about wisdom, which amount to estimating a science according to the intrinsic value of its object, is afterwards brought down to a lesser level, while the second criterion (that of the ‘most knowable’) is then given the first rank. Let us remember that the *aporia* manifests a conflict between norms, and that a conflict of norms is particularly hard to arbitrate, since each norm claims to be the ultimate authority on the matter. But here, the criterion of ‘what is more knowable’ is admitted even for the final cause, since Aristotle thinks that it gives a better understanding, even independently of the value conferred on it, by the fact that it represents the good itself (see *Parts of Animals* I 1, 639^b 14–20).

Besides, it may be noticed that Aristotle marked this criterion off at the very beginning of our passage, when he asked: ‘which knows best?’ (^b3–5). Moreover, it can be applied by means of distinct specific tests. In lines 14–22, Aristotle brings in three such tests:

(^b14–16): We get more information about some object, in general, when we know that this object ‘is *x*’ than when we know that ‘it is not *y*’, or when we know that ‘it is an *A*’ rather than when we know that ‘it is not a *B*’;

(^b16–18) but we catch it better when we are able to apply to it a predicate such as ‘it is an *A*’, that is, a predicate falling under the category of substance, than when we have only a predicate belonging to another category.

(^b18–22) At last, demonstration is described, in accordance with the theory of the *Posterior Analytics*, as finding a middle term belonging to the essence of the object.¹⁵ The phrase *ἐν τοῖς ἅλλοις καὶ ὧν ἀποδείξεις εἰσὶν* has been often felt as awkward or difficult by the commentators. They interpreted it in various ways, calling in such problematic notions as the ‘syllogism of essence’ or ‘scientific but not demonstrative knowledge’. It seems to me that it would be less risky, and even natural, to recognize here the well known turn *οἱ ἅλλοι καὶ οἱ Ἀθηναῖοι*: ‘knowledge in general, and especially demonstrative knowledge’: demonstration is taken as a paradigm case of knowledge, which, owing to its strict procedure, sheds light on what happens in all other cases of knowledge.

Three difficulties appear in the last part of the argument:

(1) The mention of *τέλος* (line 24) at the close of a remark about the moving cause, is likely to surprise the reader, since the whole period, from line 18 to 24, develops an explicit opposition between the cause of motion and the *τί ἐστίν*.

¹⁵ Pierre Pellegrin has shown how, in the first part of chapter 11 of *Posterior Analytics* Book II, Aristotle, for the purposes of his theory of scientific knowledge, brings back all other causes to the formal cause, that is, to a type of explanation based on the *τί ἐστι*; But it is to be noticed that the moving or productive cause resists this reduction more strongly than the other causes. To take Aristotle’s own example (94^a36–^b8), is it plausible to assume that the description of the Athenians as ‘aggressors’ aptly grasps their essence? In fact, this irreducibility of the moving cause is in full keeping with the argument that we are reading in our text.

One could perhaps amend the passage by placing a comma after *ἕτερον*, which would result in a meaning like this (I add some glosses to make the sense more apparent): ‘This cause [i.e. the principle or starting point of change] is distinct <from the knowledge by means of the form> and <besides> it is opposite to the end’, etc. I tried to suggest this meaning in the translation I gave above.¹⁶ If this is correct, line 24 would recapitulate the result of both sections of the argument (^b11–18 and ^b18–24), and thus be part of the general conclusion of the objection.

(2) Which is the ‘other science’ mentioned in the last sentence (^b24–25)? It cannot be any one of those that have been mentioned before, since it is supposed to study ‘every one of the causes’. Thus some commentators (Asclepius, and later Averroes) claimed that Aristotle was meaning wisdom. This would have the advantage of leading to a conclusion which is the strict negation of the antithesis (to appreciate the interest of that point, see remark (3) below).¹⁷ But since this interpretation does not fit in with the rest of the argument, it is certainly better to assume, as Ross did, that *ἄλλης* here stands for *ἄλλης καὶ ἄλλης*, receiving a distributive value from the fact that it is connected with *ἕκαστον*.

(3) Last, many interpreters are surprised to see the objection against the antithesis end up the way it does. It is true that the conclusion one would have expected is exactly opposite. If what precedes was really an objection against the thesis of a plurality of ‘wisdoms’, then Aristotle should conclude it with a reassertion of the thesis of one wisdom, even if he did so in a provisional and conditional way, for instance with a verb such as *δόξειεν ἂν*. The commentators have suggested various solutions: Alexander proposes an emendation of the text, reading *οὐκ ἄλλης* instead of *ἄλλης* and putting a strong punctuation before *ᾧστε*, implying as an intermediary premise: <the existence of a plurality of rival ‘wisdoms’ is inconsistent with our notions about wisdom and principles, so that> ‘it does not belong to a different science’, etc. Another solution (put forward by Ross and adopted by Stephen Menn too) would be to admit that in spite of the presence of *ἀλλὰ μὲν* at line ^b1, the presentation of the first *aporia* does not conform to the standard rule of *pro et contra*. It seems unlikely, not

¹⁶ While Ross translated: ‘and this is other than and opposed to the end’.

¹⁷ This line of thought probably explains the reading of MSS A^b and M at line ^b9: *οὐδαμῶς ἔχει* instead of *ἔχει*. But the price to pay for this solution would be too high: such a conception of principles is not Aristotelian, and this *οὐδαμῶς ἔχει* would contradict the following lines, which give some reasons that back the claims of this or that science (of course, one might think that these conflicting reasons lead to the impossibility of taking a stand on the question, but such a situation would not be conveniently described by *οὐδαμῶς ἔχει λόγον*). The enigmatic lines of Book K 1, 1059^a34–8 (already mentioned in n. 5) might reflect an attempt to solve the difficulty in a similar perspective.

only because of the exception to a clear and otherwise well respected rule, but also because in the text itself there are so many indications of a *pro et contra* procedure.

Nevertheless, it may well be true that in the case of this *aporia*, as I have had the occasion to suggest, the objections on both sides are not meant to represent complete formal refutations, since the attempts to take them as real refutations result in paralogisms or in the assumption of highly implausible premises. Thus it would be safer, and more interesting, to admit that both parts of the discussion lead to the same programme: wisdom must allow for every type of explanation, and the philosopher must be able to determine precisely the relations between the relevant principles. As I said earlier, this programme is the expression of a real difficulty met by the Aristotelian doctrine of causality. For that reason, it may be asked which will be Aristotle's answer to this challenge.

1.5 On a possible solution of the *aporia*

Unfortunately, the first *aporia* does not seem to be taken over anywhere else in the *Metaphysics*, at least not explicitly and under the same form, as is the case with the second *aporia* and so many other ones. Nevertheless, there is little doubt that Aristotle did believe he had a solution to it, although this is not a clear cut solution, but rather it consists in a complex network of relations between the various principles he admits of. So I will limit myself to a short sketch, mainly based on chapter *A* 7 of the *Metaphysics*, while other texts might have been cited as well.

The first task is to bridge the separation between immutable objects and the changing world of natural facts in order to answer the second objection against the thesis. Aristotle does that by showing a very special type of action, which in the world of our experience appears most clearly in the objects of desire and the objects of intellection, since both move without being moved. The object of desire is an example of a final cause, whereas the object of intelligence is a form and a *τί ἐστι*. Now chapter *A* 7 links them together by showing that the 'first object of intellection' and the 'first object of desire' (through such designations, he appears to mean the principles that are the basis of the corresponding types of explanation) are one and the same (1072^b2–11). The 'first intelligible' is at the same time the model of all that is good, since it is absolutely necessary—not in the sense of an external necessity such as a constraint or a necessary condition, but in the sense of an intrinsic necessity—and thus it is exactly and completely what it has to be.¹⁸

¹⁸ In addition to that, chapter *A* 7 also sketches a more intuitive or inductive argument, which is based on the theory of the *συστοιχίαι*, 1072^a30–^b1.

Here, again, the material cause is missing. As we have already seen (see section 1.1 above), the reason for that seems to be that it is impossible to carry the ‘material’ type of explanation up to a real first *arkhe*, since there is no first matter.¹⁹ However, since these material explanations are real explanations, they must be based, in some way or other, on a first principle. The solution is perhaps that matter is known together with form, not as a privation of form (in fact it is important to conceive that matter is distinct from mere privation), but because matter and form are correlatives. Aristotle goes as far as to say that matter and form are in a sense the same thing, but one in potentiality and the other in actuality.

2. Second *aporia*

2.1 *The question*

B 1, 995^b6–10:

... and whether such a science should survey only the first principles of substance, or also the principles on which all men base their proofs, e.g. whether it is possible at the same time to assert and deny one and the same thing or not, and all other such questions.

B 2, 996^b26–33:

But, taking the starting points of demonstrations as well as the causes, it is a disputable question whether they are the objects of one science or more (by the starting points of demonstration I mean the common beliefs, on which all men base their proofs); e.g. that everything must be affirmed or denied, and that a thing cannot at the same time be and not be, and all other such premises; the question is whether the same science deals with them [= the principles of demonstrations] as with substance, or a different science, and if it is not one science, which of the two must be identified with that which we now seek.

K 1, 1059^a23–4:

Further, is it the business of one science, or of more than one, to examine the first principles of demonstrations?

Γ 3, 1005^a19–21:

We must state whether it belongs to one or to different sciences to inquire into the truths which are in mathematics called ‘axioms’, and into substances.

¹⁹ In *Physics* II 7, in a similar way (but without reference to first principles), Aristotle brings the formal, final and efficient or productive causes into one, for the end is identical to the form, and the moving cause is specifically identical to them, and he leaves aside the material cause. Besides, he remarks that material cause, being only a potentiality, provides only conditional, and thus incomplete, explanations.

K 4, 1061^b17–19:

Since even the mathematician uses the common axioms only in a special application, it must be the business of first philosophy to examine these²⁰ also.

Does wisdom bear on substances only, or does it consider also the principles of demonstration? The question is stated in these terms in chapter *B* 1, and this is in the same terms that it is discussed in *B* 2 and resolved in *Γ* 3. That stands to reason; but this is not so simple as it might seem, since the *aporia* appears in a quite different form at the beginning of chapter 2 (996^b26–7): are demonstrative principles ‘the objects of one science or more than one’? The author of Book *K* has a very similar phrasing. But it seems very probable that this is but an awkward and ambiguous formulation that Aristotle just let slip out, and indeed the very next sentence in chapter *B* 2 seems to correct the mistake: ‘the question is whether the same science deals with them as with substance, or a different science’ (996^b31–2). Ross suggests that the adverbial *καί*, at the beginning of this sentence, does not bear on *ἀμφισβητήσιμόν ἐστιν*, but on an implied *θεωρῆσαι*, which could plausibly be called for by the proximity of *τὸ θεωρῆσαι τῶν αἰτίων τούτων ἕκαστον* in the preceding sentence. But it is not necessary to suppose such a complex and unusual train of thought. One might as well admit that this is a loose and elliptical sentence combining two distinct ideas: (1) that there is a problem with demonstrative principles, and (2) that this problem has implications concerning the unity *vs.* multiplicity of wisdom.

Besides, the sentence would be perfectly clear without the clause *πότερον μὴς ἐστὶν ἐπιστήμης ἢ πλείονων*, which might be considered a later addition, inserted here to explain *ἀμφισβητήσιμον*—needlessly, in fact, since this word is glossed, after a long parenthesis explaining what the ‘starting points of demonstration’ mean, by another interrogative *πότερον* clause. But perhaps it is better not to correct a text that is well attested and can be understood in spite of its strange syntax.

²⁰ ‘These’ (*τούτων*): does that refer to common axioms, or to the principles of mathematics? The sequel of the chapter does not allow us to answer that question with confidence, for physics and mathematics are considered as parts of wisdom, in a fashion very similar to what we can read at the beginning of Book *E*, and without any mention of the specific problem of the status of the axioms (while this problem is at the foreground of the discussion in *Γ* 3). I take that to be a typical example of how the author of Book *K* works: he takes up some elements from his model (in this case, the allusions to mathematics, and then to physics, in *Γ* 3), then he turns them into a school commonplace (namely, that mathematics and physics are opposed to metaphysics as particular sciences to an universal science), while in fact physics and mathematics are not on a level in Book *Γ*: mathematics is introduced as an example of a science, or group of sciences, which take into account the particular role played by a specific kind of proposition (the so-called ‘axioms’) in their demonstrations; whereas physics (i.e. Presocratic natural philosophy) is brought in as a trend which considered the principle of non-contradiction without any regard to its peculiar position in demonstrations, but rather as a general physical property of reality as a whole.

Of all the commentators whom I have consulted, Madigan alone chooses to take the question 'are they the objects of one science, or more?' at face value. That leads him to think that the second *aporia* consists in three related but distinct questions:²¹

- (a) Does knowledge of the principles of demonstrations pertain to one science or more?
- (b) If this is one science, is it the same as the science of substances?
- (c) If there are two distinct sciences, which of them is wisdom?

He thinks that the discussion in *B* 2 deals first with question (a) in lines 996^b33–997^a11, then with question (c) in lines 997^a11–15. Thus he has to admit that the development of the *aporia* in *B* 2 does not conform to the *pro et contra* pattern and that, although the *aporia* is stated under the form of question (b) in chapter 1, what is discussed in chapter 2 are questions (a) and (c), while the solution in Book *I* addresses question (b). To avoid these complications, it is easier to discard at once the alleged question (a). Of course, this depends also on how the section 996^b33–997^a11 is to be understood.

Before coming to that section, let me point to another variation between chapters 1 and 2, which has not been noticed by commentators. The propositions

Wisdom considers only substances, and not the principles of demonstrations

and

The science of substances and that of the principles of demonstrations are two distinct sciences

although both may be considered as negations of

There is one and the same science (i.e. wisdom) which knows the principles of demonstrations together with substances

are not equivalent, since one may assume the first one and reject the second, if one thinks that there cannot be a science of the first principles of demonstrations. Now this is exactly the meaning of the second objection of chapter 2 (see below section 2.3). Aristotle seems to waver between these two distinct, and equally plausible, versions of the antithesis without feeling uncomfortable. The reason why that does not jeopardize the whole discussion is that at the end he decides for the affirmative thesis, thus leaving aside both versions of its rejection.

²¹ See Madigan 1999, 40 1.

Clearly, Aristotle thinks that his talk of ‘demonstrative principles’ will not be familiar to his audience or readers, and that they will not identify at once what he is meaning. For he takes the trouble, even in the short summary of chapter 1, to explain this notion by means of a general description and several examples (as we shall see, the phrase in *I* 3, ‘the <truths> that are called ‘axioms’ in mathematics’, has the same purpose). To us, some of these examples are unproblematic: we are able to recognize immediately the principle of non contradiction (*B* 1, 99^b9–10) or the law of excluded middle (*B* 2, 99^b29). In fact, these are the principles that Aristotle undertakes to demonstrate, or at least to vindicate against those who would deny them, in chapters 4–8 of Book *I*, which are a long excursus called for by the last argument he had brought forth in *I* 3 to support his answer to our *aporia*. (This argument assumes that the study of such principles is particularly suitable for the philosopher, since they are the best known and the most certain of all the truths that human beings can know. But the mere fact that there are some persons who deny these propositions, and others who demand a demonstration to admit them, challenges Aristotle’s argument.)

Things are not so clear with the second example given in chapter 2: ‘a thing cannot at the same time be and not be’. Is this only another phrasing for the principle of non contradiction, or is this meant to have an ontological import, so that this would be another kind of ‘demonstrative principle’? I will come back to that point later.

Last, both lists of examples end with an ‘... and all other such things’, which suggests that the list could be continued. But in what direction? Ancient commentators do mention, first, mathematical axioms (‘two quantities which are equal to the same quantity are equal’), but physical and ethical principles as well (‘nothing can come out from not being’ or ‘all striving aims at some good, real or apparent’), or even medical or logical propositions. This interpretation probably comes from the fact that for Alexander and his followers, according to the Hellenistic use of such phrases as *koinai ennoiai*, the adjective ‘common’ meant ‘common to all human beings’ or to all reasonable beings. But that cannot fit in with one of the main arguments that we find in *B* 2 and in *I* 3, namely that such principles must not be particular to one science. So I would be reluctant to admit even the example of the axioms about mathematical equality. The fact that mathematical sciences are mentioned at the beginning of *I* 3 must not mean that wisdom has to deal with mathematical axioms. I see that rather as an analogical suggestion. ‘What I have in mind’, Aristotle would say, ‘is *something like* what mathematicians, in their own domain, call “axioms”’. These ‘common propositions’ have, in relation to all possible demonstrations, the special status that geometers ascribe, in relation to geometrical demonstrations, to the propositions they call ‘axioms’. So the adjective *koinai*, which is

used here to characterize these propositions, has the exact meaning which distinguishes it from the 'universal' (*katholou*): something which belongs to several objects or fields, but without being necessarily the mark of one and the same nature that would be identical in every one of them.

Another important point is that these principles are sometimes called *doxai*, 'opinions' or 'judgements', and *protaseis*, 'premises' or 'propositions'. Thus one may suspect that the thesis, and the *aporia* itself, might well rest on a categorial mistake, or a mere pun. The *arkhai* of substances are their last *elements* or their first *causes*, while the *arkhai* of demonstrations or sciences are first *propositions*. Can there be anything common to both these kinds of *arkhai*, so that one would be justified in treating them as the objects of one and the same science? In order to appreciate exactly this difficulty, one has to remember that in Aristotle's idiom the word *episteme* covers two notions that we are inclined to distinguish more or less sharply, while he probably thought that they were two inseparable aspects of the same reality:

- an *episteme* is a coherent body of true propositions obtained through demonstrations;
- *episteme*, as opposed to perception, *phantasia* or opinion, is a specific modality of knowledge; in some contexts the word refers to a single experience of this kind of 'understanding knowledge'.

Thus the claim that substance(s) and the principles of demonstrations are objects of one and the same science may be interpreted in two distinct ways, according to these two aspects of *episteme*:

- (a) in the course of the development of a scientific theory of substance, one must necessarily come across assertions such as the principle of non contradiction;
- (b) in the very act of conceiving the principle of non contradiction, one must obtain some knowledge of substance (or conversely, in the act of understanding what a substance is, one must necessarily recognize the truth of the principle of non contradiction).

How is this possible? The first claim will seem undoubtedly weaker than the second one. But even that will not be so easily satisfied. For if the principle of non contradiction has to be part of a system of true propositions, that means that it is itself true. This is not the way we are accustomed to think of the principle of non contradiction. It is generally considered to be a rule, and a rule, even an infrangible one, is neither true nor false. Remember that for Aristotle logic is not a science, precisely because rules of inference are indifferent to the truth or falsehood of the premises and conclusions.

2.2 First objection against the thesis

B 2, 996^b₃₂–997^a₂:

It is not reasonable that these topics should be the objects of one science; for why should it be peculiarly appropriate to geometry or to any other science to understand these matters? If then it belongs to every science alike, and cannot belong to all, it is not peculiar to the science which investigates substances, any more than to any other science, to know about these topics.

K 1, 1059^a₂₄–5:

If of one < science >, why of this rather than of any other?

The outer meaning of this objection is as follows. Logical principles concern all sciences to the same extent, so that there is no reason to ascribe the knowledge of these principles to one of them rather than to any other. The argument is developed in two stages: first, an inductive move that starts from the case of geometry to establish a general assertion about all sciences, and then a deductive move which passes from ‘all the sciences’ to ‘the science of substances’. The role played by geometry in the argument is probably due to the fact that geometers were the first scientists to pay some attention to the existence of axioms, i.e. to see the possibility and the necessity of some universally acknowledged propositions, on which all demonstrations had to be based. But this historical priority does not confer geometry any special right over the principles that it shares with other sciences. If this interpretation of the inductive part of the argument is correct, then we should reject Schwegler’s conjecture at line 34 (*σοφίας* instead of *γεωμετρίας*), which would in fact suppress the inductive move, and thus weaken the whole argument.

The deductive move rests on the implicit assumption that the science of substances is just one science among the others. Bonitz (rightly) questions this assumption. He calls it ‘a fraud’, because he thinks Aristotle pretends to ignore that wisdom is a universal science. It is true that wisdom is not any particular science, but I am not sure that this is Aristotle’s point here. The point is that even if it is universal, it is in the same position as any particular science with regard to the way in which it refers to the common axioms in order to build up or validate its own demonstrations. Moreover, if one thought it possible to lean on that alleged universality of wisdom in order to escape this first objection, one would crash head on against the next one, which tends to establish the impossibility of such a universal science.

2.3 *Second objection against the thesis*

B 2, 997^a2–11:

And, at the same time, in what way can there be a *science* of the first principles? For we are aware even now what each of them in fact is (at least even other sciences use them as familiar); but if there is a demonstrative science which deals with them, there will have to be an underlying²² kind, and some of them must be demonstrable attributes and others must be axioms (for it is impossible that there should be demonstration about all of them); for the demonstration must start from certain premises and be about a certain subject and prove certain attributes. Therefore it follows that all attributes that are proved must belong to a single class; for all demonstrative sciences use the axioms.

The idea that there is no demonstration (and consequently, in Aristotle's view, no scientific knowledge) of axioms is now commonplace for every educated person. Aristotle himself knows very well this rule, which he states very conspicuously in chapter *A* 9 (992^b24–33). Anyway, he does not worry much about that, and assumes at once that we can easily cope without a scientific knowledge of the principles of demonstrations, because we are quite enough acquainted with them. In Book *I*, he will claim that these principles are perfectly known to everybody, and 'anhypothetical' (the choice of the Platonic word is significant). Admittedly this is not his last word on the topic, since in chapters 4–8 of Book *I* he will have to fight all the way the arguments of those who deny or question these principles. But here, the way he freely takes this point for granted shows at least that it is not at stake in the *aporia*.

It may seem that Aristotle's tone in these lines is not so confident. But perhaps this impression is due only to the fact that the sentence of lines 3–9 contrasts this immediate practical knowledge with a fully fledged demonstrative science. Nevertheless, Aristotle definitely says that we know 'what each of them in fact is'. The justification he gives for that fact is plainly empirical: we can see, 'anyway', that every science uses those principles as well known premises admitted by anybody.

More striking is the fact that here he does not content himself with the notion that a demonstration of demonstrative principles is neither possible nor necessary. He goes on to explore this impossible science, and gives a sketch of what it would look like if it existed. This sketch is based on his own description of the elements of a science, that which we can read in the *Posterior Analytics*: a science demonstrates *from something* (its axioms), *about something* (the domain of objects of which it deals, its own *genos* in Aristotle's idiom), and it demonstrates

²² 'Underlying' or 'assumed by way of hypothesis', if we take *ὑπόκειμαι* to be the passive counterpart of *ὑποτίθημι*.

something (essential properties of this *genos* or of some object within it), the statement of which constitutes the theorems of that science. Now, if there is to be scientific knowledge of the general axioms of demonstration, some of them must be considered as statements of certain essential properties of a certain domain of objects. ‘Some of them’ (τὰ μὲν), Aristotle says, ‘because there cannot be a demonstration about all of them’, that is: even the science of axioms should have its own axioms. At this point, one might perhaps expect a refutation by reduction to an infinite regress. That could be appropriate if Aristotle’s purpose was merely to establish the necessity of primitive propositions, but this is not his point here. What he means is that, if there were such a science of the common axioms, then even those which would be kept undemonstrable and undemonstrated (i.e. the axioms of the science of axioms) would have their status changed *ipso facto*: they would no more be principles common to all sciences and proper to none, but the particular axioms of that particular science. Thus they would no more be rules, but real true propositions conveying some information about some object(s). But this is precisely what the objection is intended to bar. For that would mean that there is a common *genos* of everything that can be demonstrated, that is, a genus of all beings—a thesis that Aristotle, as is well known, continually rejects. This was the original mistake of the Eleatic school, a mistake in which their physicist opponents shared in a way since, as they saw so many natural phenomena that appeared to contradict the principle of non contradiction, they felt that they had a right to reject the principle altogether.

2.4 Objection against the antithesis

B 2, 997^a11–15:

But if the science of substance and that which deals with the axioms are different, which of them is by nature more authoritative and prior? The *axioms* are more universal and are principles of all things. And if it is not the business of the philosopher, to whom else will it belong to inquire what is true and what is untrue about them?

K 1, 1059^a24–5:

If of more, what sort of sciences must these be said to be?

This objection makes use of one of the prenotions about wisdom from Book *A*: wisdom must be the knowledge of what is most universal (*A* 2, 982^a21–26). This opinion can be made into an objection against the antithesis only if it is further assumed that wisdom, whatever it may be for the rest, contains the knowledge of substances (an assumption which is common to *aporiai* 2–5). If this is so, and if it is true that the knowledge of demonstrative principles cannot be left out

of the scope of wisdom, for they are undoubtedly among ‘what is most universal’, then wisdom must necessarily deal with both matters together.

It remains to be seen how that can be done. Book *B* gives no hint of a solution, except perhaps the mention of the philosopher at lines 14–15. The same mention occurs again in *Γ* 3, not only when Aristotle claims that it comes to the philosopher to have the most accurate knowledge of the principles that are most knowable and most certain, but also when he remarks that before him, only some natural philosophers had undertaken to assess the validity of the principle of non contradiction, and that they did so because they were convinced that they were dealing with all that there is: ‘But since there is one kind of thinker who is even above the natural philosopher (for nature is only one particular genus of being), the discussion of these truths also will belong to him whose inquiry is universal and deals with primary substance’ (*Γ* 3, 1005^a33–^b1).

2.5 *A few words about the solution*

In Book *Γ* Aristotle sides resolutely with the thesis: ‘Evidently then the philosopher, who is studying the nature of all substance (περὶ πάσης τῆς οὐσίας . . . ἥ πέφυκεν), must inquire also into the principles of deduction’²³ (1005^b5–8).

To understand better the meaning of this answer, let us turn back to the objections that were raised against it in chapter *B* 2. For if we are to maintain the thesis without any reservation, we have to remove these objections in some way or other. There is not much difficulty with the first one, since it was presented only as a plausible argument based on a kind of principle of indifference (‘why this science rather than any other one?’). Thus it will be enough to find a distinctive feature of, or to determine a special status for, the science called wisdom. This is precisely the kind of move that is made in the objection to the antithesis (997^a11–15, section 2.4 above).

It will not be so easy to cope with the second objection, since this one rests, as we have seen, on an important Aristotelian thesis: there cannot exist a universal science, that is, a science which would be able to demonstrate from

²³ In the translation of this text, I have chosen to depart from the traditional rendering of ἥ through the Latin adverb *qua* or its various equivalents in modern languages, and to keep something of the original concrete meaning of the Greek adverb (literally: ‘through which way’) in the phrase ἥ πέφυκεν. For when ἥ is translated merely by *qua*, the verb πέφυκεν without any complement looks awkward. Of course, it is still possible to supply a complement in the translation and to write: ‘. . . *qua* naturally constituted <as a substance>’. Anyway, I think that here ἥ πέφυκεν has the same meaning as the standard phrase ‘*qua* being’ when it is used to describe the peculiar kind of knowledge which is proper to first philosophy, as I will now proceed to show.

anhypothetical principles the essential properties of every object belonging to every area of being. But, as it is equally well known, Aristotle bypasses the bar he had himself put on such a science, by means of a special dispensation, which he expresses by the phrase : ‘... *qua* being’. I will not undertake, at this stage of my essay, to discuss the issues raised by this *distinguo*, since they concern the project and status of Aristotle’s first philosophy as a whole. But since the second *aporia* and the principle of contradiction are seldom cited by scholars in their debates about the science of being *qua* being, I think it may be worthwhile to see how the discussion of the second *aporia* may throw some light on these issues.

For every particular science, as we have seen, demonstrative principles hold only as rules. They do not provide any information about the properties or causes that make an animal (or a number, or a virtue), precisely what it is. And if it is so for the kinds of things that are studied by each discipline taken separately, then it must be so for all beings. But if one looks at them in another way, universal demonstrative principles do tell us something about what it is, for any being whatever, to be: that is, about the fact that every one of them has some features which make it precisely the kind of being it is, and about the way in which these properties belong to it. To people who confess that they are puzzled by the cryptic phrase ‘to study being *qua* being’, one might give this clue: to consider beings²⁴ *qua* being is to consider them from a point of view in which, for instance, the principle of non contradiction tells us something about them.

But what does it tell? Let us put the matter the other way round, and take another start from the notion of a ‘science of substances’, which was presupposed in the original statement of our *aporia*. This notion may seem less problematic, but on a closer examination it is not so clear as it first appears. For ‘substance’ is not much more of a true *genos* than ‘being’ is. I take it that, when the ten categories are described as *γένη τοῦ ὄντος*, the word *γένος* has mainly or only its negative meaning (i.e. classes that are not part of a larger genus) and not the positive one (i.e. an homogeneous universal that can be conveniently divided into species). ‘Substance’ is not a common essence encompassing all kinds of substances. But if the principle of non contradiction is taken as the statement of an essential property of substance, showing how any substance, *as such*, is constituted (this is how I think we should understand the *ἡ πέφυκεν* of line 1005^b7), then there exists a science of substance. So both difficulties (the one about a scientific knowledge and the one about a science of substances) are solved together, and it is literally true to say that both sciences

²⁴ I borrow the plural ‘beings’ from the illuminating remarks of Barnes 1995, 69–72.

are one and the same knowledge, not only a science that would do both things separately.

A passage of Γ 4 (1007^a20–^b18) provides a confirmation for this interpretation. It comes immediately after the celebrated ‘demonstration’ of the principle of non contradiction ‘by means of a refutation’. Aristotle adds a series of auxiliary arguments to reinforce his main demonstration, and the first of these is that the rejection of the principle of non contradiction would amount to ‘suppressing substance and quiddity’, that is, to rejecting the thesis that some predications are essential whereas others are accidental. If this is so, one can bring off another refutation of those who deny the principle of non contradiction, by means of a *modus tollens*: if one assumes that there exists something like substance and quiddity (and to Aristotle’s eyes it is an essential feature of our world, that some objects at least may be recognized and understood by reference to their quiddity), then the principle of non contradiction must be true. Aristotle concludes: ‘If this is so, it has been demonstrated (δεδείκται) that it is impossible to attribute contradictory predicates to one and the same object’ (1007^b17–18). This ‘demonstration’ is precisely the kind of project which has been alluded to in chapter *B* 2, 997^a5–6: to give a ‘demonstration’ of a demonstrative principle, considered as the statement of an essential property of the ‘genus’ of substances, by taking as an axiom another fundamental assertion (namely, the claim that there are essential predications). Here, ‘genus’ must be put into inverted commas, since substances are not a true genus; and so does ‘demonstration’, since this is an indirect demonstration, which is not a fully scientific demonstration,²⁵ although it is not devoid of scientific value.

²⁵ *Posterior Analytics* I 26.

3

Aporiai 3–5

FRANS A. J. DE HAAS

1. Introduction

In the first chapter of *Metaphysics B* Aristotle lists a series of questions concerning a ‘science’ (ἐπιστήμη) he has been seeking since the start of *Metaphysics A*. He regards dealing with these questions as a necessary part of the search for such a science. Most of them are discussed in more detail in the remainder of Book *B*. This chapter focuses on *aporiai* 3–5, with reference to the order in which they appear in *B* 2, 997^a15–998^a19. Book *K* 1–2 provides a similar, though by no means identical, discussion of *aporiai*.¹ In order to acquire a complete picture of the issues involved, our first task will be to sort out the similarities and differences between the three accounts.

In our editions *aporiai* 3–5 complete the second chapter of Book *B* of Aristotle’s *Metaphysics*, which contains a more elaborate discussion of the first five *aporiai* that were briefly introduced in *B* 1, 995^b4–27. This was probably the reason why the organizers of the Symposium decided to have these *aporiai* discussed together. Unlike the ancient editor, however, commentators have tended to set *aporiai* 1–4 apart as dealing with the tension between the universal scope of first philosophy on the one hand, and the Aristotelian requirement of the unity of the subject matter of a science on the other. These commentators consider the remaining *aporiai*, starting with 5, to deal with ‘more substantive metaphysical issues’.²

¹ For the discussion about the authenticity of Book *K* see Décarie 1983, who accepts *K* as authentic, versus Aubenque 1983 who is critical about authenticity; cf. Madigan 1999, xxxviii xl (henceforward: Madigan). Whether Book *K* is authentic or a summary of issues dealt with in *Metaph. BΓΕ* by an author somewhat later than Aristotle, the account in book *K* may well testify to the wider context of the questions posed in *B*, esp. if Aubenque is right in characterizing the author as ‘dans une certaine mesure un compilateur qui a assez d’autonomie pour utiliser plusieurs sources, à côté de la source principale qui sont *BΓΕ*’ (1983, 343).

² See e.g. Ross 1970 (1924), 223 (with *aporiai* 4 and 5 in reversed order); Mansion 1955, 149; Leszl 1975, 117–18 (with qualifications); Irwin 1988, 161; Madigan 1999, xiii; Cardullo 2003, 177–8.

Halper has argued that *aporiai* 1–5 belong together because they all focus on the requisite *conditions* of metaphysics.³ He also argued that the set of five *aporiai* about the *subject matter* of first philosophy is balanced by the remaining set of *aporiai* which deal with the unity of the *principles*. According to Halper, Aristotle's syllogistic analysis opened the way to conceive of sciences that used principles to demonstrate attributes of their subjects, thus separating subject matter from principles. Thus Aristotle was able to oppose Platonic metaphysics, which claimed the identity of the subject matter and principles of first philosophy. The unity of subject matter and principles, respectively, then became the obvious locus of *aporiai* in Book *B*.

The position I shall defend here differs from both of these options. On the one hand I believe there are sufficient reasons to regard *aporiai* 1–5 as a group, though not because they all raise questions about the (unity of the) subject matter of first philosophy or about its conditions. Rather *aporiai* 1–5 trace the effect of applying the philosophy of science of the *Posterior Analytics* to the new science Aristotle is exploring in the first books of our *Metaphysics*. We shall see that even the critical discussion of the status of Forms and intermediates in *aporia* 5 is governed and limited by this concern. At the same time *aporia* 5 paves the way for, e.g., the more positive investigation of mathematical objects in *Metaphysics M–N*, and thereby shows its affinity with the later *aporiai*. All in all, the transition between *aporiai* 4 and 5 is equally smooth as that between *aporiai* 5 and 6.

The structure of this paper is the following. A comparison of *B* 2 with similar accounts in *B* 1 and *K* 1 will show that in *B* 2 Aristotle's attention seems to shift away from the required *unity* of such a science to the *items* it comprises, and especially to the scope and character of the resulting science (section 2). In *Metaphysics A* Aristotle established a set of characteristics of *sophia*, among which we do not yet find any of the requirements of a demonstrative science. These characteristics are tested and applied throughout Book *B* and explain the constitutive features of Aristotle's own position in Book *I* (section 3). An analysis of the discussion of *aporiai* 3–5 shows that Aristotle takes as a starting point his articulated views of demonstrative science as set out in the *Posterior Analytics*. Many interpreters have regarded the problems raised in Book *B* as preparation for a relaxation or even rejection of the model of science which Aristotle proclaimed in the *Posterior Analytics*. In their view the heterogeneous subject matter and special character of metaphysics as a science of first principles

³ See Halper 1987 on *aporiai* 1–4 and Halper 1988, 21–3 for *aporiai* 1–5 as a set. The Kantian inspiration of this interpretation, which sheds considerable doubt on its applicability to Aristotle, is especially clear from Irwin 1988, 166–8.

would not allow this model to stand.⁴ If so, the science sought turns out not to be a science strictly speaking, for reasons to be found in our *aporiai*. Others have argued, to my mind more convincingly, that Aristotle is at pains to maintain the model of science erected in the *Posterior Analytics*, and in fact succeeds in doing so.⁵ Our starting point will be that in *aporiai* 3–5 Aristotle does not yet take for granted that *sophia* is a demonstrative science. Rather, he tests this possibility against a limited set of characteristics of demonstrative sciences. In this way *aporiai* 3–5 succeed in creating serious problems that are not solved by having recourse to the *Posterior Analytics* but result from a particular application of some of its requirements to the proposed subject matter of *sophia* (section 4). This application takes us to the heart of Aristotle's project in the *Metaphysics*, since precisely as a result of applying the requirements of Aristotelian demonstrative science *sophia* comes dangerously close to the Platonic universal science which the *Posterior Analytics* was so keen to rule out. A discussion of this wider issue will show what contributions *aporiai* 3–5 make to the investigation of first philosophy (section 5).

2. Three accounts

In the list in *Metaphysics B 1* the first two questions are [i] whether one or many sciences deal with the causes, and [ii] whether this science is supposed to deal only with the principles of substance or also with the principles from which all people draw proofs.⁶ Aristotle then introduces his next three *aporiai* in the following way:

[iii] And if the science in question deals with substance, whether *one* science deals with all substances, or more than one, and if more, whether are all akin (*συγγενείς*), or must some of them be called forms of wisdom (*σοφίας*) and the others something else?

[iv] And this itself is also one of the things that must be discussed—whether sensible substances alone should be said to exist or others also besides them, and whether these others are of one kind (*μοναχῶς*) or there are several classes (*πλείονα γένη*) of substances, as is supposed by those who believe both in Forms and in mathematical objects intermediate between these and sensible things.

⁴ See e.g. Aubenque 1962, *passim*; Owen 1960; Kirwan 1971; Irwin 1988, chs. 7–8 esp. 154 and 162–3; Irwin 1990; Code 1997. Others like Leszl 1975, 119–34 seem genuinely puzzled about the role of the *Posterior Analytics* in our *aporiai*.

⁵ A strong statement to this effect is contained in Bolton 1996, 231–40, see also Bolton 1994, and with differences in emphasis and detail McKirahan 1995, Fraser 2002, Bell 2004, 27–33.

⁶ *Metaph. B 1*, 995^b_{4–10}. For *aporiai* 1–2 see the contribution by Crubellier in this volume. Following Madigan I give references to *aporiai* in *B 1* in roman numbers, to *B 2–6* in arabic numbers, and to *K 1–2* in lower-case letters.

[v] We must inquire, then, as we say, into these questions, and also whether our investigation (*θεωρία*) is concerned only with substances or also with the essential attributes of substances (*τὰ συμβεβηκότα καθ' αὐτὰ ταῖς οὐσίαις*).⁷

Aporia [iii] clearly connects with *aporia* [ii] which mentioned the principles of substance as part of the subject matter of the science under investigation. If the science in question deals with substance, there is this further question about the unity of the domain of substance. Since, or so Aristotle assumes, there are several kinds of substance, the question arises whether the sciences that study these kinds make up a single kind, called *sophia*, or only some of them are entitled to this name. Interestingly, the plural *sophias* indicates that at this stage of Aristotle's investigation *sophia* is a generic term, allowing for several kinds of *sophia*.⁸ The option that there is only *one* kind of substance, studied by a single science, is not envisaged. This reflects both the Platonic doctrine of Forms and mathematical mentioned,⁹ and Aristotle's distinctions between perceptible and non perceptible substances as reflected in *aporia* [iv], 99^b14–15, and between corruptible and incorruptible substances as reflected in *aporia* [xi], 99^a2–4. The further option that from the several disciplines that study the various kinds of substance only *one* will deserve the name of *sophia* is not mentioned either.

Aporia [iii] arises only on two assumptions: (1) there are several kinds of substances, and (2) each kind of substance is studied by its own kind of *sophia*. The second assumption (2) can be explained from Aristotle's *Posterior Analytics*: the identity of a science (*ἐπιστήμη*) partly derives from the genus it is concerned with.¹⁰ More precisely, as it is put in the discussion of *aporia* 2:

And, at the same time, in what way can there be a science (*ἐπιστήμη*) of the first principles? For we are aware even now what each of them is; at least even other sciences use them as familiar. And if there is a *demonstrative* science (*ἀποδεικτική*) which deals with them, there will have to be an underlying kind (*γένος ὑποκείμενον*), and some of

⁷ *Metaph. B* 1, 99^b10–20. All translations of *Metaphysics B* and *K* are based on *The Revised Oxford Translation* (tr. W. D. Ross Barnes 1984) unless otherwise indicated. Madigan takes lines 99^b25–7 to resume *aporia* [v], but although these lines mention *per se* attributes again, there is no need to attach them to *aporia* [v] instead of *aporia* [vi], which concerns dialectical concepts (same, other, like, unlike, contrariety) and their essential attributes, cf. *Γ* 2, 100^a7–8. Besides, the relation between these concepts and substances is not always said to be that of *per se* attributes, cf. *Γ* 2, 100^b33–6, 100^a1–8, 100^b11–18; *K* 3, 106^b4–6. See further Leszl 1975, 132–3. Although *aporia* [vi] does not reappear in *B* 2–6, the relevance of these concepts to (*φιλο*)σοφία is confirmed in the texts mentioned above, and Aristotle discusses them in Book *I*.

⁸ Cf. *B* 2, 99^a16, *ἐπιστημαί*. In *E* 1, 102^a18–32 mathematics, physics, and theology are designated as the three *φιλοσοφίαί θεωρητικάί*, and contrasted with a *πρώτη φιλοσοφία* which is *καθόλου* because it is *πρώτη*. See n. 48.

⁹ For similar wording cf. *A* 6, 98^b14–18.

¹⁰ Cf. *APo* I 7, 75^b7–8; I 28, *passim*. For a clear discussion of the *γένος* of a science, see McKirahan 1992, ch. 4. For its relation to the issue of a universal science, see section 5.

them must be attributes (πάθη) and others must be axioms (ἀξιώματα) (for it is impossible that there should be demonstration about all things); for demonstration must start from certain premises and be about a certain subject and prove certain attributes. Therefore it follows that everything proven must belong to one class (γένος); for all demonstrative sciences use the axioms.¹¹

Here the investigation is concerned with the question whether the principles of proof (αἱ ἀποδεικτικαὶ ἀρχαί) are studied by the new science. This topic itself does not depend on the *Posterior Analytics*, since the principles of proof (such as the principle of contradiction and the law of excluded middle) are familiar from the practice of other demonstrative sciences, and from the *Topics*. However, Aristotle claims that *if* there is a *demonstrative* science that deals with the principles of proof, *then* it must be possible to identify its subject genus, attributes, and axioms. Let us refer to this doctrine as the ‘three element rule’. In section 4 we shall see in more detail how this rule is used to generate difficulties for the new science as it has developed so far.¹²

The first assumption (1) is put to the test in *aporia* [iv]: is there only a single kind of substance or are there several kinds?¹³ From the examples of Forms and mathematical we can infer that this question was at least partly prompted by the background of this discussion in Plato’s Academy. Clearly, the distinction between Forms, mathematical, and sensible substances is not to be taken as a division of the genus substance into several species, but as establishing three independent genera of substance, each with its corresponding kind of knowledge.¹⁴

Finally, *aporia* [v] states the question whether the science under investigation should only deal with substances, or also their *per se* attributes. There is no apparent link with the preceding *aporia*, as is signalled by the transitional formula ‘We must inquire, then, as we say, into these questions, and also . . .’. This question, too, recalls the three element rule of demonstrative science which was invoked in *aporia* 2. As it stands, the question is hardly aporetic, and should get a quick affirmative answer on the basis of the *Posterior Analytics*. We shall have to see whether *K* 1 and *B* 2 develop this question into a more serious issue.

In Book *K*, chapter 1, similar *aporiai* are found, albeit in a different order and with different emphasis. First we find *aporia* [c], which corresponds to [iii]:

¹¹ *Metaph.* *B* 2, 997^a2–11 (with modifications, my italics).

¹² See p. 89 f.

¹³ For the terms *συγγενής*, *συγγένεια* in this context cf. *APo* I 9, 76^a1, 9, 30; I 28, 87^b4; I 32, 88^b23–4.

¹⁴ For the triad cf. e.g. *A* 6, 987^b14–16 which specifies that the division is between *perceptible* substances and non-perceptible substances. Cf. *K* 1, 1059^a39–1; *Δ* 2, 1028^b19–21.

[c] Further, does it investigate all substances or not? If not all, it is hard to say which; but if, being one, it investigates them all it is doubtful how the same science can embrace several.¹⁵

In its formulation *K* 1 displays the binomial structure of a fully fledged *aporia*, in terms of a thesis and antithesis (if not . . . if) which are both questioned so as to yield a proper *aporia*.¹⁶ The difficulty of determining which substances are the subject matter of *sophia* is the difficulty we have already met in *aporia* [iii]. The doubt refers, once again, to the tension between the unity of a science and its comprising more than a single kind of substance.

The fourth *aporia* [d] in *K* 1 relates to the fifth *aporia* [v] in *B* 1, on which it sheds new light:

[d] Further, is it about substances (*οὐσίαι*) alone, or about attributes (*συμβεβηκότα*) as well? If there is demonstration with respect to (*περί*) attributes, there is no demonstration with respect to (*περί*) substances. But if the science <of attributes> is different, what is each of them, and which is wisdom? For if wisdom is demonstrative, <the one that is> concerned with attributes <is wisdom>, but if it concerns things that are primary, <the one that> concerns substances is wisdom.¹⁷

As we have already seen, a demonstrative science proves *per se* attributes to belong to their subjects. In *APo* I 10, 76^b11–16 Aristotle states that every demonstrative science is about (*περί*) three things: the *genos*, the axioms, and the attributes. If ‘about’ is used in this general sense there can be no problem, as Ross pointed out: *sophia* may well *define* substances and *demonstrate* their attributes.¹⁸ However, the explanation of the second horn of the *aporai* points in a different direction. Apparently, ‘about’ is to be taken in the sense in which it applies to the attributes, which are subjected to proof. *Ousiai*, whether in the sense of ‘substances’ or in the sense of ‘essences’, cannot be subjected to proof in this sense, as we know from the *Posterior Analytics*.¹⁹ So, again, if we assume the

¹⁵ *K* 1, 1059^a26–9. Pace Madigan *ad loc.* I do not regard lines 34–8 as belonging to this *aporia* but rather to *aporia* [a], 1059^a20–3, concerning the four causes.

¹⁶ Ross 1970 (1924) I, 226–7 emphasizes this binomial structure as the basic structure of the *aporia*, even where it is not at all explicit in Aristotle’s texts.

¹⁷ *K* 1 1059^a29–34, my translation, after Barnes 1984. Madigan translates: ‘If there is demonstration of (*περί*) attributes, there is no demonstration of substances. But if the science <of attributes> is different, what is each of them, and which is wisdom? In so far (*ἐι μὲν*) as it is demonstrative, the science of attributes is wisdom, but as a science of things that are primary, the science of substances is wisdom.’ This translation misrepresents *περί* and leads the focus away to the different issue of whether there is demonstration of substances/essences. The translation ‘in so far’ for *ἐι* takes for granted that *σοφία* is demonstrative, and thus states the problem as the opposition between two requirements of *sophia*. For my interpretation see the main text.

¹⁸ Ross, 231, cf. Madigan, I 49, who refers to Alex. In *Metaph.* 194,28–195,2 for this solution.

¹⁹ Cf. *APo* I 10, 76^b3–6: the existence of proper objects of a science (here: the substances) is assumed, whereas the existence of the attributes is proved from the principles. Strictly speaking, essences cannot be proved, see *APo* II 4–8.

Posterior Analytics as given, there should be no problem. What, then, is the issue here? In his explanation Aristotle opposes the option that wisdom is a demonstrative science to the option that it is concerned with primary things (*πρῶτα*)—which, by definition, cannot be established by demonstration.²⁰ So what seems to be at stake here is again the question whether wisdom is to be regarded as a demonstrative science at all, or not.²¹ This question is tackled by exploiting the three element rule with regard to substances and attributes. If wisdom demonstrates attributes, the distinctions on which the three element rule rests forbid that wisdom applies to substances in the same way (the question does not signal any distinction in this respect). If, then, one assumes the science of attributes to be separate from the science of the substances they are the attributes of, the result is incomprehensible ('what is each of them'), and there is no way of deciding which of them is wisdom: each of them has its own claim to that title.

Next *K* 1 contains a section denying that the science under investigation involves all causes discussed in the *Physics*, because the final cause should not be included, which harks back to *aporia* [a].²² The issue of the relation between *sophia* and physics is then widened into a further *aporia*, reminiscent of *aporia* [iv]:

[e] In general, it involves the *aporiai* whether the science now sought for is really about perceptible substances or not, but about others. If it is about others, it would be about the Forms or the mathematical.

Now, that the Forms do not exist is clear. Nonetheless, it involves *aporiai*, even if one posits that they exist, why in the world <intermediates> do not also exist in the case of other things of which there are Forms, just as they do in the case of the mathematical? I mean that they posit the mathematical as intermediate between Forms and perceptibles, as some third class of things alongside Forms and things here, but there is no third man or horse alongside the thing itself and the particulars.

But now if <the mathematical> do not exist as they say, what sort of things should we posit that the mathematician investigates? Certainly not things here, for none of them is such as the mathematical sciences seek. But neither is the science now sought about the mathematical, for none of them is separate.

Nor is it about perceptible substances, for they are perishable.²³

This *aporia* does not show any concern with the unity of a science that would deal with several kinds of substance if Forms and mathematical existed as

²⁰ Cf. e.g. *APo* I 10, 76^a31^b2; II 19, 99^b20².

²¹ See *aporia* 2 above.

²² See n. 15 above.

²³ *Metaph.* *K* 1, 1059^b38^b14.

Platonists said they did. On the contrary, it proposes a set of different though related questions.

Unlike *B 1*, *K 1* raises the question whether the science involved concerns perceptible substances or not. The positive answer was assumed in Book *A*, chapters 6 and 9, and is not further elaborated here (see below p. 87). The negative answer is stated at the end of this section, and rests on the assumption that the science now sought should be about imperishable substances. In Aristotle's own full fledged theory this argument will not be valid, since at least *some* perceptible substances (the heavenly bodies) are imperishable. So far, however, only Forms and mathematical have been considered imperceptible substances, and both of *these* are regarded as imperishable.²⁴

Unlike *B 1*, too, *K 1* takes for granted that Forms do not exist. It makes clear that if they did, an inconsistency would arise for the Platonists: why assume the existence of mathematical but not of man and horse, given that there are Forms of both? We shall see this type of argument return more extensively in *B 2*.

Unlike *B 1*, finally, in *K 1* the author is ready to assume that mathematical do not exist separately. This position, we are told, is not without problems of its own, because it may leave us without a proper subject matter for mathematics. Apparently, *K 1* does not assume the results Aristotle reached in *M–N*, where he not only denied that mathematical have a separate existence, but also described on what kind of objects mathematicians operate. Rather, the discussion formulates the *raison d'être* of books *M–N*, which are necessary precisely when the Platonic view of mathematical turns out to be untenable.

It will be clear that if Forms and mathematical do not exist as substances in the way in which some said they did, here Aristotle envisages no further kinds of substance which might jeopardize the unity of the science sought. In this respect, a decision on the existence of Forms and mathematical is prior to *aporia* [iv]. On the other hand, the last line of the section points out why Forms and mathematical were considered serious candidates in the first place: they at least are imperishable, and thereby qualify for being the subject matter of *sophia* in a way (most) perceptible substances do not. In short, *K 1* shows a wider spectrum of issues than *B 1*, and much less focus on the requirements of a science as such. It remains to be seen how *B 2*, the most extensive account of *aporai* 3–5, compares with its shorter counterparts.

²⁴ Only in *Metaph. A* does Aristotle repeat his results from the *Physics* that there are prime movers of the celestial spheres, and does he argue for the Intellect as an imperceptible, imperishable substance.

3. *Metaphysics* Book *A*: *sophia*

In order to set the exact boundaries within which we shall have to interpret *aporiai* 3–5 it is useful to list the various steps through which Aristotle has taken his search in Book *A*. In *B* 1 Aristotle indicates that he is going to lay out the puzzles to be studied regarding ‘the science we are seeking’.²⁵ For the outlines of this ‘science we are seeking’ he refers to earlier aporetic discussions²⁶ which we find in Book *A* where he introduced this research project in similar terms.²⁷ Book *A* itself ended by promising a set of *aporiai* like Book *B*:

But let us return to enumerate the difficulties that might be raised on these same points; for perhaps we may get some help towards our later difficulties.²⁸

We may surmise that our set of *aporiai* is itself to be regarded as an intermediate inquiry, the results of which may contribute to the solution of yet further *aporiai*. Hence, the inquiry leads from the beginning of Book *A*, through *B*, to further questions. We find that Book *B* refers to some of the results reached in Book *A*,²⁹ and that Book *B* is referred to in later parts of the *Metaphysics*.³⁰

We start after the famous description of the progressive stages of cognition, from sense perception, through memory and experience (ἐμπειρία)—all of which humans share with animals—to human art (τέχνη) and understanding or ‘science’ (ἐπιστήμη).³¹ We learn that these human capacities rank higher on a scale of ‘wisdom’ (σοφία) than mere human experience. For

- People value knowledge of *causes* (τὸ διότι) higher than experience and practical skill which rest on knowledge of the fact (τὸ ὅτι). They regard those who possess knowledge of causes (τέχνη, ἐπιστήμη) and an account (λόγος) as more skilful (σοφώτερος) than those who possess only experience and practical skill.³²

²⁵ Cf. *B* 1, 995^a24 τὴν ἐπιζητουμένην ἐπιστήμην; cf. *B* 2 996^b3; 996^b31 3.

²⁶ *B* 1, 995^b5 περὶ ὧν ἐν τοῖς πεφρομισμένοις διηπορήσαμεν; cf. *B* 2, 996^b8 ἐκ τῶν πάλαι διωρισμένων.

²⁷ Cf. *A* 1, 982^a1 3 ὅτι μὲν οὖν ἡ σοφία περὶ τινὰς ἀρχὰς καὶ αἰτίας ἐστὶν ἐπιστήμη, δῆλον; *A* 2, 982^a4 ἐπεὶ δὲ ταύτην τὴν ἐπιστήμην ζητοῦμεν κτλ. (both quoted below p. 82); *A* 2, 982^b7 8; 983^a21 3; also *A* 9, 992^a24 ζητούσης τῆς σοφίας περὶ τῶν φανερῶν.

²⁸ *A* 10, 993^a25 7. Given the possibility of earlier versions of a discussion of *aporiai*, to which Book *K* may testify, it cannot be excluded that the reference in *A* 10 originally meant a different set of *aporiai* than we now possess in Book *B*. For this issue see Madigan, xxxviii xl.

²⁹ e.g. *B* 2, 996^b8 10 refer to *A* 1 2 and 4; *B* 2, 997^b3 5 refer to *A* 6 and 9, with some provisos, see Madigan, 50 51.

³⁰ e.g. *Γ* 1 addresses *aporiai* 1, 2 and 4; *Γ* 2, 1004^a b1 takes up *B* 1, 995^b20 7 on the principles of dialectic (not further discussed in *B* 2 6); *Γ* 3, 1005^a19–b18 speaks of *aporia* 4 as settled; to *aporia* 5 refer *M* 2 1076^a38–b4, 1077^a1 20; *EZHΘ* pick up *aporia* 3 by addressing further issues concerning substance.

³¹ *A* 1, 980^a1 981^a24.

³² *A* 1, 980^a24–981^b6; 981^b29–982^a1.

- People consider those who possess the ability to *teach* as more knowledgeable; this ability derives from knowing the causes.³³
- People do not regard perceptual knowledge of particulars (τὸ ὅτι) as σοφία because it lacks knowledge of causes (τὸ διὰ τί);³⁴
- people admire inventors of τέχνη because they go *beyond sense perception which all have in common*, which is especially true of theoretical τέχναι, as opposed to practical and useful skills (τέχνη).³⁵

A 1 closes on the line

It is clear that *sophia* is *epistēmē* concerning certain principles and causes.³⁶

which the first line of *A* 2 picks up with the phrase

Since we are seeking this *epistēmē*, we must investigate with which causes and which principles the *epistēmē* which is *sophia* is concerned.³⁷

At the start of chapter *A* 2 the phrase ‘this *epistēmē*’ is still a generic indication of an intellectual skill involving the knowledge of causes. As such it is called σοφία, τέχνη, or ἐπιστήμη, apparently without the more technical overtones familiar from other parts of the Aristotelian corpus. In chapter *A* 2 the list of common opinions on ‘wisdom’ and ‘the wise’ compiled in chapter *A* 1 is summarized,³⁸ and taken as the starting point of the investigation with which causes and principles *sophia* is concerned. In the process each of the items on the list receives further specification. To *sophia* the following descriptions apply:

- knowledge of everything, i.e. *universally*, not down to every detail, which is at the same time what is most *difficult* for humans to know, because furthest removed from sense perception;³⁹
- knowledge of *first principles* (τὰ πρῶτα) which are few in number and therefore *most precise* knowledge;⁴⁰
- teaching knowledge of the causes and thereby theoretical knowledge *to a higher degree*;⁴¹
- knowledge most of all, which he who seeks knowledge for its own sake will desire most; this is knowledge of what is *most knowable*, the highest principles and causes by which everything else is known;⁴²
- knowledge superior to all knowledge, because it grasps the good for the sake of which all individual actions take place, as well as what is best in nature as a whole.⁴³

³³ *A* 1, 981^b7–10; *A* 2, 982^a13. ³⁴ *A* 1, 981^b10–13.

³⁵ *A* 1, 981^b13–20. ³⁶ *A* 1, 982^a1–3.

³⁷ *A* 2, 982^a4–6. ³⁸ *A* 2, 982^a6–21.

³⁹ *A* 2, 982^a21–5. ⁴⁰ *A* 2, 982^a25–8.

⁴¹ *A* 2, 982^a28–30. ⁴² *A* 2, 982^a30–^b4. ⁴³ *A* 2, 982^b4–7.

Clearly, in its own way the science which Aristotle has been seeking qualifies for all these characteristics to the highest degree. At this point Aristotle concludes:

On the basis, then, of everything that has been said, the name which we are seeking applies to the same science (*ἐπιστήμη*): it must be one which contemplates the first principles and causes; for also the good, viz. the because of which, is one of the causes.⁴⁴

From his survey Aristotle concludes that the name '*sophia*' applies to a science of first principles and causes. It is important that Aristotle signals that the commonly accepted characteristics of the *sophos* and of *sophia* all point to the same science. For here we see how this survey furnishes a presupposition that will help generate *aporiai* 1–5: if all first principles and causes, including the good, are somehow covered by a single science, problems arise concerning the unity and character of this science. The special reference to the final cause as included (merely) because it is one of the four causes signals Aristotle's disagreement with Plato, who declared the Good to be the highest Form. In section 5 we shall return briefly to this issue.

In the remainder of chapter *A* 2 Aristotle presents two more claims:

- *sophia* is not aimed at production but pursued for its own sake: we can see from history that *philosophia* began to be pursued by people who wished to flee the ignorance of which they had become aware, and who were free from the necessities of human life. They started by wondering (*θαυμάζειν*) and discussing questions (*διαπορεῖν*) about marvels close at hand, and proceeded to larger questions; when the explanation is found one is in the opposite state: one would be surprised finding things to be otherwise.⁴⁵
- the suspicion that such knowledge befits a god rather than a human being is correct: this knowledge is divine both in the sense that it is the kind of knowledge a god will have most of all, and in the sense that god as such is believed to be among the primary causes and principles. But the gods are not jealous. Hence this knowledge is the highest knowledge without exception, and better than any other kind.⁴⁶

The first claim identifies the search for *sophia* as the primordial search for knowledge for its own sake, with wonder and *aporiai* at the centre of people's concerns. The queries that are part and parcel of Aristotle's discussion of *sophia* throughout the *Metaphysics*, but most clearly in Book *B*, are thus identified as fundamental to *philosophia* from its beginnings. The aim of the enterprise is the opposite state of knowledge which would marvel at the opposite of what is actually the case.

⁴⁴ *A* 2, 982^b7 10.

⁴⁵ *A* 2, 982^b11 28; 983^a11 21.

⁴⁶ *A* 2, 982^b28–983^a11.

The second claim contradicts the old view that the gods are jealous and themselves have a kind of knowledge mankind should not strive for. This view would detract from the supremacy of *sophia* as specified in the preceding paragraphs. But since the gods are not jealous, it is indeed a godlike knowledge, which includes knowledge of god as a first principle, which the philosopher can and must pursue. This type of knowledge is truly supreme.

At the end of *A* 2 Aristotle concludes:

It has been said which is the nature of the science (*ἐπιστήμη*) we are seeking, and which is the target that the investigation (*ζήτηση*) and the procedure (*μέθοδος*) as a whole have to hit.⁴⁷

Aristotle continues to call the kind of understanding he is seeking an *episteme*. Indeed, he uses this term to stipulate the goal of his entire enterprise. But so far Aristotle has not made explicit that the science he is seeking must therefore be a demonstrative science that obeys the rules of the *Posterior Analytics*. Thus, so far we need not be surprised that the terms he uses to indicate the kind of knowledge he is investigating show a remarkable variety, as does other epistemological terminology.⁴⁸ Indeed, it would be unwise to take the use of the term *episteme* in a more technical sense than required at each particular point of the investigation. Throughout, the investigation into the science of causes remains neutral to the requirements of the *demonstrative* science familiar from the *Posterior Analytics*. This does not detract from the possibility of investigating the science of causes. On the contrary, taking this neutral stance provides Aristotle with a perspective from which he can test the emerging new science against the framework of the *Posterior Analytics*. This explains why the variety in terminology continues in Book *B*, despite the obvious presence of *Posterior Analytics* doctrine.⁴⁹

As is well known, in chapters *A* 3–9 Aristotle introduces the four causes he identified in the *Physics*, and raises the question whether and to what extent his

⁴⁷ *A* 2, 983^a21–3.

⁴⁸ In *A* 1 2 we find *γινώσκω*, *γνώσις*, *γινώσκω*: 981^a30, ^b6, 11, 982^a10 1, 24, ^b3, 5; *εἰδέναι*: 981^a24, 27 9, 31, ^b2, 7, 982^a15, 23, 30, ^b21; *ἐπιστήμη*, *ἐπίστασθαι*: 981^b9, 20, 22, 982^a2, 4 6, 9, 14, 21 2, 26, ^a30–^b4, 8, 21, 27, 32, 983^a7, 21; *θεωρητική*: 982^a29, ^b9 10; *σοφία*, *σοφός*: 981^a27, ^b1, 5, 10, 16, 18 19, 31, 982^a2, 7 19 (*περὶ τοῦ σοφοῦ*); *τέχνη*, *τεχνίτης*: 981^b8, 14, 17, 24 (*mathematics*), 31; *φιλοσοφεῖν*: 982^b11, 13, 18, 20; *φρόνησις*: 982^b24. In *A* 3 6 *φιλοσοφεῖν*, *φιλοσοφία*, *φιλόσοφος* occur often to designate the activity of Aristotle's predecessors at what he regards as a pristine version of the same project, e.g. 983^b2 6, 21, 987^a29 31, 988^a16, down to his contemporaries in 992^a33. The designation *πρώτη φιλοσοφία* for the new science does not occur until *E* 2, 1026^a24.

⁴⁹ In Book *B*, down to and including the discussion of *aporiai* 3 5 (997^a15–998^a19) we find: *γινώσκω*: 996^b16, 997^a1, 28; *γινώσκω*: 995^b1, 997^a2, 4 5; *εἰδέναι*: 996^b15, 19 20, 23; *ἐπιστήμη*, *ἐπίστασθαι*, and cognates: 995^a24, ^b6 7, 996^a19 20, 996^b2, 9, 11, 13, 15, 25, 27, 31, 997^a3, 16 17, 28, ^b3, 26, 28 9; *θεωρία*, *θεωρεῖν*: 995^b19, 25, 996^b25, 997^a15, 22, 24, 26, 32; *σοφία*: 995^b12 13, 996^b9; *τέχνη*: 996^a33. For discussion of the role of the *Posterior Analytics* see below.

predecessors succeeded in identifying any or all of them.⁵⁰ The survey as a whole is explicitly designed to check whether anyone proposed another kind of cause besides Aristotle's quartet and, if not, to enhance our conviction about the four causes.⁵¹ *A* 3–5 cover the Presocratics, with a conclusion about the character of their contribution at *A* 5, 987^a2–28. *A* 6 is devoted to Socrates and Plato. Aristotle takes this description of Platonic theory as his starting point in *aporia* 5, *B* 2, 997^b3–5. *A* 7 critically summarizes the results of the description of earlier theories.

In Chapter *A* 7 Aristotle draws the conclusion he will repeat in Chapter *A* 10, before announcing the *aporiai* of Book *B*:

All these thinkers, then, as they cannot pitch on another cause, seem to testify that we have determined rightly both how many and of what sort the causes are. Besides this it is plain that when the causes are being looked for, either all four must be sought thus or they must be sought in one of these four ways. Let us next discuss the possible difficulties with regard to the way in which each of these thinkers has spoken, and with regard to his views about the first principles.⁵²

Hereby Aristotle's own views about the causes are officially confirmed. The second sentence contains the germs of *aporia* 1: does the new science deal with all causes, or with only one of them? Moreover, if Aristotelian physics already marshals all causes there are, the question arises whether physics itself can be the science that is sought. This line of thought will be taken up at *E* 1, 1026^a23–32.

Following his announcement here, Aristotle indeed proceeds to a further stage of his investigation by raising *aporiai* about previous theories in *A* 8–9. It is to this aporetic treatment of his predecessors in particular that he will refer at *B* 1, 995^b5. For our purposes it is interesting to note that none of the problems that Aristotle raises in *A* 8–9 touches on *Posterior Analytics* doctrine.⁵³ Moreover, though his critical treatment of Pythagorean and Platonic doctrine contains reference to the argument from the sciences (there must be Forms and intermediates corresponding to the objects of sciences), also in relation to the introduction of intermediates, he does not extend the use of this argument to the case of applied mathematics as he will do in *aporia* 5.⁵⁴ Nevertheless, in *A* 9 Aristotle insists that some arguments that are put forward in support of the existence of Forms prove too much. The 'argument from thought' and the

⁵⁰ Aristotle refers to his *Physics* at *A* 3, 983^a33–983^b1; cf. *Phys.* II 3.

⁵¹ *A* 3, 983^b4–6; cf. *K* 1, 1059^a34–8.

⁵² *A* 7, 988^b16–21, cf. *A* 10, 993^a11–24. Both in *A* 7, 988^a20–3 and in *A* 10, 993^a13–16 Aristotle famously stresses that earlier accounts of the causes were imprecise and immature versions of his own enterprise.

⁵³ For the only exception see below p. 88 f.

⁵⁴ Cf. *A* 9, 990^b24–7, 991^b27–992^a2 with *B* 2, 997^b12–34.

'argument from the sciences' are cases in point.⁵⁵ Whether the Platonists realize it or not, these arguments also warrant a similar separation in other cases than *ousia*.

A further comparison of *A* 9 with *aporia* 5 shows that the two sets of problems are complementary and show only a small overlap. In *A* 9 Aristotle discusses arithmetic and Forms as numbers, whereas in *aporia* 5 the objects of geometry and applied mathematics are in focus.⁵⁶ In *A* 9 he explicitly raises the question what purpose the Forms serve, whereas in *aporia* 5 he passes over this issue briefly, while focusing on the purpose of intermediates.⁵⁷ And finally, in *A* 9 he does not turn arguments in favour of Forms against the existence of intermediates, as he does in *B* 2.⁵⁸ It is clear, then, that in *B* 2 Aristotle builds on and continues the same searching criticism he had already begun in *A* 8–9.

Aporiai 3 and 5 assume that *sophia* concerns substances. But what does *ousia* mean in this context? Again Book *A* may provide us with the necessary background information, this time coupled with *aporiai* 1–2. In *A* 3 the term *ousia* is first used, and refers to one of Aristotle's own four causes, viz. the formal cause or the essence (*to ti en einaî*).⁵⁹ Hence the term is also used in describing Presocratic and Platonic attempts at grasping the formal cause or the *ousia* of something.⁶⁰ In other texts the term denotes the single material cause of the monists, including the Pythagorean numbers, and the Anaxagorean mixture.⁶¹ But *ousia* is also used for the realm or condition of being which the Pythagorean opposites or the Platonic One are supposed to identify;⁶² for the realm of generation and corruption;⁶³ and for substances as opposed to accidents, which are also considered as products of the Ideas.⁶⁴

Against this background it is not surprising that the main objection which Aristotle levels against the theory of Forms in *A* 9 concerns the ontological separation between *ousia* as cause and *ousia* as what is explained by this cause. He is convinced that this separation undermines the very causality it is supposed to guarantee.⁶⁵ We shall see that in Book *B*, *aporiai* 3–5, the term *ousia* is

⁵⁵ See esp. 990^b24–7. For detailed analyses of these arguments as they appear in *On Ideas*, see Fine 1993, chs. 9 and 5 respectively.

⁵⁶ Cf. *A* 9, 991^b9–27 with *B* 2, 997^b12 ff.

⁵⁷ Cf. *A* 9, 991^a8–^b9 with *B* 2, 998^a15–19.

⁵⁸ Cf. *B* 2, 998^a11–13.

⁵⁹ *A* 3, 983^a27–8; *A* 7, 988^a34–5; *A* 9, 991^a13, ^b1–2, 992^a26–8.

⁶⁰ *A* 5, 987^a23; *A* 6, 987^b21; *A* 7, 988^b28–9; *A* 9, 992^a8, 993^a18.

⁶¹ *A* 3, 983^b10; *A* 4, 985^b10; Pythagoreans: *A* 5, 987^a19; Anaxagoras: *A* 8, 989^b7.

⁶² *A* 5, 986^b8, 987^a18; *A* 6, 987^b25; *A* 7, 988^b12–13; *A* 9, 992^b1–4.

⁶³ *A* 8, 989^b23.

⁶⁴ *A* 8, 989^b3; *A* 9, 990^b24–35, 992^a10, 992^b22.

⁶⁵ Cf. *A* 9, 991^a8 ff., 992^a24–^b1.

consistently used for the subject matter of the new science, not for a principle or cause.⁶⁶

In a series of general remarks that concludes chapter *A* 9 Aristotle reproaches the Platonists for losing sight altogether of the purpose of the project they (and Aristotle) are engaged in:

In general, though philosophy (*σοφία*) seeks the cause of perceptible things, we⁶⁷ have given this up (for we say nothing of the cause from which change takes its start), but while we fancy we are stating the substance of perceptible things, we assert the existence of a second class of substances, while our account of the way in which they are the substances of perceptible things is empty talk; for sharing, as we said before, means nothing. Nor have the Forms any connection with that which we see to be the cause in the case of the sciences—for whose sake mind and nature produce all that they do produce—with this cause that we assert to be one of the first principles; but mathematics has come to be the whole of philosophy (*φιλοσοφία*) for modern thinkers (*τοῖς νῦν*), though they say that it should be studied for the sake of other things.⁶⁸

Thus, *sophia* seeks the cause of *perceptible things*, and should not posit causes and principles (like Forms and mathematical) which cannot or do not function as causes and principles of these perceptibles—despite claims to the contrary. The neglect of purpose, and, more specifically, the neglect of the final cause in nature as well as human thought, is fatal to the enterprise of what Aristotle now calls ‘philosophy’. We can expect Aristotle to remedy the failure he perceives in the attempts of his predecessors and contemporaries, attempts at the project which he regards as the same as his own. At the same time we can understand why, in further discussions of Forms and intermediates in Book *B*, Aristotle seems to lose sight of the balance of contrary arguments that his dialectical strategy prescribes, and focuses almost entirely on the problems that besiege theories of Forms and intermediates.

Despite all criticisms, the convergence of the opinions of the general public (*A* 1–2) and of his predecessors (*A* 3–9) concerning the content of *sophia* and the overall project of gaining a full understanding of the sensible world thus emerges as the important theme of Book *A*. This convergence as such suggests that there is a single science of principles and causes to be sought, for which *sophia* or *philosophia* is the appropriate name, and which Book *B* will have to explore further. If the issue of unity is present in this project so far, it is the unity

⁶⁶ For the development of this issue in the *Metaphysics* see e.g. Code 1997.

⁶⁷ The ‘we’ here does not entail that Aristotle was a Platonist when he wrote these lines. Engaging in discussion with his contemporaries he finds himself in the same predicament he ascribes to them in this text. Besides, it is good rhetorical practice to identify with the public that one wishes to turn around by one’s argument.

⁶⁸ *A* 9, 992^a24–992^b1.

required by a science of *everything*, i.e. a science of the principles and causes of everything, in an as yet unspecified way. Up to Book *B* no attempt has been made yet to cash out this unity in terms of the unity of a *demonstrative* science; for this approach we will have to wait until Book *B*, chapters 1–2.

However, we do not have to wait until Book *B* for *Posterior Analytics* material to be used in the search for *sophia*. Chapter *A* 9 ends on an elaborate argument against the assumptions that everything is one in an unspecified sense,⁶⁹ and that it is possible to know the elements of everything. The passage deserves to be quoted in full here:

In general, if we search for the elements of existing things without distinguishing the many senses in which things are said to exist, we cannot succeed, especially if the search for the elements of which things are made is conducted in this manner. For it is surely impossible to discover what acting or being acted on, or the straight, is made of, but if elements can be discovered at all, it is only the elements of substances; therefore to seek the elements of all existing things or to think one has them is incorrect.

And how could we *learn* the elements of all things? Evidently we cannot start by knowing something before. For as he who is learning geometry, though he may know other things before, knows none of the things with which the science deals and about which he is to learn, so it is in all other cases. Therefore if there is a science of all things, as some maintain, he who is learning this will know nothing before.

Yet all learning is by means of premises which are (either all or some of them) known before—whether the learning be by demonstration or by definitions; for the elements of the definition must be known before and be familiar; and learning by induction proceeds similarly.

But again, if the science is innate, it is wonderful that we are unaware of our possession of the greatest of sciences.⁷⁰

Aristotle argues that a science which knows the elements of *all* things leaves nothing to be known beforehand, from which someone can acquire knowledge about it.⁷¹ He concludes that the pursuit of such a science is impossible. The argument rests on a number of familiar claims from Aristotle's *Posterior Analytics*. All intellectual teaching and learning derive from prior knowledge;⁷² it is impossible that this prior knowledge is innate.⁷³ Moreover, all argument is exhausted by demonstration and induction.⁷⁴ The argument is clearly directed

⁶⁹ Cf. *A* 9, 992^b9–10.

⁷⁰ *A* 9, 992^b18–993^a2.

⁷¹ For the issue of elements as principles, see further *aporia* 7.

⁷² *APo* I 1, 71^a1–2, with application to the *Meno* problem, 71^a29–30.

⁷³ *APo* II 19, 99^b26–7.

⁷⁴ e.g. *APo* I 1, 71^a5–11.

against ‘some who maintain that there is a science of all things’, who are readily identified as the proponents of a Platonic universal science. Together *APo* I 1 and the passage quoted underline the polemical aim and potential of the *Posterior Analytics*.

It is important to note that the argument quoted above constitutes the final substantive part of Book *A*—before the transitional chapter *A* 10—to which *B* 1 is the natural sequel. This in itself suggests that at the start of Book *B* Aristotle’s concern may well be, among other things, with fighting the assumption that there is such a thing as ‘a science of everything’ (τις τῶν πάντων ἐπιστήμη, *A* 9, 992^b29). Moreover, it is clear already that Aristotle employs doctrine that we find in his *Posterior Analytics* as weapons against the claim that there is a science of everything. It remains to be seen whether and how Book *B* continues this approach.

4. *Aporiai* 3–5 in detail

Let us return to *aporiai* 3–5, and to the most elaborate discussion they receive in Book *B*, chapter 2. There the third *aporia* reads:

In general, (1) do all substances fall under one science or (2) under more than one?

(ad 2) If the latter, to what sort of substance (ποίας οὐσίας) is the present science to be assigned?

(ad 1) On the other hand, it is not reasonable that one science should deal with all. For then there would be one demonstrative science dealing with all attributes.

For every demonstrative science investigates with regard to some subject its essential attributes, starting from the common beliefs. Therefore, to investigate the essential attributes of one subject, starting from one set of beliefs, is the business of one science. For the subject belongs to one science, and the opinions from which it starts⁷⁵ belong to one, whether to the same or to another; so that the attributes also are investigated either by these sciences or by one composed of⁷⁶ them.⁷⁷

In *B* 1 the question focused on the identification of the *science(s)* that deal with one or several kinds of substance: which deserve the name of *sophia*? Are they akin?⁷⁸ Now, in (2), the focus shifts to the identification of the *kind of substance* (in the singular) which ‘the present science’, i.e. the *sophia* Aristotle has been analysing so far, is supposed to deal with. We are probably to understand that

⁷⁵ 997^a22 ἐκ τῶν αὐτῶν δοξῶν: Barnes 1984, 1575, wrongly translates ‘premises’ where clearly the axioms or common beliefs are meant, cf. 997^a20 1; so Madigan, 5.

⁷⁶ 997^a25 ἐκ τούτων μία: following Ross 1970 (1924), I, 230 1. Barnes 1984, 1575, and Madigan translate ‘derived from them’, which creates difficulties understanding the argument. See further the main text.

⁷⁷ *B* 2, 997^a15 25.

⁷⁸ See above p. 75 ff.

this question is problematic because of the issue of unity touched upon in *B* 1, or for lack of a criterion to choose among kinds of substance. The latter issue will be addressed in *aporia* 5. In *B* 2 a single question suffices for this part of *aporia* 3, but the alternative is granted an argument of its own.

The argument by which Aristotle sheds doubt on option (1)—that one science should deal with all substances—is not immediately clear. Aristotle states it would not be reasonable (*οὐκ εὐλογον*) to have a single science deal with all *attributes*. Why is this ‘not reasonable’? Aristotle does not say, but his argument suggests that he is not ready to accept a single universal science covering all substances and all attributes. We shall return to this concern of Aristotle’s in more detail in section 5.

Why does option (1) imply that there is one science which deals with all attributes? In order to corroborate his claim Aristotle explicitly invokes the three element rule from the *Posterior Analytics*, which we already recognized in the accounts of *aporai* 3–5 in *B* 1 and *K* 2. Moreover, the rule had just been explained at length in the discussion of *aporia* 2, which raised the question whether the axioms themselves were to be studied by the science under investigation.⁷⁹ So at this point the reader of Book *B* can take the three element rule for granted: the unity of a demonstrative science rests on the fact that it proves per se attributes (*καθ’ αὐτὰ συμβεβηκότα*) to belong to a particular subject (*περί τι ὑποκείμενον*) starting from the common beliefs (*ἐκ τῶν κοινῶν δοξῶν*).⁸⁰

In option (1) the supposition is that the subject is ‘all substances’, and, presumably, that the common beliefs are *all* common beliefs. On the basis of the three element rule Aristotle argues that since all substances belong together with their attributes and the common beliefs there is a single science that embraces all attributes—which is not reasonable.⁸¹ However, Aristotle is aware that the situation is more complex. The discussion of the second *aporia* did not decide whether the common beliefs belong to a separate science or not. Hence two further possibilities ensue, which, however, both lead to the same result:

- (A) By the three element rule the attributes belong equally with both substances and common beliefs.⁸² If one science studies all substances, and

⁷⁹ See the contribution by Crubellier, p. 62 ff. above.

⁸⁰ The vocabulary differs somewhat from the *Posterior Analytics*: *ὑποκείμενον* where *APo* prefers *γένος* (but see *γένος ὑποκείμενον*, *B* 2, 997^a6; *APo* 75^a42–^b1; 76^a12); *κοινὰ δόξαι* instead of *ἀξιώματα*, cf. *B* 2, 996^b28, *Phys.* I 4, 187^a27–8. Given the context which deals with *all* substances and *all* attributes, we are presumably to understand the definite article as referring to *all* common beliefs.

⁸¹ Madigan, 47, states that this is in fact Aristotle’s argument, and a logical possibility, but seems puzzled as to why this result would be problematic for Aristotle.

⁸² 997^a24 *αὐται* picks up the emphasis in 997^a21–2 *τὸ αὐτὸ γένος... ἐκ τῶν αὐτῶν δοξῶν*.

another the common beliefs, *both* these sciences will study the attributes. Hence the science of all substances will also study all attributes. QED.

- (B) If a single science is compounded out of the science of all substances together with the science of common beliefs—no doubt as a result of the three element rule—the attributes will belong to that single science. Hence the science of all substances will also study all attributes. QED.

The assumption of two different sciences in (A) recalls the distinction between two separate sciences made in *K* 1. However, there the focus is on the question whether the *science* of substances is the same as or different from the science of attributes, and inquires what these sciences are, and which is the wisdom sought. For, it was argued, if the science of attributes is demonstrative, wisdom is demonstrative, but if the science of primary things is wisdom, wisdom is not demonstrative. None of these issues arise here. The comparison of *B* 2 with *K* 1 shows the same shift as the comparison of *B* 2 with *B* 1: besides the issue of the identity and character of the sciences involved there is now ample room for the issue of the inclusion of different subjects in the science under investigation and the consequences of such inclusions for the science at hand. The three element rule is the source of the problems raised: it forces all attributes to be studied by the same science that studies all substances. It is clear that without the three element rule the problem could not have been stated. Thus we see that this piece of doctrine from the *Posterior Analytics* doctrine is used to generate problems for *sophia*, problems which require a solution *if* the science sought is supposed to be a *demonstrative* science. As in *K* 1, there is no sign yet that wisdom *is* a demonstrative science. Nor can the *Posterior Analytics* itself provide the solution to the problems.

The argument which is supposed merely to corroborate the claim of option (1) of *aporia* 3—viz. that a science of all substances will be concerned with all attributes—is not itself an *aporia*. However, it immediately gives rise to an *aporia* about the status of the attributes in the science under investigation. Under the influence of this argument, no doubt, Aristotle adopts what must now have seemed a more natural order of the *aporiai* and first turns to *aporia* 4, which was *aporia* [v] in *B* 1.

Further, does our investigation deal with substances alone or also with their attributes? I mean for instance, if the solid is a substance and so are lines and planes, is it the business of the same science to know (*γνωρίζειν*) these and to know the attributes of each of these classes (*περὶ ἑκάστων γένος*) which the mathematical sciences prove, or of a different science?

- (1) If of the same, the science of substance also must be a demonstrative science; but it is thought that there is no demonstration of the essence (*τοῦ τί ἐστιν*).

(2) And if of another, what will be the science that investigates the attributes of substance? This is a very difficult question.⁸³

This statement of *aporia* 4 elaborates on the brief statement of *aporia* [v] in *B* 1, and does not coincide with *aporia* [d] in *K* 1, for unlike *K* 1 the question is not about identifying one of the two sciences mentioned as wisdom. However, with *K* 1 this statement shares a concern with demonstrative science.

Let us have a closer look at the analogy with mathematics. If it were maintained—contrary to the arguments in *aporia* 5 and Book *M*—that lines, planes, and solids are kinds of substance, the question arises whether it belongs to the science which embraces these kinds, viz. general mathematics, to study the attributes of each of these kinds of substance as well. We are back with the difficulty of a *single* science dealing with *several* kinds, though now in the guise of a single science dealing with the *attributes* of several kinds. Even in case one would accept a single science that deals with several kinds of substance, there is this further question whether it will also deal with the attributes of each of them. In the analogy it becomes even more apparent that such a universal science would not only transgress the boundaries between the various kinds of substance,⁸⁴ but also put the different mathematical disciplines out of work. For, again according to the three element rule, each of the mathematical sciences derives its claim to sciencehood from its dealing with its own set of subject, attributes, and axioms.⁸⁵

The assignment of the study of the attributes meets with problems either way: if the same science studies both the substances and their attributes (1), and if it were to adopt the demonstrative character of a science dealing with attributes, it must also demonstrate essences—which is held to be impossible. Indeed, as we have seen, it is against Aristotle's expressed opinion in the *Posterior Analytics*. If another science were to deal with the attributes of substances (2), these might be left unaccounted for, since another science which is able to deal with those without dealing with substances will be hard to find.

The analogy with mathematics already contains the germs of Aristotle's way out of the problems we have analysed so far. In *I* 2 Aristotle explains:⁸⁶

⁸³ *B* 2, 997^a25–34.

⁸⁴ For discussion of Aristotle's measures against such a *μετάβασις εἰς ἄλλο γένος* see *APo* I 7, I 9 and I 13 with Barnes 1994 *ad loc.*, esp. 158–62; McKirahan 1992, chs. 4–5; Hankinson 2005.

⁸⁵ Cf. Mansion 1955, 152. *Pace* Madigan, 47 I see no rhetorical advantage in increasing the number of attributes, nor do I find in the text that 'the argument works back from the diversity of essential attributes to the diversity of the kinds themselves.'

⁸⁶ For Book *I* in general see esp. Kirwan 1971 and Cassin and Narcy 1989, though the latter do not refer to Book *B*; Bell 2004 discusses all *aporiai* from the perspective of Book *I*.

And there are as many parts of philosophy as there are kinds of substance, so that there must necessarily be among them a first philosophy and one which follows this. For being falls immediately into genera; and therefore the sciences too will correspond to these genera. For ‘philosopher’ is like ‘mathematician’; for mathematics also has parts, and there is a first and a second science and other successive ones within the sphere of mathematics.⁸⁷

Aristotle accepts the division of the sciences of substance along the lines of its genera, in conformity with the *Posterior Analytics*. In *I* 2, as in our *aporia* 4, Aristotle uses the relation between general mathematics and its various branches as a model for the relation between first philosophy and the other branches of theoretical philosophy.⁸⁸ In both cases, the genera are considered to be irreducible and in that sense on an equal footing; in both cases they are also considered to constitute a series of prior and posterior. Hence there is room for a *first* philosophy, which deals with the *primary* substance, without giving up the *Posterior Analytics* doctrines we have met so far. Hence, too, first philosophy need not deal with *all* attributes of the various kinds of substance, let alone be turned into a science that demonstrates essences. However, it does study the attributes of being as such, which all kinds of substance exhibit in their own way in so far as they are beings. The relation between being as such, its attributes, and the common axioms itself obeys the three element rule. Here, too, Aristotle does not give away any of the results of his *Analytics*.⁸⁹

It is notable that within this framework the famous theory of focal meaning, introduced earlier in *I* 2, is not necessary to establish the possibility of first philosophy against the threats of *aporiai* 3–5. Focal meaning serves to elucidate the unity of the *subject matter* of first philosophy once this has been established as being qua being. But although the problem of the unity of the subject matter as a *genos* is addressed in some formulations of *aporiai* 3–5, it is by no means the dominant issue. This is not surprising when we realize that the notion of being as such does not occur in Book *B*.

In the analogy between the science of substances and the science of lines, planes, and solids the latter are considered as substances for the sake of argument only. However, the analogy constitutes a smooth transition to the long discussion of the question of *aporia* 5: do Platonists rightly claim that the Forms as well as mathematical objects are substances? And: are sensibles, mathematical and

⁸⁷ *I* 2, 1004^a2 9.

⁸⁸ Cf. *Metaph.* *E* 1, 1026^a23 32; *K* 7, 1064^b8 9; *M* 2, 1077^a9 12, ^b17 22; *APo* I 5, 74^a17 25. Cf. McKirahan 1995, 286 9.

⁸⁹ Alexander defends the scientific status of Aristotle’s metaphysics in his influential commentary on the *Metaphysics* by showing that it complies with the three-element rule; cf. Bonelli (forthcoming) who also discusses Alexander’s interpretation of *aporiai* 2 4.

Forms different species of the same kind ‘substance’, or different irreducible genera.⁹⁰

Further, must we say (1) that sensible substances alone exist, or (2) that there are others besides these? And (2a) are substances of one kind (*μοναχῶς*)⁹¹ or (2b) are there several kinds of substances, as those say who assert the existence both of the Forms and of the intermediates with which they say the mathematical sciences deal?⁹²

This section repeats the statement of this *aporia* in *B* 1 in almost the same wording, except for the specification that ‘they say the mathematical sciences deal’ with the intermediates. This phrase brings out the connection with the previous section more clearly, and prepares for later criticism in 997^b12 ff. Questions 2a–b can be regarded as questions that arise once it is admitted that there are other substances besides sensible ones.

In the remainder of the discussion Aristotle mainly focuses on part (2b) of the question, and develops a long series of arguments against the existence of Forms and intermediates whether outside of or within the sensible universe.⁹³ As noted above, the removal of Forms and intermediates does not rule out in principle that there are other kinds of substance besides sensible substances. If there are, as Aristotle believes there are, question (2a) still has to be properly answered, and it is to this question that the theory of focal meaning in *Γ* 2 intends to provide the answer. However, this question does not come up for discussion in *B* 2.

In his criticism of Forms and intermediates Aristotle builds on his discussion of Forms as separate causes in *Metaph. A* 6 and 9, to which he explicitly refers. He repeats the criticism that Forms are nothing but eternal duplicates of the perishable sensible natures within the universe.

In what sense we say the Forms are causes and substances in themselves has been explained in our first remarks about them; while this presents difficulties in many ways, nothing is more absurd than to say, on the one hand, that there are certain natures (*φύσεις*) besides those in the universe (*ἐν τῷ οὐρανῷ*), and on the other hand, that these are the same as sensible things except that they are eternal while the latter are perishable. For they say just this, that there is a man in himself and a horse in itself and health in itself⁹⁴—a procedure like that of the people who said there are gods, but in human

⁹⁰ For a most illuminating discussion of this *aporia* see Cleary 1995, 206–9, 242–64 to which I refer for further details. For recent analyses in relation to its reception by Alexander and Syrianus, respectively, see Flannery 2003, Cardullo 2003, 180–208.

⁹¹ For *μοναχῶς* as ‘of one kind’ as opposed to various kinds, cf. *B* 1, 995^b15–16, quoted above p. 75.

⁹² *B* 2, 997^a34–^b3.

⁹³ For discussion whether mathematical are substances, see further *aporia* 12; for reasons for and against positing Forms alongside intermediates, see *aporia* 12 bis.

⁹⁴ For the role of medicine as a paradigm art in discussions about Forms cf. *De Ideis* ap. Alex. In *Metaph.*, 79, 11–80 6; for discussion see Fine 1993, 76–9. Cf. *Rhet.*, 1356^b30–3.

form.⁹⁵ For they were positing nothing but eternal men, nor are they making the Forms anything other than eternal sensible things.⁹⁶

Why does Aristotle pick on the eternity of Forms as if that were their only distinguishing characteristic?⁹⁷ Perhaps the articulation of the *aporia* in *K* 1 may be of some help. For there the issue about Forms and mathematics was balanced by the claim that because sensible substances are perishable, the science sought could not be concerned with them either. In the text cited above the perishability of substances is also mentioned, and opposed to the eternity of the Forms. In general, what is eternal is considered prior to what is not.⁹⁸ The eternity of Forms thus jeopardizes the claim of sensible substances to be the proper subject of *sophia*. After all, in section 3 we have seen that the subject matter of *sophia* should be the highest possible object of knowledge. If imperishability is thus an important characteristic of the subject matter of *sophia*, we can understand why Aristotle has to criticize the arbitrary way in which the Forms gained the predicate.⁹⁹

The introduction of intermediates between Forms and sensibles provides a set of problems of its own. Aristotle focuses on two issues. The first is that there is no reason to restrict the practice of positing intermediates between Forms and sensibles only to the objects of mathematics, which are said to exist also as Forms as well as in the sensible world.¹⁰⁰ The second is the claim, made by Pythagoreans and some Platonists (perhaps in response to the kind of criticism that Aristotle will level against intermediates below), that mathematics exist not separately from but *in* sensibles.

Aristotle shows that the restriction of the existence of intermediates to mathematical objects comes out as particularly arbitrary in applied sciences like astronomy, optics, and mathematical harmonics. These sciences deal with

⁹⁵ An echo of Xenophanes' criticism of anthropomorphism in religion, DK B14 16.

⁹⁶ *B* 2, 997^b 3 12, tr. Barnes 1984 adapted after Apostle 1966 as quoted by Cleary 1995, 247.

⁹⁷ Ross *ad loc.* (I, 231) is critical of Aristotle's approach for this reason. Forms can be called eternal sensibles because they share their essence with sensibles, cf. *Metaph.* *A* 9, 990^b 34 991^a 8; *M* 4, 1079^a 31–^b 11. Cf. Madigan, 53–5 for a different approach. Compare Book *I* 10, 1058^b 36 1059^a 14. In *A* 6, 987^b 14–18 we learn that eternity and immobility also distinguish intermediates from sensibles, whereas plurality distinguishes them from Forms.

⁹⁸ Neither imperishability nor eternity is among the characteristics of the subject matter of *sophia* in *A* 1 2, see above, section 3. It does figure as a characteristic of the principles in Presocratic thought, e.g. *A* 3, 984^a 13–16. In *Θ* 8, 1050^b 5–8 Aristotle claims that eternal things are prior in essence (τῇ οὐσίᾳ) to perishable things because they lack potentiality, cf. *Δ* 11, 1019^a 1–14.

⁹⁹ Madigan, 55 suggests that the description of Forms as sensibles stresses that even if they exist they do not differ in that respect from the sensibles in option (1) in the text quoted above. Apart from the odd claim on Aristotle's part that Platonists would consider the Forms sensible in any sense of the term, the discussion of the Forms is located in section (2b) which explicitly addresses *other kinds* of substance.

¹⁰⁰ Cf. *A* 8, 990^a 27–32.

mathematical properties as they inhere in objects of the physical world.¹⁰¹ In their case the mathematical properties are supposed to exist as intermediates (spheres, lines, numbers), whereas for the bearers of these properties (in the case of astronomy: the universe as a whole, the sun, the moon etc.) no intermediates are assumed to exist. This distinction, Aristotle indicates, is merely arbitrary.

On the other hand, if they *were* assumed to exist as intermediates, this would lead to even less convincing results. For positing an intermediate universe, sun, and moon entails, or so Aristotle is ready to suggest, that they be endowed with the prime characteristic of mathematical intermediates: immobility—or else become moving mathematical, which is an even worse contradiction in terms:

Further, if we are to posit besides the Forms and the sensibles the intermediates between them, we shall have many difficulties. For clearly on the same principle there will be lines besides the lines in themselves and the sensible lines, and so with each of the other classes of things; so that since astronomy is one of these mathematical sciences there will also be a heaven besides the sensible heaven, and a sun and a moon (and so with the other heavenly bodies) besides the sensible ones.

Yet how are we to believe these things? It is not reasonable even to suppose these bodies immovable, but to suppose their *moving* is quite impossible.¹⁰²

According to Aristotle, optics and mathematical harmonics deal with mathematical aspects of objects of sight and hearing, too. On the above argument, it is necessary to grant these objects a status as intermediates, too, along with their mathematical properties. On the assumption that such objects are still sensibles, the argument will require the assumption of faculties of sight and hearing that have these intermediates as their proper objects. Such faculties of sight and hearing cannot exist on their own but would have to belong to animals (sense perception belongs primarily to animals). These animals, in their turn, must be assumed to exist on the same intermediate level if their senses are supposed to perceive intermediate sensibles. In Aristotle's shorthand:

And similarly with the things of which optics and mathematical harmonics treat. For these also cannot exist apart from the sensible things, for the same reasons.

For if there are sensible things and sensations intermediate between Form and individual, evidently there will also be animals intermediate between animals in themselves and the perishable animals.¹⁰³

¹⁰¹ Cf. Plato *Rep.* 529c 531c; *Phil.* 55 9, esp. 57b5 7. According to Aristotle pure mathematics abstracts from all physical attributes including motion, cf. *Phys.* II 2, 193^b22 35, *Metaph. M* 3, 1077^b17 1078^a31. For the status of the applied mathematical sciences cf. *APo* I 13, 78^b32 79^a13; *Phys.* II 2, 194^a7 12.

¹⁰² *B* 2, 997^b12 20.

¹⁰³ *B* 2, 997^b20 4.

This concludes the absurdities following from positing intermediates between Forms and sensibles. As such these absurdities raise the more general question of what kinds of objects the mathematical sciences are supposed to investigate anyway.

One might also raise this question: about what kinds of things should these sciences investigate?¹⁰⁴ If geometry is to differ from mensuration only in this, that the latter of these deals with things that we perceive, and the former with things that are not perceptible, evidently there will be a science other than medicine, intermediate between medical science in itself and this individual medical science, and so with each of the other sciences.

Yet how is this possible? There would have to be also healthy things besides the perceptible healthy things and the healthy in itself.¹⁰⁵

If their objects differ only in terms of perceptibility from those of their less theoretical counterparts, why not posit intermediate health and the corresponding intermediate science of medicine? Although Aristotle shifts from the objects to the corresponding kind of knowledge, as he did with perception above, the argument is still concerned with the prior issue of positing objects. The case of the applied sciences merely suggests that these intermediate objects entail a corresponding type of knowledge. This is a converse application to intermediates of the Platonic argument from the sciences in support of the Forms. Instead of assuming Forms corresponding to the objects studied by the sciences, Aristotle suggests there must be sciences corresponding to the objects generated by his argument.

The assumptions of this line of argument are then criticized, true to the character of the aporetic argument.

And at the same time not even this is true, that mensuration deals with perceptible and perishable magnitudes; for then it would have perished, when they perished.

And astronomy also cannot be dealing with perceptible magnitudes or with this heaven above us. For neither are perceptible lines such lines as the geometer speaks of (for no perceptible thing is straight or curved in this way; for a hoop touches a straight edge not at a point, but as Protagoras said it did, in his refutation of the geometers), nor

¹⁰⁴ Madigan, 7, with 57–8 translates: ‘for which kinds of beings are we supposed to seek these sciences?’; cf. Tredennick (Loeb 1933 etc.): ‘with respect to what kind of objects we are to look for these sciences.’ Barnes 1984, 1576: ‘with reference to which kind of existing things we must look for these additional sciences.’ However, light of *K* 1, 1059^b9–10 (εἰ δὲ αὐτὸ μὴ ἔστιν ὡς λέγουσι, περὶ ποῖα θετέον πραγματεύεσθαι τὸν μαθηματικόν;) it makes more sense to take ταύτας τὰς ἐπιστήμας as subject of ζητεῖν, cf. *Metaph.* *K* 7, 1063^b36–7. So Cleary 1995, 253 (translation Apostle 1966): ‘What kinds of things should be sought by these sciences?’.

¹⁰⁵ *B* 2, 997^b25–32.

are the movements and complex orbits in the heavens like those of which astronomy treats, nor have geometrical points the same nature as the actual stars.¹⁰⁶

In order not to be fully dependent on the existence of particular, perishable objects, even a practical skill like mensuration entails a moderate level of universalization. This is a characteristic of any art and science, as Aristotle pointed out in Book *A*.¹⁰⁷ If so, perceptibility cannot make the difference between mensuration and geometry, and the positing of intermediates loses its foundation.

The second counter argument reveals the motive for positing intermediates in the first place. People like Protagoras rightly insisted that sensible things do not display mathematical properties as the mathematicians describe them, not even in the applied mathematical sciences like astronomy.

If the question of the objects of mathematics has resulted in puzzlement so far, one may understand the further option to which some people have resorted: the objects of mathematics are a kind of their own, but they exist *in* sensibles. However, Aristotle is keen to raise problems for this view, too.

Now there are some who say that these so called intermediates between Forms and the perceptible things exist, not apart from the perceptible things, however, but in these; the impossible results of this view would take too long to enumerate, but it is enough to consider such points as the following:

It is not reasonable that this should be so only in the case of these *intermediates*, but clearly the *Forms* also might be in the perceptible things; for the same account applies to both.

Further, it follows from this theory that there are two solids in the same place, and that the intermediates are not immovable, since they are in the moving perceptible things.

And in general to what purpose would one suppose them to *exist*, but to exist *in* perceptible things? For the same paradoxical results will follow which we have already mentioned; there will be a heaven besides the heaven, only it will be not apart but in the same place; which is still more impossible.¹⁰⁸

Again the domain of application is at stake: there is every reason to apply this argument to Forms as well as intermediates. Moreover, an absurd consequence follows: two solids will be in the same place, viz. the mathematical solid and the physical body (at least when it is assumed that both occupy space). Such arguments, along with the many that are only hinted at here, give rise to the more general question of what purpose this view would serve to begin with.

If, then, all existing views of special objects for the mathematical sciences raise problems, the question of what their objects are remains for *aporiai* 12 and 12 bis to take up further. Aristotle's own treatment of these issues is announced in *M* 1 in terms that clearly aim to continue the discussion where *aporia* 5 left off.¹⁰⁹

¹⁰⁶ *B* 2, 997^b 32–998^a 6.

¹⁰⁷ Cf. *A* 1, 981^a 15–24.

¹⁰⁸ *B* 2, 998^a 6–19.

¹⁰⁹ Cf. *M* 1, 1076^a 8–37.

The fact that the argument of *aporia* 5 stops here is a clear indication that it is still governed by the context of the methodological discussion in the previous *aporia*, while at the same time providing the transition to more properly ontological questions. It still focuses on the questions whether there is one kind of substance, and if not, whether substance comes in one or in several kinds.

What is more, possible candidates for the title of ‘substance’ next to sensible substances, i.e. the Forms and intermediates (in any mode of existence), have the advantage of being eternal and imperceptible, both of which would give them pride of place above sensible substances. The long discussion we have summarized above, then, serves to raise problems about possible objects of *sophia* which seem to have a better claim to this title than sensible objects. After all, only when the number of acceptable candidates for subject matter of the science sought has been cleared up, can the further issue of the unity of the science sought arise. So again we see that the discussion is not mainly concerned with the unity of the science sought, but rather with preliminaries to that question.

For reasons of consistency Aristotle requires that arguments regarding Forms should affect intermediates and/or sensibles as well, and vice versa. The main aim of these arguments is to cast doubt on the existence of Forms and intermediates as substances. Nevertheless, the character of the *aporia* requires the balancing argument that sensible substances cannot be the subject of *sophia* either, e.g. because they are perishable (*K* 1, 1059^b14). In sum, *aporia* 5 would then suggest that *sophia* cannot be concerned with substance at all. Hence the priority of substance still requires further argument.

On the other hand, by definition the *aporia* must leave room for the possibility that Forms and intermediates do exist in addition to sensibles, and the arguments which apply to two or three of them in common may even be taken as support of that option. Although this option is not explicitly envisaged in any of Aristotle’s discussions, in that case the science sought would have to deal with Forms and intermediates as well as sensibles. That is, it would be a universal science dealing with even more items than Plato’s universal dialectic. On this speculative reading, *aporia* 5 would signal the same kind of danger as *aporiai* 2–4: if *sophia* is to be concerned with *all* substances, it may turn out to embrace even more than Plato’s universal dialectic.

5. From universal science to first philosophy

In the *Republic* and the *Philebus* Plato formulated the ideal of an all embracing science of everything which he called dialectic, and for which the mathematical

sciences constituted the necessary preparation.¹¹⁰ This ideal he left for his contemporaries and successors to take up one way or another. As is well known, we find numerous arguments throughout the Aristotelian corpus that state or betray Aristotle's dislike of such a science of everything, more in particular a dislike of the Platonic version of such a science. Aristotle has several lines of attack on Plato's ideal which can be subsumed under the three headings of the three element rule we encountered above: subject matter, properties, and axioms or common principles.

First, Aristotle rejects the proposed subject matter of this rival science, the Ideas with the Idea of the Good as their fountainhead. In *aporia* 5 we have seen a small part of the famous list of arguments Aristotle used to question the existence of the Ideas.¹¹¹ He also questions whether the Good can serve as the principle of everything by pointing out that the term 'good' is used in different genera of being. Hence, the study of the good cannot belong to a single science.¹¹² This argument rests on a number of Aristotelian claims some of which we have already seen. For one, a science is characterized by a single genus, and when 'good' is found in different genera of being it does not constitute a unified domain. If so, the prohibition on crossing from one domain to another renders a coherent science of the Good impossible.

This argument in turn rests on the more general point that there is no such thing as a genus of being or a genus of everything.¹¹³ The ten genera of being cannot be reduced to a single overarching genus 'being' of which they are the species. One reason is given in the discussion of *aporia* 7 at *B* 3, 998^b22–7: the differentiae of the genus 'being' would themselves be beings. This would violate the rule that the genus cannot be predicated of its own differentiae.¹¹⁴ In this way, of course, Aristotle does not rule out *any* science of being, but only one in which the categories are regarded as species of a common genus. Here it is important to realize that for Aristotle the *genos* which constitutes a science

¹¹⁰ Plato *Rep.* VI, 508a–511e for the Good and the Ideas as subjects of the highest kind of knowledge, and *Rep.* VII, 521c–535a for the proposed curriculum for the philosopher-king which leads from the mathematical sciences to dialectic and knowledge of the Good. Cassin and Narcy, 1989, 93–103 note echoes from Plato's *Republic* in Book *T*. Compare *Phil.* 55c–59b.

¹¹¹ See above p. 94 f. and in general Cherniss 1944, Fine 1993.

¹¹² *EN* I 6; *EE* I 8, esp. 1217^b25 ff. with Woods 1992 *ad loc.* The latter passage was taken by Owen 1960 to rule out the kind of science developed by Aristotle in Book *T*. Berti 1971, Leszl 1975, 84–5, and Code 1996, who followed Jost (now published as Jost 2001), opposed this interpretation in different ways. I am grateful to Larry Jost for providing me with a copy of his paper. Here I have to leave aside the complex issue of the relative date of Aristotle's two *Ethics*, for which our passage is also relevant.

¹¹³ Cf. *SE* 11, 172^a13–15; *APo* II 7, 92^b14; *Metaph.* I 2, 1053^b27 ff.; *A* 4, 1070^a33–^b4; *EE* I 8, esp. 1217^b25 ff.

¹¹⁴ Cf. *Top.* 144^a36–^b3. The same argument is applied to the alleged genus of unity and its differentiae.

need not be a logical or natural kind.¹¹⁵ Nevertheless, we have seen that the distinction between various kinds of substance is sufficient—at least in the context of *aporia* 5 which employs the argument from the sciences against the Platonists—to rule out a single science of substance.

From *aporia* 4 we can derive an argument against the science of everything based on the *Analytics* theory of per se predication. A science of everything would have to prove *all* attributes of *all* different kinds of substance. However, per se attributes belong to their subjects in specific ways described in *APo* I 4: they either occur in the definition of their subject, or their subjects occur in the definition of the attributes.¹¹⁶ This will yield a single science of everything only on the supposition that being is entirely homogeneous—which Aristotle thinks it is not.

The notion of *per se* (*καθ' αὐτό*) is the foundation of Aristotle's so called prohibition of kind crossing.¹¹⁷ No science can make use of the principles of any other science in its demonstrations, unless there is a partial overlap between their domains, as in the case of subordinate sciences such as geometry and optics, or arithmetic and harmonics. In *APo* I 9 Aristotle explicitly connects this prohibition of kind crossing to the issue of a science of everything:

If this is evident, it is evident too that one cannot demonstrate the proper principles of anything; for those will be principles of everything, and understanding (*ἐπιστήμη*) of them will be sovereign over everything. For you understand better if you know from the higher explanations; for you know from what is prior when you know from unexplainable explanations. Hence if you know better and best, that understanding too will be better and best. But demonstration does not apply to another genus—except, as has been said, geometrical demonstrations apply to mechanical or optical demonstrations, and arithmetical to harmonical.¹¹⁸

In short, if it were possible for an overarching science to prove the proper principles of the sciences, that science would concern knowledge of the principles of everything. Here it is clear that the definition of per se attributes and the prohibition of kind crossing that rests on it have the purpose (among other things) of rendering a Platonic universal science impossible.

Finally, in *aporia* 2 we find evidence of Aristotle's doubts about the science of everything derived from the *common* principles of a science.¹¹⁹ Since all

¹¹⁵ See McKirahan 1992, 60–2, with McKirahan 1995. Fraser 2002 reaches a similar conclusion, though as part of a different interpretation of the relation between the *Metaphysics* and the *Posterior Analytics*. Within the limitations of this essay I must refrain from further discussion of this issue.

¹¹⁶ *APo* I 4, 73^a34–^b24. On the significance of all four senses of *καθ' αὐτό* mentioned in this passage see De Haas (forthcoming).

¹¹⁷ See above p. 92 with n. 84.

¹¹⁸ *APo* I 9, 76^a16–25.

¹¹⁹ See further Crubellier in this volume. On common and proper principles see *APo* I 10–11, with McKirahan 1992, ch. 6.

demonstrations use the same common principles, a separate science of these would assume the existence of a single coherent genus of things proved—which does not exist for the reasons stated above. At least it would be higher than the science of substance which also uses these principles, and which would have no better claim to study common principles than any other particular science that uses them. Moreover, it is clear from the *Posterior Analytics* that first principles can be known only by induction, not by demonstration or any kind of dialectic.¹²⁰ In *Posterior Analytics* I 32 Aristotle brings together his arguments against the claim that all deductions have the same principles. These arguments deal with both common and proper principles, and maintain the prohibition of kind crossing throughout.¹²¹ Otherwise ‘everything would turn out to be the same’ (88^b14–5). Aristotle’s complaint that for his contemporaries everything had turned into mathematics¹²² reflects his impatience with the mistake of those who pronounce on metaphysical issues without proper training in analytics (*Γ* 3, 1005^b1–5).¹²³ Thus they have come to believe that everything can be derived from a single principle. Aristotle’s analytics provide the tools to spell out how wrong they are.

It will be clear that both the three element rule and the definition of *per se* as established in the *Posterior Analytics* are closely linked to Aristotle’s rejection of a Platonic universal science. As such they accompany Aristotle’s conviction that being, unity, and the good cannot be reduced to a single principle. Without exaggeration we can say that an important reason for formulating the three element rule and the definitions of *per se* was in fact Aristotle’s wish to outlaw the Platonic universal science. On the other hand, we have seen that in *aporiai* 2–5 Aristotle invokes his *Posterior Analytics* doctrine to make troubles for the science that he is seeking. Indeed, the passage from *A* 9 we discussed earlier¹²⁴ raises the expectation that Book *B* will employ *Posterior Analytics* doctrine against a science of everything. What, then, can we conclude about the role of *Posterior Analytics* doctrine in Book *B*?

A preliminary answer would be to confirm that Aristotle wishes to underline the tensions between the project of a science of first principles and his *Posterior Analytics*. This is more likely in view of the fact that the relevant portions of the *Posterior Analytics* framework were designed with the aim of rebutting a

¹²⁰ Cf. *APo* II 19, with McKirahan 1992, ch. 18. This also applies to common principles like the principle of non-contradiction as discussed in *Metaph. Γ*, as Bolton 1994, 339–53 has shown.

¹²¹ For detailed discussion see Barnes 1994, 194–8, cf. McKirahan 1992, 54–7.

¹²² See *A* 9, 992^a24–992^b1 quoted and discussed above.

¹²³ This is not equivalent to lacking familiarity with the *Analytics*, *pace* Bolton 1996, 232, with Cassin and Nancy 1989, 178–81.

¹²⁴ See p. 88–9.

universal science which derives everything from a single principle in the manner of contemporary mathematics. However, on this reading of *aporiai* 3–5 they turn out to be rather weak, and we have seen that some of the questions can then be answered simply by applying *Posterior Analytics* doctrine. Such a reading is not satisfactory when we see that Aristotle explicitly tells us to regard the *aporiai* as an important part of his inquiry into the science of principles. What is the problem *for his project*?

On the basis of the current investigation I believe the following suggestion is in order. In my view *aporiai* 3–5—as they are discussed in *B* 2, less so in *B* 1 and *K* 1—do not primarily address the *possibility* or the *conditions* of metaphysics, nor do they merely measure the *scope* of its subject matter against the requirement of the unity of the subject *genos* of a science. Rather Aristotle shows his awareness that *his own project* runs the risk of being reduced to a Platonic universal science *precisely because of his model of science*. In *aporiai* 3 and 4 it is Aristotle's three element rule that demands that substances as subject matter, their attributes, and the common principles of the science that studies them, belong together closely. These items enter the discussion on their own, as separate candidates suggested by the previous discussion in Book *A*, or by the practice of the various sciences such as mathematics. However, because Aristotle believes they belong so closely together, the conclusion becomes almost inevitable that together they constitute an impossible science that studies *all* substances, *all* their attributes, as well as *all* common principles. At the fundamental level of *sophia* Aristotle's model of science backfires, and threatens to turn a set of respectable topics into a universal science. The unity of the subject matter of *sophia* generates problems because it is too tight, not because it is too loose.

Aporia 5 addresses a different question, though it derives from Aristotle's anti Platonic strategy all the same. We have seen that the main thrust against a universal science came from insisting on the irreducible multiplicity of genera of being (and unity and goodness) which were all on a par. Their multiplicity, together with the *per se* requirement, vouched for a similarly irreducible multiplicity of sciences. But precisely when the threat of superior imperishable substances like Forms and intermediates is removed, the equal status of the various genera of being itself constitutes a problem. For how can one possibly choose which science of which kind of substance deserves the title of *sophia*? Here, too, Aristotle had to countenance the side effects of his own strategy against a universal science.

None of these problems was detrimental to Aristotle's project in the end. But they were not mere preliminaries, or mere dialectical moves towards a sure

solution. They constitute the analysis of the clash between Aristotle's standing strategy against a Platonic universal science and his own attempts at that very same venerable enterprise which he had inherited from his predecessors. This clash was illuminating, and thanks to Aristotle's wit served to set the precise dimensions of what we now know as Aristotle's metaphysics.

4

Aporiai 6–7

ENRICO BERTI

Introduction

Aporiai 6 and 7 of *Metaph. B* open the series dedicated to the discussion of the nature of principles (*arkhai*). This discussion continues until the end of the book and reference is made to it in chapter 6 with the statement: ‘These are the questions that it is necessary to raise about the principles’ (1003^a5–6).¹ The principles have been indicated in book Alpha—to which Beta is closely connected²—as the object of ‘the science we are searching for’, namely wisdom (*sophia*) or first philosophy. At times they have been identified with the ‘first causes’ (which are, as we know, of four types) and occasionally with the ‘elements’ (*stoikheia*). This latter term—always in *Metaph. A*—designates the material elements admitted by Empedocles (earth, water, air, and fire) or those proposed by Leucippus and Democritus (the full and the empty) or the elements of numbers acknowledged by the Pythagoreans (the odd and the even), as well as the elements of the Ideas and of the ideal numbers acknowledged by Plato (the One, the great and the small).

The relationship among the notions of principle, cause, and element, according to Aristotle, is notoriously one of progressive inclusion, as shown in Book *A*. The notion of ‘principle’ includes that of cause, because ‘all causes are principles’, but also that of point of departure and of beginning, which is not always a cause. The notion of cause, in its turn, includes that of element, because the element is nothing other than an immanent principle, or a cause inside the thing of which it is an element, while the cause can also be an external principle, as happens in the case of the moving cause. As we will see in *aporiai* 6 and 7 of *Metaph. B* the terms ‘principle’ and ‘element’ are used almost

¹ I will use *The Revised Oxford Translation* (Barnes 1984), occasionally modifying it, as in this case.

² Cf. Mansion 1955.

always together, as if they had the same meaning, that of ‘immanent principle’. This certainly does not hold true for Aristotle, who maintained that the element is only a particular type of principle. However it must have been valid for the Platonists, if it is true, as Aristotle reports elsewhere, that ‘they make every principle an element’ (*Metaph. N* 4, 1092^a6–7). For this reason I do not agree with the interpreters who say that the real choice, formulated by Aristotle in *aporia* 6 proposes the genera and the elements as candidates for the title of principles.³ The choice, as we will see, is between the genera and the constituent parts of things as candidates for the title of principles elements—that is, of principles understood in the sense of elements. The name element, in fact, can indicate not only the constituent parts, but also—for the Platonists—the genera.⁴

I. *Aporia* 6

1. *The formulation of the aporia*

The formulation of the sixth *aporia* in chapter 3 of *Metaph. B* is the same as the one that was proposed in chapter 1: ‘whether it is the genera that should be taken as elements and principles, or rather the primary constituents (*ex hon enuparkhonton proton*) of a thing’ (998^a21–3).⁵ In chapter 1 the alternative is between the ‘genera’ and ‘the parts present in each thing into which it is divided’ (*eis ha diaireitai enuparkhonta*, 995^b27–9), exactly as in chapter 3. On the other hand in Book *K*, which in certain respects is parallel to books Beta, Gamma, and Epsilon, we find a rather different formulation, namely: ‘whether the science we are seeking should be said to deal with the principles which are by some called elements. All men suppose these to be present in compound things; but it might be thought that the science we seek should treat rather of universals (*ton katholou*); for every formula and every science is of universals and not of particulars’ (1059^b21–6). Here the *aporia* concerns the object of the science we are seeking (as in the first four *aporiai* of *Metaph. B*) rather than the nature of principles and elements. Furthermore the author postulates the identification of the elements with the constituent parts—which in *Metaph. B* is precisely what is at issue—and substitutes ‘universals’ for ‘genera’, and in so

³ Cf. Dooley and Madigan 1992, 137, n. 203. But also Bonitz 1849, 149.

⁴ *Metaph. A* 3, 1014^b6–13.

⁵ Following Alexander, in *Aristot. Metaph.* 202, 8–10 Hayduck, like all the editors, I am reading *prōtōn* in line 23, in place of *prōton*, cited by some manuscripts (including the one possessed by Alexander). I do not share *The Revised Oxford Translation* choice, which, in the first formulation of the *aporia*, namely *B* 1, 995^b27–29, translates *genē* as ‘the classes’. As we will see, this is one of the two meanings that the term has in *Metaph. B*, consequently it would be a good idea to adopt the literal translation ‘genera’, as the *Revised Translation* does in *B* 3, without dissolving the ambiguity.

doing, alludes to a theory that, as we will see, is quite specific, even in its terminology.

Those who considered the ‘genera’ principles elements of beings were the Platonists, namely Plato himself and, presumably, his most faithful disciples. As far as Plato is concerned, the standard reference is to the *Sophist*, where, however, the term *gene* indicates, in the same way that *eide* does, the Ideas, that is, the Forms. And the ‘supreme genera’ (*megista ton genon*) are Being, Same, Different, Rest and Motion (*Soph.* 253d–255e), namely the supreme Ideas of which all the others partake. The term *gene* seems to have a different meaning in the *Philebus*, where it indicates limit, unlimited, mixture and the cause of mixture, i.e. the principles elements of the Ideas, the totality of these and their cause (*Phil.* 23 c–d). In all probability, Aristotle is referring to the Platonists as a group, that is, to Plato and his immediate pupils. It is significant that in *Metaph.* A 1 Aristotle refers to them as ‘the thinkers of the present day’ (*hoi . . . nun*): ‘The thinkers of the present day tend to rank universals as substances, for genera (*gene*) are universals, and these they tend to describe as principles and substances, owing to the abstract nature of their inquiry (*dia to logikos zetein*)’ (1069^a26–8). This passage confirms that the term used by the philosophers in question was not *katholou*, which Aristotle uses in order to explain their doctrine, but *gene*. The explanation that he gives of the doctrine in question is the same one that he gives in *Metaph.* A 6 in order to distinguish Plato’s doctrine from that of the Pythagoreans: ‘His divergence from the Pythagoreans in making the One and the numbers separate from things, and his introduction of the Forms, were due to his inquiries in the region of definitory formulae (*dia ten en tois logois skepsin*), for the earlier thinkers had no tincture of dialectics’ (987^b31–3).

The other philosophers—those who identified the principles elements with the constituent parts of bodies—were evidently those philosophers whom Aristotle habitually calls ‘physicists’, as can be seen in the same passage from *Metaph.* A 1: ‘The old thinkers (*hoi . . . palaî*) ranked particular things as substances, e.g. fire and earth, but not what is common to both, body’ (1069^a28–30). Therefore Stephen Menn is right in saying that in this *aporia*, just as in the others, Aristotle contrasts his first philosophy with physics and with dialectic.⁶ However, as we will soon see, the doctrine in question is not just that of the physicists; it possesses other foundations as well.

⁶ S. Menn, ‘The Aim and the Argument of Aristotle’s *Metaphysics*’, draft, February 2002, kindly sent to me by the author.

2. The 'thesis': the principles elements are not the genera, but the constituent parts of bodies

If we may be permitted to use Ross's language, followed however by numerous interpreters, we can call the first hypothesis of a solution to the *aporiai* 'the thesis'. This is introduced by Aristotle through a series of examples that function just as similar arguments in favour of it do, and could be formulated positively as: 'the principles elements are the constituent parts of bodies.' Interestingly enough, Aristotle never offers this formulation of the thesis. Rather, at the end of the treatise he formulates it only in a negative way, saying that 'the principles of things would not be genera' (998^b3–4). In my opinion, this is evidence that the real object of the *aporia* is not the choice between the doctrines of the Platonists and those of the physicists. Rather it is to examine the validity of the Platonists' doctrine, with respect to which the arguments in favour of the opposing doctrine must be considered as so many objections or difficulties.

These arguments, as we have said, consist of three examples of the use of the term 'element' and of a fourth example regarding the term 'nature', considered as equivalent to 'element'. It involves arguments that are, so to speak, positive, not absurd consequences of the Platonists' doctrine.⁷ In fact one has the impression that it involves not simply dialectical arguments, but those that express convictions that Aristotle actually professes and that probably even Plato would have accepted. If this were so, in a sense they would place Plato in contradiction with himself and would constitute a genuine rebuttal of the Platonic doctrine. In that case book Beta would offer us not just a simple dialectical discussion of an *aporia*, but rather a rebuttal of Plato's doctrine which would be tantamount to a genuine demonstration of its opposing doctrine, namely that of Aristotle.

The first argument consists of the example of the elements of articulate sound (*phone*), which are 'the primary parts of which all articulate sound consists, . . . not the common genus, articulate sound' (998^a23–5). Now, we know that in the Greek language one of the meanings of the term *stokheion* is precisely that of elementary sound (vowel or consonant) from which words are formed. An other meaning, parallel to this one, is a letter of the alphabet—that is, of written elementary sound, from which written words (or, initially, syllables) are formed. There is debate as to whether this meaning is the original one from which all the others, metaphorically, would derive, as Hermann Diels maintained,⁸ or if instead it is derived in its turn from other meanings, in particular

⁷ Alexander speaks of this notion of an 'induction' (*epagōgē*) (*In Metaph.* 20, 32). He is followed by Madigan 1999, 68.

⁸ Diels 1899.

from the mathematical one—which we will soon discuss—as Walter Burkert asserts.⁹ This does not concern us. What is important to us is that it is a meaning recorded by Aristotle himself as being current (*Metaph.* Δ 3, 1014^a26–30) and, still more important, it is a meaning acknowledged by Plato himself. In fact, in the *Theaetetus*, Plato employs the example of letters that form syllables in order to illustrate the elements from which complex things are formed (201e–206b). And in the *Philebus* he makes use of the example of elementary sounds and of the letters of the alphabet in order to illustrate the elements of a multiplicity endowed with unity, as finite, such as the unity that dialectic must establish among the Ideas (17a–18e).

It must be noted that the comment ‘not the common genus, articulate sound (*ou to koinon he phone*)’ seems to be directed against the Platonists, as does the analogous comment made in the passage cited in *Metaph.* Α 1 regarding the elementary bodies (fire, earth), ‘but not what is common to both, body’ (1069^a29–30). On the other hand, Plato in the dialogues and the Platonists in general employed the metaphor of language—of letters as the elements of syllables and of words—in order to illustrate the structure of reality. This is seen in a famous testimony of Sextus Empiricus, according to which ‘Pythagoras of Samos and his school’ (an expression that can also be applied to members of the early Academy) maintained that

those who are genuinely philosophizing are like those who work at language (*logos*). Now the latter first examine the words (for language is composed of words); and since words are formed from syllables, they scrutinize the syllables first; and as syllables are resolved into the elements (*stoikhēia*) of written speech, they investigate these first; so likewise the true physicists, as the Pythagoreans say, when investigating the universe, ought in the first place to inquire what are the elements into which the universe can be resolved (*eis tina to pan lambanei tēn analusin*).¹⁰

Krämer calls this analysis ‘die elementarisierende Behandlung’ and thinks that it is one of the two methods by which Plato (in his unwritten doctrines) and the Platonists would have traced all things back to the principles elements (the other was ‘die generalisierende Denkform’).¹¹ This therefore constitutes an other reason for thinking that Aristotle’s argument is meant to be a critique internal to the Academy.

A second argument against the Platonists’ doctrine is given by exploiting the example of the elements of geometry that Aristotle calls *diagrammata*. ‘We give

⁹ Burkert 1959, where one can find the entire debate prompted by Diels’s book.

¹⁰ Sext. Emp. *Adv. Math.* X (*Adv. Phys.* II), 248–50, trans. R. G. Bury, Loeb Classical Library, 1960, p. 333. *Platonic Testimony* 32 Gaiser (T. 12 Krämer, in Krämer 1982).

¹¹ Krämer 1973.

the name of “elements”’, he says, ‘to those geometrical propositions (*ton diagrammaton*) the proofs of which are implied in the proofs of the others, either of all or of most’ (998^a25–6). In this regard, the meaning of the term *diagrammata* is debated. The term literally means figures, drawn or constructed with the goal of proving a theorem. However in Aristotle’s use of it, it seems to refer to theorems, including their proofs, which are in their turn the basis for further proofs.¹² This leads one to think that, to begin with, the true elements are even more fundamental propositions, such as the definitions and axioms of geometry.¹³ But the elements of geometry are not only the propositions that cannot be demonstrated; they also include the proofs that lie at the basis of all the other proofs and as such form a genuine and complete geometry textbook. In this sense the term *stokheia* became the title of many geometry treatises, the most famous being by Euclid. From Proclus we learn that the oldest ones were by Hippocrates of Chios (before Plato), Leon and Theudius (Plato’s contemporaries), and Hermotimus.¹⁴

Now this meaning of the term *stokheia* was acknowledged by Plato as well as by Aristotle. The latter records it in *Metaph.* Δ 3, where he connects it equally to the primitive proofs that are at the basis of other geometrical proofs, and more generally to the primitive proofs that are at the basis of the other proofs such as simple syllogisms composed of three terms: two extremes and one medium term (1014^a35–b3). As for Plato, he was very familiar with the geometry of his time, so that there is no reason to doubt that, among the meanings of *stokheion*, he also acknowledged the geometric one. In fact, it was not by chance that Eudemos of Rhodes—Aristotle’s disciple and author of the first history of geometry (which is the basis for Proclus’ commentary on book I of Euclid’s *Elements*)—mentioned Plato as being the first to have used the term *stokheion* in the physical sense.¹⁵ According to Burkert this is a sign that Plato applied the mathematical method of *dihairein* to physics, as emerges from the *Timaeus*.¹⁶

¹² Cf. *Metaph.* Θ 9, 1051^a21–30. See also Asclep. In *Aristot. Metaph.* 174, 9–10, Hayduck, who offers examples of theorems proven by way of others, and Thom. Aquin. In *Metaph. Aristot.* 424, Cathala-Spiazzi, who denotes the elements in *prima geometriae theoremata*. All interpreters agree on this interpretation: see Bonitz 1849, 150–1; Schwegler 1847, III, 128; Ross 1970 (1924), I, 234. Heath 1949, 216, explains: ‘geometrical propositions including the proofs of the same and not merely “diagrams” or even “constructions”’. This interpretation has recently been confirmed by Netz 1999, 36–7. According to Netz, for Aristotle, ‘*diagramma* itself certainly means “a mathematical proposition”’, but also ‘a proof where a mathematical diagram occurs’.

¹³ This interpretation came from an article by Burkert 1959, who cites *Top.* VIII 3, 158^b35–6, where Aristotle states ‘the first among the elements’ in the definitions, for example ‘what is a line’ and ‘what is a circle’. According to Burkert this was the original meaning of the term *stokheion*.

¹⁴ Procl. In *Eud.* 66, 7 ff. Reference to the *Elements* by Euclid is already in Alexander, In *Metaph.* 202, 14–15.

¹⁵ Eudemos, fr. 31 Wehrli (Simpl. In *Phys.* 7, 12 ff.).

¹⁶ Burkert 1959, 197.

The third argument presented by Aristotle against the concept of the principles elements as genera consists simply of a reference to the theories of those who sought the elements of material bodies. These were the monists, who recognized only one element, as well as the pluralists such as Empedocles, who recognized many elements. Aristotle declares that they ‘say the parts of which bodies consist and are compounded are principles, e.g. Empedocles says fire and water and the rest are the constituent elements of things, but does not describe these as genera of existing things’ (998^a28–32).¹⁷ Clearly Aristotle is using these theories simply as an authority, as is his habit, but the thesis that he wants to defend at this point is not necessarily that of the physicists. Their doctrines are only one of the arguments that Aristotle adduces against the Platonists’ doctrine, which is again evoked in the statement ‘but does not describe these as genera of existing things’. For the same reason, I do not find it necessary to assert, with Krämer, that the identification of the principles with the elements of bodies derives from Speusippus.¹⁸

Finally, the fourth argument against the doctrine of the Platonists revolves around artefacts such as a bed. Aristotle says of a bed, ‘if we want to examine the nature (*phusis*),’ that is, the principles, ‘we examine the parts of which it consists (*ex hon morion sunesteke*) and how they are put together (*pos sunkeimenon*)’ (998^b1–2).¹⁹ Even in this case, then, the principles elements are identified with the constituent parts. Aristotle’s mention of an artefact is probably due to a preoccupation with completeness.²⁰ In language as well as in geometry, in the case of the natural bodies as well as in the case of artificial objects, the principles elements always correspond with the constituent parts and never with the genera. Nevertheless it is possible, as Menn observes, that the example of the bed contains an allusion to the famous passage in *Physics*, where Aristotle cites the opinion of Antiphon. According to this opinion, the nature of a bed is simply wood, as shown by the fact that a buried bed would be capable of generating, at most, only wood (*Phys.* II 1, 193^a12–17). But according to Aristotle (*ibid.* 193^b8–12), this example provides the basis of an analogous argument which shows that form too is nature. Also in our example, Aristotle probably alludes to the form of the bed, when he mentions, besides the parts

¹⁷ I am reading lines 30–1, as do the majority of the manuscripts, Asclepius, Ross, and Jaeger (*ta meta toutōn*).

¹⁸ Krämer 1973, 150. This author also sees an allusion to Speusippus in the use of the term *koinon* to indicate the universal in line 998^a25.

¹⁹ In this case also there is a problem in the reading; see the differences among the editions by Bonitz, Schwegler, Christ, Ross, and Jaeger. I am following *The Revised Oxford Translation* (= Barnes 1984), which does not accept the insertion proposed by Jaeger.

²⁰ This is noted also by Alexander, *In Metaph.* 202, 26, and Asclepius, *In Metaph.* 175, 5.

of which the bed is composed, 'how they are put together'. This means that the principles elements conceived as constituent parts are not only matter, as the physicists believed, but also form, as Aristotle himself maintains in *Phys.* I (where the three principles elements are matter, form, and privation). Therefore, in the argument under examination, Aristotle is not defending the opinion of the physicists, but wants to criticize the doctrine of the Platonists by availing himself of many arguments, including those that come from his own philosophy.

3. *The antithesis: the principles elements are the genera*

The arguments in favour of the 'antithesis', that is, of the Platonic concept of the principles elements as genera, are evidently of Platonic origin, but this does not keep them from being partially shared by Aristotle. Nonetheless it must be noted that although it was recorded by Aristotle in book *Delta* among the meanings of the term 'element', he explicitly attributes the concept of principles elements as genera to certain people, while implicitly distancing himself from them (1014^b9–11).

The first of these arguments involves the nature of the definition, as necessary condition for scientific knowledge: 'In so far as we know each thing by its definition, and the genera are the principles of definitions, the genera must also be the principles of definable things' (998^b4–6).²¹ The premises of this argument are as Platonic as they are Aristotelian. In fact for Aristotle the second premise constitutes one of the meanings of the term 'genus' (*Metaph.* Δ 28, 1024^b4–6: 'in the formulae their first constituent element, which is included in the essence, is the kind, whose differentiae the qualities are said to be'). This meaning is at the basis of the conception of definition as an aggregate of genus and specific differentia illustrated by Aristotle books IV and V of the *Topics*. Here apparently the term 'genus' does not mean Idea or Form, as in Plato's *Sophist*, but has the taxonomic significance of 'class'. By contrast, Alexander probably refers to the other meaning of 'genus', observing in this context that, according to the *Topics*, the specific differentia too can be called 'genus'. For in *Top.* I 4, 101^b18, Aristotle asserts that the differentia, being of the nature of the genus (*genike*), can be placed on the same level.²²

²¹ On line 4 one can read *hēi* with Alexander, Moerbeke, and the manuscripts, in place of *ei* with Ross and Jaeger.

²² Alex. In *Metaph.* 203, 7 9. Nonetheless Bonitz 1849, 150, does not agree and refers back to the passage in which Aristotle asserts that the genera are prior to the specific differentiae (*Top.* IV 6, 128^a24; VI 5, 142^b28; *An. Post.* II 13, 97^a25 ff.). It was noted during the Symposium by both David Sedley and Michael Frede that in *Metaph.* B the term 'genus' is used with two meanings, one Platonic and the other 'taxonomic'.

In Aristotle's argument there is, however, a third premise that remains implicit, namely that the principles of knowledge are also the principles of the object known, or in scholastic terminology, that the *principia cognoscendi* correspond to the *principia essendi*. This assumption is made explicit by Thomas Aquinas,²³ who is followed by all of the Thomist interpreters.²⁴ With regard to this, Madigan speaks of an application of the 'mirroring assumption,' according to which an item in the thing defined corresponds to each item in the definition, and he points to *Metaph. Z* 10, 1034^b20–2 as the location where Aristotle formulated it. This assumption certainly reflects Plato's doctrine but it is doubtful that Aristotle is always in agreement with it. In fact, in *Metaph. Z* 10 he asserts that, in the thing defined, the parts are sometimes prior to the whole, but sometimes not. Now one may doubt that the genus, as part of the definition, is prior to the thing defined in the same way as it is prior to the definition.²⁵

In a sense, this argument is also itself an application of the one that Krämer called the 'elementarisierend' method, because, as Aristotle asserts in *Metaph. A*, at the basis of the concept of the elements as genera lies the definition of the term 'element' as something 'small and simple and indivisible' (3, 1014^b5), which, as such, is present in a multiplicity of beings. For 'the so called genera (*ta kaloumena gene*) are universal and indivisible (for there is no definition of them).' Precisely for this reason 'some say the genera are elements, and more so than the differentia, because the genus is more universal; for where the differentia is present, the genus accompanies it, but where the genus is, the differentia is not always' (1014^b9–14). Therefore even the genera are elements because they are constituent parts, not of things but of their definitions. And so we are dealing, once again, with an 'elementarisierend' method, but with a difference from the doctrines of the physicists: the genera are constituent parts, not of the thing of which they are called elements, but of its definition. In short, it is an application of the 'elementarisierend' method at the level of discourse.

The second argument in favour of the antithesis concerns the conception of science directly, without having to pass through the definition: 'If to get the knowledge of things is to get the knowledge of the species (*ton eidon*) according to which they are named, the genera are the principles of the species' (998^b6–8). That the science of beings is the science of their species is a premise of Platonic origin, shared by Aristotle. As for the assertion that the genera are principles

²³ Thom. Aq. *In Metaph. Aristot.* 427: 'Si igitur idem est principium essendi et cognoscendi, etc.'

²⁴ Colle 1922, 235 6, that nevertheless raises a doubt regarding its validity; Tricot 1953, I, 139, n. 2; Reale 1993, III, 130, n. 11.

²⁵ With regard to this see the commentary by Frede and Patzig 1988, 166 ff.

of the species, according to Krämer, it is a specifically Platonic doctrine. However, he holds, it was not shared by the other Academics: neither by Speusippus, who acknowledged the antecedence of individuals over genera and species (thus repudiating the doctrine of Ideas), nor by Xenocrates, who acknowledged the antecedence of the species over individuals as well as genera.²⁶ According to Krämer, Aristotle at first (in the *Categories*) took Speusippus' opinion, identifying the primal substance with the individual, and then, in Book *Z* of the *Metaphysics*, Xenocrates' opinion, identifying the primal substance with the species.

I am not sure that I can share this interpretation, for the following reasons. First, I do not believe that the doctrine of *Metaph. Z* is incompatible with that in the *Categories*. Furthermore, in the *Topics*—a work commonly considered to be as early as the *Categories*—there is a passage in which Aristotle asserts the antecedence of the genus over the species. Aristotle says that definition, genus, and differentia are prior to species, because they 'co eliminate' the species, in the sense that the elimination of the genus and the differentia implies the elimination of the species. In addition, they are better known than the species. For example, he who knows man, the species, also knows animal, the genus, and footed, the differentia, while he who knows the animal and footed does not necessarily know man (*Top.* 141^b25–30). In addition, according to Menn, in *aporia* 6 of *Metaph. B* Aristotle speaks of 'genus' meaning the aggregate of genus and specific differentia. And in *Metaph. Δ* Aristotle says that 'the genus is called a part of the species', because it is contained in its definition, 'though in another sense the species is part of the genus' (25, 1023^b23–5), because the genera are divided into species (1023^b18–19). In any case, the argument adopted by Aristotle in *aporia* 6 of *Metaph. B* expresses Plato's point of view—which maintains the antecedence of the genus over the species—while objecting to the viewpoints of Speusippus and Xenocrates.

But the most interesting argument in favour of the antithesis is surely the third: 'some also of those who say Unity or Being (*to hen e to on*), or the Great and the Small, are elements of things, seem to treat them as genera' (998^b9–11).²⁷ As can be inferred from *Metaph. A* 6, the reference is to Plato himself who introduced the One, identified with Being, and the Great

²⁶ Krämer 1973, 149–52. For Xenocrates' doctrine, Krämer relies on the article by Pines 1961.

²⁷ At the Symposium David Sedley called attention to the *kai* in line 9, proposing that it be understood as 'even' and therefore as an indication that the Platonists are a particular case among those who maintain the identification of the principles-elements with the genera. In my opinion however, it indicates the fact that the doctrine of the Platonists constitutes another argument in favour of the antithesis, which is in addition to the earlier ones acknowledged by Aristotle, but different from them because this one is not shared by him.

and the Small, namely the Indefinite Dyad, as the principles elements of the Idea numbers, of the Ideas and of the sensible things.²⁸ What is interesting here is that these philosophers treat the One Being and the Great Small ‘as genera’. According to Alexander, followed by Asclepius, this means that the One and the Indefinite Dyad are predicates of all things. This is because, for Plato, each thing possesses a unity in that it belongs to a certain species, and at the same time it is affected by the Indefinite Dyad in that it is subject to continual change.²⁹ But there is no text that proves this and, in any case, the continual change refers only to sensible things, not to the Ideas, which also have as principle the Indefinite Dyad.

It seems to me that Aristotle’s assertion, which states that Plato treated the One and the Great Small as genera, is better explained by a passage that has been considered by Gaiser and Krämer to be a fragment of Plato’s ‘unwritten doctrines’. In this passage, which follows the one already mentioned, Sextus Empiricus expounds the doctrines of the ‘Pythagoreans’. I am reproducing it in its entirety because it shows very well the reasons why Plato conceived of the one being and the indefinite dyad as genera.

‘As there are’, says Sextus,

these three classes, the self-existent things (*kath’heauta*), those conceived as in opposition (*kat’enantiotēta*) and also those conceived as relatives (*pros ti*), above all these there must stand of necessity a certain genus (*epanō ti genos*), and it must exist first for the reason that every genus must exist before the particulars classed under it. When it, then, is abolished all the particulars (*eidē*) are abolished along with it, but when the particular is abolished the genus is not also done away with; for the former depends on the latter, and not conversely. Thus the disciples (*paides*) of the Pythagoreans postulated the One as the supreme genus of the things conceived as self-existent. For even as this is self-existent, so also each of the absolute things is one and conceived by itself. But of the opposites the equal and the unequal are, they said, the principles and hold the rank of genus; for in them is seen the nature of all the opposites, that of rest, for instance, in equality (for it does not admit of the more and the less), and that of motion in inequality (for it admits the more and the less) . . . The relatives, however, are classes under the genus of excess and defect; thus the great and greater, much and more, high and higher are conceived by way of excess; but small and smaller, few and fewer, low and lower by way of defect. But since self-existents and opposites and relatives, which are genera, are found to be subordinate to other genera—namely, the One, and equality and inequality, and excess and defect—let us consider whether these genera also can be referred back to others. Equality, then, is brought under the One (for the One first of all is equal to itself), but

²⁸ We will return to this identification, which also reappears in *aporiai* 7 and 11 as a doctrine of Plato, but it is justified also on the part of Aristotle in *Metaph. Γ* 2, 1004^b27–9.

²⁹ Alex. In *Metaph.* 204, 1–6; Ascl. In *Metaph.* 176, 16–17.

inequality is seen in excess and defect; for things of which the one exceeds and the other is exceeded are unequal. But both excess and defect are ranked under the head of the Indefinite Dyad, since in fact the primary excess and defect is in two things, that which exceeds and that which is exceeded.³⁰

Here we find the reduction of all things, or of all Ideas, to two or three supreme genera: the 'self existents' and the 'relatives' (see also Plato, *Soph.* 255c) or rather the 'self existents', the 'opposites', and the 'relatives', conceived as general categories under which all beings are listed. It is clear that the term 'genera' is used in the classificatory sense, that is, in a sense more like that in the *Philebus* than in the *Sophist*, which proves that such a meaning of genus was already present within Platonism. Later we find the reduction of these two or three genera to the One and the Indefinite Dyad and they too are conceived as supreme genera in the classificatory sense under which all the others are listed. It is a conception reported as a doctrine of Plato, though with some difference, by the Academic Hermodorus,³¹ and as a doctrine proposed by other philosophers, but in some measure shared by Aristotle himself (*Metaph.* *Γ* 2, 1004^b27–1005^a2).³² It constitutes the clearest representation of what Krämer calls the 'generalisierend' method and what other interpreters call the 'réduction catégoriale' of things to principles elements.³³ While the 'elementarisierend' method involves deconstructing things into their constituent elements, this 'generalizing' or 'universalizing' method involves taking them back to their genera, which is equivalent to deconstructing, not the things, but their definitions, their notions, into their constituent parts. The latter are, in their turn, notions or concepts. But as we know, according to the Platonic view, concepts, i.e. the universals, are also realities, more real than particular things; they are the most real realities.

4. Conclusion

The conclusion of the *aporia* consists in juxtaposing the two conceptions of definition: 'But, again, it is not possible to describe the principles in both ways (*amphoterōs*). For the formula of substance is one; but definition by genera will be different from that which states the constituents of a thing' (998^b11–14). Here on the one hand, Aristotle refers to the doctrine of definition by genus and

³⁰ Sext. Emp. *Adv. Math.* X, 269–75, translation by Bury (*Plat. Test.* 32 Gaiser, 12 Krämer). This passage cannot refer to Xenocrates, as many interpreters maintain, because the antecedence of the genus over the species is explicitly affirmed, which is the thesis opposed to that of Xenocrates.

³¹ See Simpl. *In Arist. Phys.* 247, 30–248, 30 Diels (*Plat. Test.* 31 Gaiser, 13 Krämer).

³² Cf., with regard to this passage, my article "La 'riduzione' dei contrari in Aristotele" (*Berti* 1973).

³³ Cf. Richard 1986, 184–9.

specific differentia that is shared by the entire Academy and that finds its canonical representation in the *Topics*. On the other hand he seems to evoke another possible conception of definition when he mentions the parts of which a thing is composed. In order to demonstrate the impossibility of sustaining both conceptions at the same time, Aristotle asserts that the definition of substance must be one, evidently considering this to be a principle recognized also by his interlocutors, that is, by the Academics.

According to Alexander, followed again by Asclepius and also by Thomas Aquinas, Aristotle here relies on the doctrine of the *Posterior Analytics*, which affirms the unity of definition because definition is the discourse that manifests the essence in the most appropriate sense.³⁴ But Hayduck observes that this doctrine is found rather in the *Topics*, where Aristotle says that, ‘if there are to be a number of definitions of the same thing, the object defined will be the same as the essences represented in each of the definitions; but these are not the same, inasmuch as the definitions are different’ (*Top.* VI 4, 141^a35–^b 1). If this is true, as it seems to me to be, then it can be a doctrine that is shared by the entire Academy.

Another passage in which Aristotle reproaches his Academic friends for an analogous contradiction that refers in particular to the One is found in *Metaph. M*. Here he asks, ‘In what way, then, is the One a principle?’ and attributes to the Platonists the response: ‘Because it is not divisible.’ To which he objects: ‘But both the universal, and the particular or the element, are indivisible; but in different ways, one in the formula (*kata logon*) and the other in time (*kata khronon*). In which way is the One a principle? . . . They make the One a principle in both ways (*amphoterous*). But this is impossible. For one kind of principle is the form or substance, the other the part or matter’ (*M* 8, 1084^b13–20).³⁵ In this passage also, Aristotle juxtaposes the two methods practised by the Academy in the search for the principles—the ‘generalisierend’ method and the ‘elementarisierend’ one—attributing them both to the same philosophers, that is, to the Academics as a whole.

From Aristotle’s point of view, it seems that the difference between the two methods is the difference between a purely logical consideration, having to do with concepts, notions, and definitions (the ‘generalisierend’ method), and an ontological, or even ‘chronological’, consideration (the ‘elementarisierend’ method). But for Plato this difference does not exist, because, as we have just

³⁴ Alex. *In Metaph.* 204, 12–15; Ascl. *In Metaph.* 176, 24–5; Thom. Aq. *In Metaph. Aristot.* 426.

³⁵ I prefer the translation by Annas 1976 (‘In what way, then, is One a principle?’), to that offered by *The Revised Oxford Translation* (‘How then is 1 the starting point?’) because I maintain that the passage is about the One as principle posed by the Platonists (as Annas also thinks, p. 182). In this regard, see also Rossitto 1978.

said, the concepts, i.e. the universals, the Ideas, also have a reality, and even ontological superiority over the sensible things. For what Aristotle disapproves is not the confusion between the logical and the ontological point of view, but another confusion: that between the formal principle and the material principle. It could seem that this distinction too belongs more to Aristotle than to Plato, but this is not true. In *Metaph. A* Aristotle attributes to Plato himself the discovery of this distinction by means of the doctrine of the two principles of the ideal numbers, the One and the Indefinite Dyad, which are, according to Aristotle, principles respectively as cause of the essence (*aitia tou ti esti*), i.e. formal cause, and as material cause (*kata ten hulen*) (*Metaph. A* 6, 988^a7–11).

The reason for this confusion is indicated clearly by Aristotle in the same book, *M*, where he states:

The cause of the mistake they fell into is that they conducted their inquiry at the same time from the standpoint of mathematics (*ek tōn mathēmatōn*) and that of universal formulae (*ek tōn logōn tōn katholou*) <i.e. of dialectic>, so that from the former standpoint they treated unity, their first principle, as a point; for the unity is a point without position . . . Therefore the unity becomes the matter of numbers . . . But because their inquiry was universal they treated the unity which can be predicated, as in this sense also a part of the number. But these characteristics cannot belong at the same time to the same thing. (1084^b23–32)

Here Aristotle denounces the incompatibility between the mathematical and the dialectical point of view. Both of these points of view belong to Plato, at least to the Plato of the unwritten doctrines, and they cause him to conceive of the One simultaneously as material cause and formal cause of numbers.

With regard to *aporia* 6 as with all the others, which almost always allow for a solution, it is legitimate to ask ourselves where this solution is. Bonitz declares that he does not know if Aristotle ever resolved this *aporia*.³⁶ Ross states that 'this problem is nowhere answered explicitly by Aristotle.' However he also notes that from *Metaph. Z* 10 we learn that the constituent parts of a thing are contained in its definition only when they are contained in its form, while from *Metaph. Z* 13 we learn that the universals (among which are included the genera mentioned in this *aporia*) cannot constitute the substance of individual things. In reality Aristotle develops his own conception of the principles elements in the *Physics* (I 7–8) as well as in the *Metaphysics* (*A* 2–5, *N* 2). It has to do with the celebrated doctrine of matter, form, and privation, which are elements, in the sense that they are constituent parts of things. But in addition he acknowledges that in another sense the parts of the definition, i.e. the genus and the specific differentia, are also principles.

³⁶ Bonitz 1849, 151.

For in *Metaph. H 2* Aristotle declares: ‘We must grasp, then, the kinds of differentiae, for these will be the principles (*arkhai*) of the being of things, e.g. the things characterized by the more and the less, or by the dense and the rare, and by other such qualities; for all these are characterized by excess and defect’ (1042^b31–5). Therefore it would seem that Aristotle too speaks of the principles elements in exactly the same two senses in which Plato speaks of them. This is without doubt true, but Aristotle takes care not to confuse these two senses. For him, the form is a principle and the parts of the form, i.e. the genus and the specific differentia, are also principles (even if these latter two are principles in two different senses). Matter is a principle in the same way and so are the parts of matter, namely the elementary bodies (earth, water, air, and fire). However one must not confuse the way in which form is a principle with the way in which matter is a principle. Likewise, one must not confuse the way in which the genus is a principle with the way in which the specific differentia is a principle,³⁷ not to mention the moving cause, which is a principle but is not necessarily an element.³⁸

II. *Aporia* 7

1. *The formulation of the aporia*

What the majority of interpreters call *aporia* 7 is formulated by Aristotle in the following way: ‘Besides this, even if the genera are in the highest degree principles (*hoti malista arkhai*), should one regard the first of the genera as principles, or those which are predicated directly of the individuals?’ (998^b14–16). In chapter 1 we find, more or less, the same formulation, with the additional example of animal as the universal genus and of man as the lowest species (995^b29–31). Conversely, in Book *K*, this does not appear as a separate *aporia*, but as a lengthening of *aporia* 6, concerning first of all One and Being, presented in Platonic language as including (*periekhein*) the totality of beings, as anterior by nature, as co eliminating all the rest, and as object of participation (*metekhein*) of the differentiae (1, 1059^b27–34).

Now aside from this language (which constitutes a further reason for doubting the authenticity of Book *K*), it seems to me that the *aporia* in question is, in effect, a particular case of *aporia* 6—more directly, of the hypothesis that the

³⁷ The explanation of this differentia necessitates an analysis of *Metaph. Z 10–12*, for which I refer to the commentary by Frede and Patzig.

³⁸ For this reason I do not agree with Madigan 1999, 70, who considers Aristotle’s negative conclusion surprising, as if the conclusion were in opposition to the doctrine of matter and form as causes for the same reasons.

genera are the principles elements, therefore making it a sort of sub *aporia* (or subordinate *aporia*). In fact, Schwegler considers it in precisely this way and makes it a part of *aporia* 6.³⁹ This confirms the Platonic, or better yet, Academic, character of the debate in question, where we witness not a clash between Platonic doctrines and those of the physicists, but one between different positions inside the Academy. It is to the credit of Pines and Krämer that they have identified these positions as respectively those of Plato and of his disciple Xenocrates.

2. The 'thesis': the principles elements are the supreme genera

The first hypothesis that Aristotle considers, or what interpreters (Ross, but also Bonitz, followed by all the others) call the 'thesis' of the *aporia*, is presented by Aristotle in the following way: 'If the universal is always more of a principle, evidently the uppermost of the genera (*ta anotato ton genon*) are the principles, for these are predicated of all things. There will, then, be as many principles of things as there are primary genera (*prota gene*), so that both Being and One (*to te on kai to hen*) will be principles and substances; for these are most of all predicated of all things' (998^b17–21). Soon after this formulation, Aristotle observes: 'But it is not possible that either One or Being should be a genus of things' (998^b22). From this point he launches a series of arguments. The first is against the possibility that One or Being—that is, the claimants to the title of first genera—are genera, and consequently are principles. The other arguments are against the possibility that the intermediate species—also claimants to the title of genera and of principles—really are such, or against the possibility that the genera are principles more than the lowest species are.

For this reason the discussion of the thesis is more extended than Bonitz believed. For him, it reaches only to 999^a1, and then resumes in the final part of the chapter (999^a14–23).⁴⁰ In reality this discussion extends to 999^a14, because it comprises all of the arguments that pose objections to the thesis that the supreme genera or the intermediate genera are principles. This follows Aristotle's typical dialectical method, which consists in deducing impossible consequences from the thesis under examination.⁴¹ There are five such arguments. The first surely reflects Aristotle's point of view, being completely original, while the second (maybe), third, and fourth reflect Xenocrates' point of view, shared by Aristotle. The fifth is part of the common doctrinal heritage of the Academy, shared by Plato as well as Xenocrates and Aristotle himself.

³⁹ Schwegler 1847, III, 131.

⁴⁰ Bonitz 1849, 151 2.

⁴¹ This was seen quite well by Ross, Tricot, Reale, and Madigan.

3. Aristotle's argument against the thesis: Being and One are not genera

The first argument against the universality of the principles elements has to do only with the claim that these principles elements correspond to Being and One. We have already considered this conception, which lies at the basis of Plato's unwritten doctrines as reported by Aristotle. These doctrines could find support in the Idea of the Good as supreme principle, presented in the *Republic* (since the One is identified by Aristotle also as the cause of the Good—*Metaph. A* 6, 988^a14). They could also find support in the hypothesis that speaks of the one that is (*hen on*), advanced in the *Parmenides* and never refuted there. It is precisely the *Parmenides* that leads us to believe that One and Being, admitted by Plato according to Aristotle's account, are not two different principles, but two aspects of one and the same principle. In the *Parmenides* Plato rejects the hypothesis of a One that is only one, saying that for this One there is no name, no definition, no science, no perception and no opinion, and that therefore it is impossible (142a). At the same time he admits the hypothesis of a One that is, i.e. that partakes in being, saying that for this One you may have science, opinion, perception, name, and definition (155d). This identification of One with Being is not contradicted by the famous passage from the *Republic* in which Plato asserts that the Idea of the Good is not *ousia*, but is beyond *ousia* in dignity and power (VI, 509b). For the *ousia* in question is not the whole of being, with respect to which one would have to say that a principle that transcends it is not. Rather it seems to be identical with the totality of the Ideas, which the Good transcends because it is the principle and the cause of them.

Against the thesis stating that One and Being are principles as supreme genera, Aristotle advances an objection that depends upon his own doctrine of definition, but is presumably shared by the entire Academy. 'But it is not possible', he says,

that either One or Being should be a genus of things (*tōn ontōn hen . . . genos*); for the differentiae of any genus must each of them both have being and be one, but it is impossible either for the species of the genus to be predicated of their own differentiae or for the genus to be predicated of the differentiae taken apart from the species (*aneu tōn eidōn*); so that if One and Being is a genus, no differentia will either be one or have being. But if the One and Being are not genera, neither will they be principles, if the genera are the principles. (998^b22–8)

In order to affirm that the differentiae of each genus must necessarily have being and unity, Aristotle makes use of Plato's argument in support of the thesis that Being and One are the most universal genera, namely that they are predicated of all beings. All that is, in so far as it is, is being and one. This also

applies to the differentiae, once it is admitted that they exist. On the other hand the differentiae must be admitted to exist in order to avoid falling into the mistake of Parmenides, who denied the existence of the differentiae altogether—an unacceptable consequence for Plato as well as for Aristotle. But it is the very universality of Being and One that prohibits them from being genera. This truth is expressed by the logical rule that states that a genus cannot be predicated of its own differentiae. It is clear that in this case the term ‘genus’ is used in a classificatory sense. However, according to what we have seen previously in Plato’s unwritten doctrines, this was bound to happen.

Admittedly Aristotle adduces two arguments in support of his denial that Being and One are genera, once it is admitted that they are predicated of their differentiae: (1) it is impossible that the species of the genus be predicated of their differentiae; and (2) it is impossible that the genus ‘without its species’ (*aneu ton autou eidon*) be predicated of its own differentiae. Alexander expands on the two arguments offered by Aristotle. With regard to the first, Alexander explains that the species cannot be predicated of their differentiae because the differentiae (for example, ‘rational’ or ‘mortal’) have a greater extension than the species (for example, ‘man’). Also, the differentiae are parts of the species, and the whole cannot be predicated of its parts.⁴² As for the second argument, he observes that the genus cannot be predicated of its differentiae only if these are considered separately from the species of which they are differentiae, for example if the genus ‘animal’ is predicated not of ‘rational’ (meaning ‘rational animal’, of which it can be predicated) but of ‘rationality’: for rationality is a quality, and ‘animal’ cannot be predicated of a quality.⁴³ But even Alexander finds this argument, propounded by Aristotle against Plato’s thesis, to be ‘somewhat logical’ (*logikotera*). In his language this is tantamount to saying that the argument is merely verbal, and as such empty and devoid of value, since the differentiae must in any case belong to a genus (for example, quality) and in such a way the genus can be predicated of its differentiae. According to Alexander, the equivocal nature of certain words (*homonumia*) is the reason why the genera seem not to be predicated of their differentiae. For example the word ‘penetrating’ refers as much to colours as to flavours, but which of these two genera must be predicated of ‘penetrating’? On the other hand, as soon as this word is connected to its genus, for all practical purposes it denotes a species, of which the genus can be predicated.⁴⁴

The same criticism of Aristotle is found in Syrianus, who cites Alexander and finds the argument in question to be ‘quite confused’ (*tarakhodesteron*).⁴⁵

⁴² Alex. *In Metaph.* 205, 15–28.

⁴³ Alex. *In Metaph.* 205, 28–206, 12.

⁴⁴ Alex. *In Metaph.* 206, 12–207, 4.

⁴⁵ Syrian. *In Metaph.* 32, 15–40 Kroll.

Following Alexander, Asclepius too repeats several times that, in this passage, Aristotle is arguing ‘in a gymnastic manner’ (*gumnastikos*), that is, simply as an exercise in arguing. For a Neoplatonist like Asclepius, Being and One are certainly genera, despite Aristotle’s objections.⁴⁶ This interpretation is not shared by Thomas Aquinas, who refers to a passage from the *Topics* (in all probability, IV 2, 122^b20–4). In the *Topics* Aristotle asserts that the differentia is not part of the genus, because that which is part of the genus is always either a species or an individual, while the differentia is neither a species nor an individual. Aquinas adds that the genus is not part of the definition of the differentia, nor is the differentia part of the definition of the genus, and hence the genus cannot be predicated in any way of the differentia.⁴⁷

Now, we need not pay much attention to the first of Aristotle’s two arguments, the one stating that the species cannot be predicated of its differentiae. For, as Ross observes, it is probably mentioned only for the sake of completeness and is not important for what Aristotle wants to demonstrate.⁴⁸ As far as the second argument is concerned, it seems to me that Alexander did not understand it well. When Aristotle asserts that the genus ‘without its species’ (*anew ton autou eidon*) cannot be predicated of its differentiae, he does not mean to say that the genus cannot be predicated of its differentiae as if these were species of another genus. But this is precisely what Alexander seems to believe when he offers the example of rationality, which is a species of the genus ‘quality’. Rather Aristotle is saying that the genus cannot be predicated of its differentiae when they are considered as being separate from the species to which they belong, that is, considered as being other species of the same genus. For example ‘animal’ cannot be predicated of ‘rational’ if it is considered to be something separate from ‘man’, that is, as something that exists alongside man as another species of the genus ‘animal’. Moreover when, as in the example given by Alexander, the genus ‘quality’ is predicated of ‘rationality’, it is because ‘rationality’, with respect to ‘quality’, is a species, not a differentia; therefore the example does not prove that the genus is predicated of its differentiae.

There is a passage from the *Topics*, cited by all commentators from Schwegler and Bonitz onwards, that might shed some light on Aristotle’s argument. In *Top.* VI 6, 144^a31^b3 Aristotle warns against predicating the genus of the differentia:

⁴⁶ Ascl. In *Metaph.* 177, 23 178, 17.

⁴⁷ Thom. Aq. In *Metaph.* 433.

⁴⁸ Ross 1970 (1924), I, 235. Perhaps Aristotle observes that the species cannot be predicated of its differentiae because there was someone who maintained that the Being and the One are species.

Again, see if the genus is predicated of the differentia; for it seems that the genus is predicated, not of the differentia, but of the objects of which the differentia is predicated. Animal (e.g.) is predicated of man and ox and other terrestrial animals, not of the differentia itself, which we predicate of the species. For if animal is to be predicated of each of its differentiae, then many animals (*polla zōia*) will be predicated of the species;⁴⁹ for the differentiae are predicated of the species. Moreover, the differentiae will be all either species or individuals, if they are animals; for every animal is either a species or an individual.

In this passage Aristotle proves that one cannot predicate a genus (for example 'animal') of one of its differentiae (for example 'biped'). In other words, it is wrong to say 'the biped is an animal'. Aristotle provides two reasons in support of this claim. The first is that, if 'animal' were to be predicated of each of its differentiae, then 'many animals' would be predicated of the species, for example of 'man'. This time Alexander does not find Aristotle's argument 'somewhat logical'. Alexander explains it by observing that 'the genera do not divide into their differentiae (*eis diaphoras*), but by means of their differentiae (*diaphorais*).' He continues by saying that if the genus (for example 'animal') were to be predicated of its differentiae (for example of 'footed' or of 'biped') then the differentiae footed and biped would be animals. And since man is a biped footed animal, animal would be predicated many times (*pollakis*) of man and man would be many animals (*polla zoia*), which is absurd.⁵⁰

Modern commentators have treated this interpretation as if Aristotle had written *pollakis to zoion* in place of *polla zoia*,⁵¹ and have considered the absurd consequence denounced by Aristotle to be simply a case of redundant predication,⁵² even if one of them has stated that this predication does not reflect the structures of being⁵³ and another has maintained that, in any case, it constitutes an error in logic.⁵⁴ If one accepts this interpretation, one could also observe that by predicating the genus many times of its species—for example 'animal' many times of 'man'—one would be denoting only the genus to which man belongs, without ever indicating its differentiae. And in so doing, the differentiae would be nullified, reducing all species of the same genus to only one.⁵⁵ But I believe that we must interpret the text in a more literal way, that is, by admitting that, if we predicated the genus of its differentiae, we would have, as a consequence,

⁴⁹ Here *The Revised Oxford Translation* (=Barnes 1984) correctly translates *polla zōia* as 'many animals', deviating from T. Waitz's interpretation, in Waitz 1844 6, going back, as we will see, to Alexander and followed by other translators, according to whom *polla zōia* would be equivalent to *pollakis to zōion*.

⁵⁰ Alex. *In Top.* 452, 2 11 Wallies.

⁵¹ Waitz 1844 6, *loc. cit.*; Ross 1970 (1924), I, 235; Tricot 1950, 250, n. 5.

⁵² Cf. Zadro 1974, 485.

⁵³ Madigan 1999, 75.

⁵⁴ Wilson, 2000, 136 40.

⁵⁵ This explanation was proposed by G. Catapano during a seminar on *Metaph. B* held in Padua in 2000 1.

that man is many animals. For if, for example, the genus ‘animal’ could also to be predicated of ‘biped’ considered as separate from ‘man’, the biped too would be a species of the genus animal, and man would be one animal as subject of the predicate ‘animal’ and another animal as subject of the predicate ‘biped’. The same argument would apply to each of the differentiae of man, so that man would be ‘many animals’.⁵⁶ The absurdity of this consequence consists in the fact that the same individual would be identified as many.⁵⁷

Aristotle’s argument has been recently criticized by Christopher Shields. According to Shields, the absurdity of the consequence consists in the attribution of many different genera (*polla zoia*) to the same species, man, that is, in the admission of the homonymy of the predicate ‘animal’. Hence, Shields observes, if this argument is applied to being, as happens in *Metaph. B*, it will reject the homonymy of being as an absurd consequence, despite the fact that this is what Aristotle intends to demonstrate, and therefore ends up in contradiction with itself.⁵⁸ But in my view it is not necessary to interpret *polla zoia* as many different ‘animal’ genera, nor does this interpretation seem plausible to me. The application of the genus to its differentiae can be interpreted as an attribution of many species of the same genus to the same species. An example of this, as we have seen, would be the attribution of many species of the genus ‘animal’ (footed, biped, rational) to the same species ‘man’, which constitutes an utter absurdity. Therefore the ‘many animals’ are different from each other, but not necessarily in genus.

In the passage cited from the *Topics*, Aristotle’s second reason for denying the possibility of predicating the genus of its differentiae, namely, that the differentiae would thus be placed next to the species and to the individuals of which the genus is normally predicated, also goes in this same direction: for it demonstrates that the differentia, by becoming itself a species of the genus, would lose its function, which is that of distinguishing the different species of the same genus. In any case, Aristotle’s arguments are founded in the last analysis on the doctrine of the definition of the species by means of the genus and the specific differentia, whereby the genus expresses what all the species have in common and the differentiae express what distinguishes the species from each other. If the genus were also predicated of its differentiae, then the definition would denote only those aspects that are common to the various species, thereby losing that which allows them to be distinguished from each

⁵⁶ This explanation was also proposed at the seminar in Padua, specifically by P. Fait.

⁵⁷ In which case we would have the same outcome as is denounced by Aristotle regarding the *ekthesis* in *Metaph. B* 6, 1003^a9–12.

⁵⁸ Shields 1999, 252–3. It seems evident to me that Shields is relying on Alexander for this interpretation.

other. This doctrine is not professed only by Aristotle. It was probably also shared by Plato's Academy, where the concept of definition presented in the *Topics* was born. Consequently for Aristotle it not only has the merit of being true, but also that of providing an objection internal to Platonism.

In conclusion, if we return to the discussion of *aporia* 7 of *Metaph. B*, we must recognize that Aristotle, up to this point, has presented a first argument against the possibility that Being and One are principles elements. He bases his argument on the fact that Being and One are not genera. In other words, they do not obey the condition that the Platonists themselves require for positing principles, which is that they be genera. This refutation of the possibility that Being and One, i.e. the most universal predicates, are principles works as an argument in favour of the thesis that the principles are not the first genera, but the lowest species. But the passage from the *Topics* assures us that only the negative part of the argument—that Being and One are not genera and, therefore, are not principles—truly corresponds to Aristotle's thought. That still tells us nothing about Aristotle's possible adherence to the thesis which states that the principles are the lowest species.

4. Xenocrates' arguments against the thesis: the principles are the lowest species

Another argument against the Platonic thesis that the principles elements are genera follows immediately: 'Again, the intermediate classes, whose concepts include the differentiae, will on this theory be genera, down to the indivisibles; but as it is, some are thought to be genera and others are not thought to be so' (998^b28–30). The sense of this argument is not altogether clear. Alexander supposes that it is directed not only against the thesis that the first genera are principles, but also against the thesis that all genera are principles. In his opinion, this thesis is refuted by the fact that certain intermediate classes between the first genera and the lowest species (the 'indivisibles')—for example those formed by the union of a universal with a privative differentia—are not genuine genera and consequently are not principles.⁵⁹ This interpretation has been taken up by almost all the commentators, ancient and modern alike, who nevertheless are divided into two camps: those who consider the argument an expression of Aristotle's point of view,⁶⁰ and those who consider it an expression of a Platonic point of view.⁶¹

⁵⁹ Alex. *In Metaph.* 207, 9–29.

⁶⁰ Syrianus, Asclepius (who nevertheless judges Aristotle's argument to be very weak), Bonitz, Schwegler, Ross, Reale, *ad loc.*

⁶¹ Colle, Tricot, *ad loc.*

I would say that it reflects a point of view that was very widespread in the Academy but does not completely coincide with Plato's own. This is the view that there are no 'genera' (to be understood in the sense of Ideas) of negations, indeterminate objects, or artefacts. Aristotle himself, in his *De ideis*, had directed this objection against one of the arguments in favour of the existence of the Ideas, 'the one said of many' (*to hen epi pollon*).⁶² Now we know that Plato admitted Ideas of artefacts (for example, in *Rep.* X he speaks of the 'Idea of the bed'), while other philosophers in the Academy did not admit them.⁶³ More directly, we know that Xenocrates admitted Ideas only of natural objects.⁶⁴ That is why I am inclined to believe that this argument, like the others that follow it, ultimately derives from Xenocrates.

In fact, the argument in question is strictly tied to the subsequent one that says: 'Besides this, the differentiae are principles even more than the genera; and if these also are principles, there comes to be practically an infinite number of principles, especially if we suppose the highest genus to be a principle' (998^b30 999^a1). This new argument is clearly directed against the thesis that the supreme genera are principles and, taken together with the preceding one, proves that only the lowest species, namely the species isolated by the specific differentiae, are true principles. Now after the discovery by S. Pines of a new fragment of Xenocrates, where he maintains exactly this thesis, it is to be concluded that Aristotle's argument also derives from Xenocrates.⁶⁵ It is for this reason that I propose attributing the preceding one to him as well. This last argument would have the function of eliminating, as candidates for the title of principles, not only the first genera, i.e. Being and One, because they are not genera, but also the intermediate genera, because they are not proper genera.

The new fragment of Xenocrates, contained in a commentary by Alexander on Aristotle and preserved only in Arabic, says (I am quoting Pines's translation of it):

Xenocrates says: If the relation between a species and a genus is like the relation between a part and a whole, and if a part is anterior and prior to the whole in virtue of a natural priority (for if a part is sublated, the whole is sublated, this in view of the fact that no whole will remain if one of its parts is lacking), whereas a part will not be <necessarily>

⁶² Aristot. *De Ideis* fr. 3 Ross (Alex. *In Metaph.* 79, 3 83, 30).

⁶³ Cf. Berti 1997 and Isnardi Parente 1979.

⁶⁴ Cf. fr. 94 Isnardi Parente 1982 (fr. 30 Heinze Procl. *In Plat. Pann.*, 691 Stallbaum).

⁶⁵ Cf. Pines 1961, 3 34.

sublated if <its> whole is sublated (being possible that certain parts of a whole be annulled whereas others remain), a species is likewise indubitably prior to the genus.⁶⁶

Thanks to the identity of the relations between genus and species and between the whole and the parts, and thanks to the priority of the part over the whole, Xenocrates asserts the priority of the species over the genus, thus applying what Krämer called the 'elementarisierend' method. Moreover, with the doctrine of the priority of the species over the genus, Xenocrates, according to Krämer, would be ranked halfway between Speusippus and Plato. On the basis of the same method applied in a more radical way, Speusippus asserted the primacy of individuals (the mathematical numbers) and denied the existence of species (the Ideas) and genera (the ideal numbers). And Plato, on the basis of the 'generalisierend' method, asserted the anteriority of the genera (the ideal numbers) with respect to the species (the Ideas).⁶⁷

The same doctrine of the priority of the species over the genus is contained in the argument presented by Aristotle immediately after the one we have already considered: 'But again, if the One is more of the nature of a principle (*mallon arkhoeides*), and the indivisible is one, and everything indivisible is so either in quantity or in species, and that which is so in species is prior to the divisible, and genera are divisible into species (for man is not the genus of individual men), that which is predicated directly of the individuals (*to eskhaton . . . kategoroume non*) will have more unity' (999^a1–6). Here Aristotle himself invokes the 'elementarisierend' method which considers the indivisible as principle and, on the basis of this method, he is led to the conclusion of the priority of the lowest species (that which is predicated directly of individuals); for example, the priority of man, over its genera.

Alexander, in his commentary on the *Metaphysics*, makes no mention of Xenocrates. However, Alexander provides us with a statement that confirms that the doctrine in question originated with Xenocrates. He observes that indivisibility according to quantity must be interpreted as indivisibility according to number.⁶⁸ If this is true, the argument would affirm the priority of species not only over genera, but also over individuals. This is precisely Xenocrates' position, halfway between Plato and Speusippus. For the same reason, the argument is criticized by the Neoplatonist commentators, who share Plato's point of view.⁶⁹ In fact, Pines and Krämer as well as Margherita Isnardi Parente,

⁶⁶ Alex. Aphrod. In *Arist. de princ. doctr.*, 281 2 Badawi Xenocrates, fr. 121 Isnardi.

⁶⁷ Krämer 1973, 130 49.

⁶⁸ Alex. In *Metaph.* 208, 10 14. On this point he is followed by Bonitz 1849, 153 (but not by Colle 1922, 245) and by Ross, 1970 (1924) I, 236 7, who cite the priority of substance and form over quantity.

⁶⁹ Syrian. In *Metaph.* 34, 12 19; Ascl. In *Metaph.* 181, 32 6.

the most recent editor of Xenocrates, consider this passage in *Metaph. B* to be a fragment of Xenocrates.⁷⁰

Bonitz and Colle think that this argument constitutes the beginning of the second part of the *aporia*, i.e. the discussion of the antithesis. Ross, Tricot, Reale, and Madigan do not follow them in this interpretation. They all, correctly in my opinion, consider the priority of species over genera to be part of the discussion of the thesis. Krämer believes that Aristotle himself is at this point in agreement with Xenocrates, and that this passage therefore presents a doctrine subsequent to that of the *Categories*, where Aristotle asserted the priority of individuals over species and genera (in the same vein as Speusippus). Furthermore, he believes it is a preparation for *Metaph. Z*, where Aristotle affirms the primacy of the *eidos* (conceived by Krämer as species, not as individual form).⁷¹ I do not agree with this interpretation, and believe, like Ross and Isnardi Parente, that Aristotle is using one of Xenocrates' arguments without subscribing to it: that is, for a purely dialectical goal, in order to set the representatives of the Academy (Plato and Xenocrates) in opposition to one another. For he bases his argument on the supposition that the One possesses the character of a principle, an Academic doctrine that does not represent his opinion, but interprets the One as being indivisible, which is exactly his opinion (see *Metaph. I*, 1–2), indicating that the One is not a principle in the Platonic sense.

Even the next argument, which is the final objection to the thesis, seems to belong to Xenocrates:

Further, in the case of things in which the distinction of prior and posterior is present, that which is predicable of these things cannot be something apart from them; e.g. if two is the first of numbers, there will not be a number apart from the kinds of numbers; and similarly there will not be a figure apart from the kinds of figures; and if the genera of these things do not exist apart from the species, the genera of other things will scarcely do so; for genera of these things are thought to exist if any do. But in the indivisible species one member is not prior and another posterior. (999^a6–13)⁷²

Commenting on this passage, Alexander states that Aristotle is referring to a Platonic doctrine which Aristotle himself shares, as can be inferred from *Nic. Eth.* I (6, 1096^a17–19),⁷³ and also, I would add, from the *Eud. Eth.* I 8, 1218^a1–10. Zeller, followed by Schwegler, observes that Aristotle here is thinking of Plato's

⁷⁰ Isnardi Parente 1982, fr. 122.

⁷¹ Krämer 1973, 155–74.

⁷² Up to line 12 the argument is considered by Isnardi to be a fragment of Xenocrates (fr. 122), which puts her in agreement on this point with Pines and Krämer.

⁷³ Alex. In *Metaph.* 209, 9–14.

ideal numbers, which are arranged according to a priority–posteriority relationship and, therefore do not admit any common genus.⁷⁴ In fact it is an argument used many times by Aristotle for placing the doctrine of ideas in opposition to the doctrine of the principles of ideal numbers,⁷⁵ or for contesting the existence of a genus common to, for example, different species of soul or different political constitutions.⁷⁶ It is very probable that even Xenocrates used it to assert the priority of species over genus. For among species there is an order of priority and posteriority (especially if species are conceived as Idea numbers, which was precisely Xenocrates' opinion); therefore there cannot be an Idea genus common to them, while within each species there are only individuals, among which there is no order of priority, and therefore the species can very well be an Idea.

As it would appear from Aristotle's argument, this doctrine serves primarily to contrast the Idea of number in general and that of shape in general, which must have been admitted by Plato but denied by Xenocrates. But as Isnardi Parente correctly observes, it has an impact upon Xenocrates' doctrine too. For the 'elementarisierend' conception on which it is based, that is the priority of the parts over the whole, when taken to its extreme consequences, is in fact incompatible with the existence of the Idea numbers of Xenocrates, which are always universals, though less general than Plato's ideal numbers.⁷⁷

The same considerations apply to what is probably an appendix to the argument that we have just examined: 'Further, where one is better and another worse, the better is always prior; so that of these also no genus can exist' (999^a13–14). From this, the general conclusion of the arguments against the thesis is: 'From these considerations, then, the species predicated of individuals seem to be principles rather than genera' (999^a14–16). Regarding this passage Alexander refers to the *Categories* (12, 14^b3–8), where the better and the worse are placed among the types of priority. And he adds that in all the genera there are species that are better and others that are worse (for example among animals god is better than man and man than the others).⁷⁸ The doctrine in question—the correspondence between the ontological order and the axiological order—must have been part of the Academy's common patrimony. This is confirmed by the fact that Aristotle used it in the *Protrepticus*, which was a kind of manifesto of the Platonic school.⁷⁹ Consequently the doctrine could have been professed by Plato as well as by Xenocrates and Aristotle.

⁷⁴ Zeller 1919 23, II/1, 683 6. The same opinion in Robin 1908, 616, n. 152.

⁷⁵ Cf. Aristot. *De Ideis* fr. 4 Ross (Alex. *In Metaph.* 85, 18 ff.).

⁷⁶ *De An.* I 1, 402^b5 8; II 3, 414^b19 33; *Pol.* III 1, 1275^a33–^b3.

⁷⁷ Isnardi Parente 1982, 350 3.

⁷⁸ Alex. *In Metaph.* 209, 34 210, 11.

⁷⁹ Aristot. *Protr.* fr. 5 Ross (Iambl. *Protr.* 37, 22 ff.).

5. The ‘antithesis’: the principles elements are the lowest species

Only at the end of chapter 3 of *Metaph. B* do we find, finally, the ‘antithesis’ of the seventh *aporia*, that is, the hypothesis that the principles elements are the ultimate species, and the discussion of it. ‘But again (*palin de*),’ Aristotle argues, it is not easy to say in what sense these <species> are to be taken as principles. For the principle or cause must exist alongside (*para*) of the things of which it is the principle, and must be capable of existing in separation from them; and for what reason should we suppose any such thing to exist alongside of the individuals, except that it is predicated universally and of all? But if this is the reason, the more universal must be supposed to be more of a principle; so that the highest genera would be the principles. (999^a16–23)

The argument contains two premises. The first (the principle must exist alongside of the things of which it is the principle) is valid for Aristotle only in certain cases. It is valid for some moving causes (for example, parents as principles of their children),⁸⁰ but it is not valid for material or formal causes. These causes are properly principles elements and therefore are immanent in the thing of which they are principles.⁸¹ It could be said in general that for Aristotle this premise is not valid for the principles elements that are discussed in *aporia* 7. For Plato, on the other hand, this premise is always valid, because even formal causes (the Ideas) are separate from sensible things. This is therefore a typically Platonic premise. The same goes for the second premise (outside of individuals there is only the universal),⁸² which is not only the basis of the Platonic doctrine of the Ideas but also constitutes the nucleus of the so called ‘generalizing’ method for seeking principles.

In all probability, it is because of this Platonizing character of the argument that Alexander judges these reasons (and maybe the preceding ones as well) as ‘conforming to majority opinion and <merely> logical (*kata to endoxon kai logikos*)’,⁸³ while Syrianus and Asclepius praise them.⁸⁴ Thomas Aquinas, for his part, observes that the genus, as part of the definition, is a principle *in cognoscendo*, while, ‘if it had a separate existence’ (*si haberet esse separatum*), it would also be a principle ‘in being’ (*in essendo*). But for Aristotle, as we know, this is not the case. With regard to this, Aquinas correctly refers to Book *Z* of the *Metaphysics*.⁸⁵ Bonitz also refers to Book *Z* for the solution to the entire *aporia*.⁸⁶

⁸⁰ *Metaph. A* 1, 1013^a7–10.

⁸¹ *Metaph. A* 3, 1014^b14–15.

⁸² This is the correct formulation indicated by Colle 1922, 250, and Reale 1993, III, 135.

⁸³ Alex. *In Metaph.* 210, 20–1.

⁸⁴ Syrian. *In Metaph.* 35, 27–9; Ascl. *In Metaph.* 183, 10–16. With regard to this, this last commentator does not hesitate to explicitly evoke the Ideas of Plato, which he also considers ‘demiurgic reasons’ (*logoi demiourgikoi*) of things.

⁸⁵ Thom. Aq. *In Metaph. Aristot.*, 442.

⁸⁶ Bonitz 1849, 155.

6. Conclusion

As Father Madigan, the most recent commentator on Book *B*, has observed, in Book *Z* Aristotle reformulates the *aporia* in question:

instead of asking whether the principles are first genera or last species, he asks whether substance (*ousia*) is an essence or a universal. When he says at *Z* 12, 1038 a 19–20, that the last difference is the substance of the thing, this may suggest that he favours the lowest species as a principle, but the lowest species in *aporia* 7 is still a universal (e.g. man), whereas the lowest difference in *Z* 12 is a form or a formative principle (e.g. human soul).⁸⁷

In *Z* 13, as we know, Aristotle rules out the idea that the genus—but this applies to any universal—can be substance. Interpreters debate whether, for Aristotle, substantial form is individual, as its function as a cause requires, or universal, as it must be in order to be an object of definition and of science.⁸⁸

But in my opinion *aporia* 7 finds no solution in Aristotle, because it is an *aporia* which is purely internal to the Academy. As we have already seen, this *aporia* is just a specific case of the ‘thesis’ of *aporia* 6, that is, of the hypothesis that the principles elements are genera, and as such it is only a type of sub *aporia* (or subordinate *aporia*). For Aristotle does not accept that the principles are supreme genera, nor that they are the last species, because in his judgment the true principles elements are form, matter, and, if you like, also privation, to which one can add, as external, non immanent principle, the moving cause (since the final cause corresponds in most cases to the complete realization of form, that is, to the *entelekheia*). From a philosophical point of view, what is important in the discussion of this *aporia* is the refutation of the Platonic thesis which states that Being and One are genera and, therefore, principles. The discussion will be completed by the refutation of the equally Platonic thesis that Being and One are substances, a refutation carried out in *aporia* 11.⁸⁹ For this refutation constitutes the only argument presented by Aristotle in support of his

⁸⁷ Madigan 1999, 80. Cf. *Z* 11, 1037^a 5–6, 28–9. Regarding this, I would like to refer to my article “Il concetto di ‘sostanza prima’ nel libro *Z* della *Metafisica*” (Berti 1989).

⁸⁸ Regarding this Madigan cites the well-known works by Owens, Lear, Frede and Patzig, Witt, Gill, Lewis, Loux, Steinfath, Bostock, Scaltsas, and Spellman, to whom it would be necessary to add A. C. Lloyd and M. Mignucci.

⁸⁹ Regarding this subject I would again like to refer to two articles of mine, namely ‘Le problème de la substantialité de l’être et de l’un dans la *Métaphysique* d’Aristote’ (Berti 1979), and ‘L’Essere e l’Uno in *Metaph. B*’ (Berti 2003).

famous statement that being is said in many ways (*to on legetai pollakhos*).⁹⁰ From a historical point of view, *aporia* 7 is interesting because it reveals to us the complexity of the debate that was developing inside the Academy between the positions of Plato, Speusippus, and Xenocrates, as has been shown by Pines and Krämer.⁹¹

⁹⁰ Cf. Berti 2001; Berti 2002, 79–107.

⁹¹ I am very grateful to David Sedley for his revision of my text. This has improved not only the English but also, in many cases, its content – for which, however, I retain full responsibility.

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5

Aporia 8

SARAH BROADIE

I

Connected with these is a difficulty, hardest of all and most necessary to apply our minds to [*theōrēsai*], which our discussion has now reached. (a) If, on the one hand, there is nothing besides [*para*] the particulars and the particulars are unlimited [*apeira*], how is it possible to get scientific knowledge [*epistēmē*] of things that are unlimited? For in every case we know [*gnōrizomen*] things just in so far as they are something one and the same, and in so far as something universal belongs to them. (b) However, if this is necessary, i. e. if there must be something besides the particulars, then of necessity there would be kinds [*genē*] besides the particulars, either lowest kinds or primary kinds. But we have just found through aporetic discussion [*diēporēsamen*] that this is impossible. (c) Further, let it be fully granted that there is something besides the concrete whole [*sunholon*] (whenever something is predicated of matter): if so, is there something besides the concrete whole in every case, or in some cases and not in others, or in no case? (d) If, though, there is nothing besides the particulars, there would be no object of thought: everything would be an object of sense, and there would not be scientific knowledge of anything—unless someone says that sense perception is scientific knowledge. (e) Furthermore, there would not be anything eternal nor yet motionless (since all objects of sense perish and are subject to motion). But if nothing is eternal, even coming to be [*genesis*] is impossible. (f) For that which is coming to be must be something, and so must that out of which it is coming to be; and the last of these must be ungenerated (if the series comes to an end and nothing can come to be out of non being). (g) Furthermore, if coming to be and motion exist, there must also be limit. For first: no motion is unlimited; rather, every motion has an end; and secondly: nothing can be in process of coming to be [*gignesthai*] if it is incapable of getting into being [*genesthai*], and that which *has* come to be [*to gegonos*] must (at the first moment of having come to be) *be*. (h) Furthermore, if there exists matter (because of its being ungenerated), it is yet more reasonable by far that there exists essence/substance [*ousia*]: that which the matter is coming to be. (i) For if there is neither essence/substance nor matter, there will be nothing at all; but if that is impossible, there must be something besides the

concrete whole, namely the shape and the form. (j) But, on the other hand, if one does posit this, there is a difficulty: in which cases shall one posit it, and in which not? That it is impossible to do so in all cases is obvious. For we would not suppose there to be a house besides the particular houses. As well as these points there is the question (k) whether the essence/substance of all the individuals (for example, of all the humans) will be one. That would be absurd; for all things are one whose essence/substance is one. But are they then many and diverse [*diaphora*]? This is unreasonable too. At the same time, (l) how in fact does the matter come to be each of these [*sc.* the individuals]; and (m) how is the concrete whole the two of these [*sc.* matter and form]? (*Metaphysics B* 4, 999^a24–^b24)

II

Aporiai 5 and 8, the two problematics most directly concerned with the question whether there exist supra sensible substances, show a striking difference of approach.¹ Five,² which focuses largely on the intermediates, does hint at reasons for postulating them. But far more marked is Five's rough impatience over the system that results, with the two levels of supra sensibles replicating sensibles. The criticism seems designed to guy this ontology as so intrinsically absurd that no solutions promised by it could be worth the price. On the other hand, Eight, which ignores the intermediates, says plenty that is specific about the grave difficulties facing any thinker who believes both that reality is knowable and explainable, and that it involves only sensible, perishable, particulars.

These contrasting treatments flag, I think, an attitude of hostility on Aristotle's part to an 'inventory of reality' approach to the question of supra sensible substance,³ and a corresponding hospitality to a 'necessary postulate' approach. Let me explain the difference. In both approaches, the assertion that there are supra sensible substances first occurs as the conclusion of reasoning that starts with some puzzle or other about objects of ordinary experience. However, it is characteristic of the 'inventory of reality' approach then to detach this assertion from the premises by which it was reached and treat its referents as objects interesting in themselves. By contrast, according to the 'necessary postulate approach', the assertion in question, once reached, nonetheless remains firmly

¹ Cf. Ross 1970 (1924): 'raised from a different point of view' (I, 240).

² *B* 2, 997^a34–998^a19. I am following Madigan's numbering of the *aporiai*.

³ For the inventory approach see *Z* 2, 1028^b9–32; *H* 1; and *A* I, 1069^a30–^b2. In a sense Aristotle accepts it or he would not have penned these passages, but this acceptance may simply reflect a framework of debate set by others. The passages are introductory.

controlled by the context of its aporetic premises. In the former approach we have, as it were, come upon supra sensible realities at one or more levels; we have discovered them by following paths of argument that started more or less at everyone's front door, but have brought us, like intrepid explorers, into higher reaches 'far from the beaten track of humans'. There turns out to be so much more in the inventory of reality than people dream of. As for the steps by which one arrives at the supra sensible, they on arrival tend to drop out of sight like instruments whose use is over. Any previous 'wonder', in the sense connected with whatever original perplexity got us reasoning to the supra sensibles in the first place,⁴ is unimportant by comparison with 'wonder' in the sense of our solemn marvelling as we stand in the exotic presence of these novel realities.

This preciosity of the detached conclusion concerning supra sensibles is something one can easily imagine (without trying to name names) sometimes captivating the very early followers of Plato (not to speak of any later ones), and as stoking the group's sense that immaterialist ontology is distinctive of the refined and accomplished intellect.⁵ My impression is that Five is taking a deliberate swipe at this attitude. If in order to do so Aristotle rather caricatures his target, as interpreters often complain, this is presumably not just to make it easier to knock down—what would be the gain from that by itself?—but to bring out what is wrong with the 'inventory' approach, and thereby get people to think about the supposed supra sensibles in terms of the contrasting approach, the 'necessary postulate' one, as I am calling it. Aristotle, without the benefit of such cut and dried meta philosophical labels, must try to convey that attending to *ta ekei* from a perspective that cuts such entities off from the difficulties which they were brought in to resolve is methodological philistinism. It is fundamentally misguided to treat the supra sensibles not as theoretical postulates to be tested for their ability to deliver *euporia*⁶ from puzzles we face about the sensible world (if the sensible world is all that there is), but as discoveries of a new kind of object which we had not realized was all along there to be contemplated. Such an attitude misunderstands the supra sensibles themselves in so far as it attributes to them a status functionally equivalent to that of data or phenomena, as distinct from *explanantia*.⁷ One consequence is that the supra sensibles are liable to be targeted by regress arguments such as those in *Parmenides* 132–3, which exploit the possibility of lining up a given

⁴ Cf. *Met. A* 2, 982^b12–19; 983^a11–21; *Theaetetus* 155c d.

⁵ For the atmosphere see Plato, *Sophist* 246a–249b (Friends of Forms against the Giants).

⁶ Cf. *B* 1, 995^a24–^b4; 996^a15–17.

⁷ 'These people are making the Forms nothing but eternal perceptibles' (*B* 2, 997^b11–12; cf. *EN* I 6, 1096^b3). 'Eternal' is a particularly apt word if the message of Five is what I have suggested, because

Form *F* with the original data (the sensible *F*s) for which it was postulated. There may well, however, be ways of conceptualizing the supra sensibles so that they are immune to this type of regress, but which do nothing to undermine the temptation to treat them as, essentially, the objects of a new existential discovery. Following that temptation has the more serious result (because less obviously remediable through ingenuity) that attention is pulled away from the original puzzles themselves, and thinkers lose sight of the task of pursuing solutions which avoid difficulties posed by Platonistic supra sensibles. Even if no actual individual thinker in the Academy was undividedly guilty in this respect, exaggeration and caricature would have helped to warn against an outlook which was present even if always intertwined with other intellectual tendencies. That it was present is surely clear from the way in which, as we know from the *De Ideis*, early Platonists sought to establish the existence of Ideas by means of *multiple* arguments, starting from often very different premises.⁸ One could not easily assume that what is asserted in each conclusion is the same throughout unless one were treating the conclusions as properly intelligible in detachment from their respective sets of premises, i.e. in detachment from the distinct *aporia* that starts the argument in each case.

III

In relation to the brief preview of it at 995^b31–6, Eight diverges in several respects. The preview runs:

Most of all, one must inquire and work out whether there is something besides matter, a cause *per se*, or not; and whether this is separate [*khōriston*] or not; and whether it is one or more in number;⁹ and whether there is something besides the concrete whole (I mean by ‘concrete whole’: whenever something is predicated of matter), or nothing, or for some things but not for other things, and what kinds of things such beings are.¹⁰

everyone in the debate was aware of phenomena (in a broad sense) that were arguably eternal – e.g. the heavens and their motion – and of some that were unarguably so, such as the incommensurability of the diagonal with the side; hence trumpeting the *eternity* of the Ideas hardly discourages us from treating them as a new set of things to be curious about. On this point, see Frans de Haas’s contribution to this volume.

⁸ The seeds of this approach were laid in Plato’s dialogues, where the motivation for postulating Forms (and accordingly the range of Forms postulated) seems to be very different in different places.

⁹ It is not clear what the question is here. Possibly it is the one taken up at 996^b20–3.

¹⁰ The reference is not clear. Is he asking ‘What are the kinds of things for which extra entities should, and what are the kinds for which they should not, be posited?’ or ‘What kinds of things are the additional entities?’ To the first, the only definite answer Eight makes is that extra entities are denied for artefacts (999^b17–18). To the second, it says that the entities must be *genē* (except that this has been shown impossible) (999^a29–32); it also implies that they are eternal (999^b4–5).

Here the mooted extra entity is introduced as a cause *per se*, and there immediately follows the question whether it is separate. Eight itself does not explicitly mention causes or separateness, although some of the arguments there are clearly about principles. The main message of Eight is that there are various good reasons to postulate entities besides particulars, and besides concrete objects. The fact that Eight does not then designate these entities 'separate' is a way of indicating that the Platonistic ontology does not follow from those reasons.¹¹

The preview asks separately (i) whether there is some *per se* cause besides matter, and (ii) whether there is something besides the concrete object. One might think that (i) is the question whether there is a kind of causal explanation apart from material causality: i.e. (in effect) whether the fourfold scheme which we tend to think of as 'Aristotelian' is to be endorsed. This a point not discussed at all in Eight. However, the preview cannot be asking that question, since the doctrine that in general there are the well known four different types of causality is treated as uncontroversial in *aporia* 1 (*B* 2, 996^a18–^b26). Question (i) must therefore be whether there is a cause whose causality does not depend on being enmattered. The reference to the concrete whole shows that the cause in question would be of something's coming to be. Question (ii) asks only whether there is *something*—not whether there is a *cause*—besides the concrete thing. Possibly the thought is that whatever extra entity there may be is not any longer a cause (of coming to be) in relation to the completed *concretum*. In Eight, the thought that there is something besides the concrete appears twice in so many words (999^a32–3 and b16: passages (c) and (i)). Since the extra item is identified with 'the shape and the form', and clearly treated (although not described) as a principle of coming to be, along with matter, Eight in effect provides a clear 'Yes' to the question whether there is something causal besides the matter. This quieter result, phrased without the terms '*per se* cause' and 'separate', seems designed to give the Platonists something which they legitimately crave, namely recognition of the essential role of form, and also, perhaps, to make them ask themselves whether they need additional baggage.

The biggest difference between Eight and its preview lies in the fact that the preview raises the question of 'something besides' only in the context of a hylomorphic analysis of substantial coming to be, whereas Eight raises it in two other sets of terms as well. There is the opening question (see (a)) of how *episteme* is possible if there is nothing unitary, identical, and universal besides *the unlimited particulars*; obviously such particulars include items in the non

¹¹ Cf. *A* 9, 990^b10–*M* 4, 1079^a6.

substantial categories. Then there is a less clearly stated question (see (e)) of how coming to be is possible if there is nothing *eternal*, i.e. if there is nothing besides *the perishables*. This latter question is then discussed from a heavily hylomorphic perspective, but nevertheless it, no less than the former, introduces a contrast not found in the preview.

That Eight should open with an epistemic demand for something besides the particulars is natural¹² in light of the immediately preceding critique (*aporia* 7) of genera and species as principles, unlimited (or ‘indefinite’) particulars being the ‘other’ of a genus and its species.¹³ The epistemic demand is then (see (d)) rephrased as the requirement that there be objects of thought (*noeta*) besides the objects of sense (otherwise either *episteme* is impossible, or sense perception is *episteme*). This Platonic contrast leads to the further Platonic thought that the domain of the mutable and of *genesis* depends on something eternal. It is only now (from 999^b6) that Aristotle begins to turn to the hylomorphic problems, and the turn is not complete until line 12. For along the way (see (g)) he engages in a problematic that applies to any sort of process, not just *genesis*. Here, as at the beginning, entities in non substantial categories fall within the horizon of the discussion, this time as *termini* of alteration, growth/diminution, and locomotion.

The result of all this is that we have in Eight a number of distinct contrasts all playing broadly the same dialectical role (particulars *vs.* universals, perceptibles *vs.* thinkables, perishables and mutables *vs.* eternals, composites *vs.* non composite principles of coming to be), although they do not coincide. (Not all particulars are perceptible (e.g. souls, cosmic unmoved movers); not all perceptibles in Aristotle’s universe are perishable; eternals need not be non particulars; some eternals are subject to motion; perceptible stuff like earth can function as a (material) principle; and despite the promotion in (e)–(g) of an eternal material principle of coming to be, we may—since the promotion is so unsatisfactory—be meant to wonder even here why any principles of the non eternal have to be eternal.¹⁴)

But notwithstanding this apparently naïve skipping from one contrast to another as if there were no differences, Aristotle in Eight distinguishes at least two directions from which arise the arguments in favour of entities besides the phenomena.¹⁵ This is indicated by the fact that he counters twice over with virtually the same objection: namely, that the metaphysical posit is not used uniformly, being invoked for some cases and denied for others ((c) and (j))

¹² Hence *ekhomenē toutōn* at 999^a24.

¹³ *Topics* II 2, 109^b14; *Posterior Analytics* I 24, 86^a4 5; *Philebus* 16^c5 18^d2, esp. 16^d7 e2.

¹⁴ The question is taken up in *aporia* 10, 1000^b29 32.

¹⁵ Cf. S. Mansion 1955, 167.

above)? It is true that on both occasions this point is phrased as one about entities *besides the concrete whole* (999^a33 and ^b16), but only in the second context is the hylomorphic notion doing real work. The first occurrence (which carries in its train the explanation of ‘*sunholon*’¹⁶) is conceptually of a piece with the earlier, epistemically oriented, references to particulars by contrast with kinds. I conjecture that Aristotle uses ‘besides the concrete whole’ here because of the impossibility of conveying his meaning had he used ‘besides the particulars’ instead. The quantifiers ‘all’, ‘some and some not’, and ‘none’ at 999^a34–^b1 would inevitably have looked or sounded as if they were referring to particulars within a given kind, rather than, as the sense demands, to kinds. As we might expect, if this is the right explanation, he then straightaway reverts to ‘besides the particulars’ (999^b1–2).

IV

I now make narrower comments, referring to the divisions in the above translation of Eight.

(a) 999^a26–9. This argument that *episteme* depends on something one and the same, universal, and besides the particulars, leaves it open whether the universal makes *episteme* possible by being its object, or by being in some way the means by which the particulars come to be its objects. (However, the contrast lower down of *episteme* and *aisthesis*, and their objects, the *noeta* and the *aistheta* (999^b1–4), seems to make it impossible for *aistheta* to function as objects of *episteme*, and therefore to make this impossible for particulars, given that they are *aistheta*.)

(b) 999^a29–32. The counter argument to (a) is that entities besides the particulars would be kinds, which (it is claimed) has been shown to be impossible (*B* 3, 998^b14 999^a23). Actually, what was argued to be impossible was that kinds are *principles* of particulars. One is left wondering whether there is room for a viable view according to which universals and kinds are indeed principles (and also objects?) of our *episteme*, although not principles of the things that are known.

(c) 999^a32–^b1. The question suggests the strategy of first pointing out a subset of the cases for which the positive claim cannot be upheld, or is somehow unattractive, and then developing the demarcation in a way that undermines it even for the remaining subset. If, as I have argued above, the question is really about when we should, and should not, postulate entities that are besides *the particulars*, it is not restricted to substances.

¹⁶ I follow Ross’s text at 999^a33.

(e) 999^b4–6. Aristotle is ignoring his own eternal heavens and stars. The thought and language of this and section (d) suggest the *Timaeus*, according to which everything perceptible has come to be and in principle can pass away. If that is so, then if, as is said at 999^b5–6, there cannot be coming to be unless there is something eternal, we have a neat argument showing that ‘There are only sensible things’ is self contradictory. But why should it be supposed that there cannot be coming to be unless there is something eternal?

(f) 999^b5–8. The question above now gets a sort of answer, touching on matter (6–8) and then form (8–16). The Platonically charged term *genesis* (999^b6) triggers an analytic reaction: for *genesis*, there must be two entities (*ti*, 6): that which is coming to be, and that out of which. (It is not clear whether ‘that which is coming to be’ means the subject, i.e. the matter, in which case at 7 the first *kai* is epexegetic, or the *terminus ad quem*, as when we say that a house is coming to be when under construction. If it means the *ad quem*, then I take it that in saying ‘that which is coming to be must be something’ Aristotle is making a point stronger than the logical one that in any given case the *ad quem* must be something specific, i.e. that ‘out of this matter there is coming to be—’ is indeed an incomplete sentence. The point rather is that the *ad quem* is real because it is a principle. Whether its reality needs to be separate from perceptible things is, for Aristotle, a further question. The plural *touton* suggests two principles, not one mentioned in two ways; but the immediately ensuing argument says nothing about form (the *ad quem*).¹⁷) As a whole the answer is not very good, because the most it shows is that the coming to be of a concrete whole requires there to be matter and form besides the *concretum* itself. It does not succeed in showing that either the matter or the form is an eternal thing. (And it does not even try to show that coming to be depends on there being an eternal thing aside from the matter and the form.) The correct point is that in the coming to be of a concrete thing there is something material and something formal each of which plays a logically final role. Otherwise there would be no finite, and hence no definite, answer to the questions ‘What is the thing coming to be out of?’ and ‘What is it coming to be?’ With regard to matter, one way of understanding the argument is this (i): an infinite answer is avoided only if, in saying what matter the object *C* is coming to be out of, we cite some material which itself never came to be from anything, and which therefore is eternal (since nothing can come to be from non being¹⁸). For even if *C*’s

¹⁷ In his Oxford translation (1908) Ross followed Alexander in rendering the first *kai* at 999^b7 as conjunctive. (This survives in *The Revised Oxford Translation* (Barnes 1984)) In his commentary, Ross 1970 (1924) takes it as epexegetic.

¹⁸ Reading *gignesthai* at 999^b8 with Jaeger.

immediate matter previously came to be from something that previously came to be from something. . . , the chain must end with a matter which never did come to be, and which therefore is eternal. This is an unfortunate conclusion for an orthodox Aristotelian, since such an Aristotelian holds both that the questions must have finite answers, and that the materials things are made of have themselves come to be too, either from something physically more primitive, or by transmutation from something equally primitive. (He also holds that at least in some cases the matter from which something comes to be must itself perish in the process; hence even if there were an eternal matter, it would be useless for some processes of coming to be.¹⁹) But it is easy to see that an infinite answer is avoidable even if, in the regress of matters, we never reach a matter that had not itself come to be out of something else. For in saying what *C* is coming to be out of, I should cite only the immediate matter, M_1 . Even if M_1 itself exists only because it once came into being out of M_2 , it does not follow that *C* is coming to be out of M_2 as well as (or instead of) M_1 .

A more sophisticated understanding of the argument would be this (ii): the chain that must not be endless is not (as in [i]) of materials which as a matter of fact previously arose from other materials, but instead is a chain of materials such that we cannot understand how any given *M* plays the part it is supposed to play as matter of the thing it constitutes without knowing what prior matter constitutes *M*. For example, the roof and walls may be thought of as matter of an unfinished house, and we could identify them by their position, but in understanding what these parts contribute to a house we have to know they are made, say, of wood or of some water and wind resistant materials; otherwise they could not contribute what walls and roof are supposed to. On the other hand, once we know they are made of wood because it is rigid and durable etc., we probably know enough to understand the house from the point of view of its material cause, without ever thinking what the more primitive materials were from which the wood came to be. That is another story—one about the wood, but not about the wood as material for the house. In every material cause explanation of a given coming to be, we have to get back to a matter such that *for the purpose of this explanation* it is irrelevant what that matter previously came from. So in the wood example we treat the wood as if it were ungenerated, in that we treat it as if it were not generated from anything in particular. And perhaps this is the excuse for speaking of the ‘last matter’ as ungenerated (lines 7 and 13). But treating something as not subject to generation within a given context is not to treat it as if it is eternal (for example, one would probably

¹⁹ Cf. *a* 2, 994^b 4 6.

continue to believe that the wood could be destroyed by fire)—let alone to imply that it *is* eternal.²⁰

The weakness of (f) as a reason for upholding the principle in (e), that *if nothing is eternal coming to be is impossible*, cannot have eluded Aristotle even when he composed Eight. He includes it presumably for two reasons. First, people do have a strong sense that the coming to be of a concrete whole *C* depends on the non coming to be of the matter and the form of *C*. Any correct theory must do justice to this; hence the problem must be kept alive even in the form of a glaringly faulty argument. It does not serve progress simply to point out the poverty of the argument and turn one's back on it. Secondly, he already holds or surmises that both materialists and Platonists were right to infer from the fact of coming to be the existence of a truly eternal substance, but were wrong in taking the specific routes they took. Thus he retains the bad argument as a presage that a good one is in the offing, and as a spur to look for it. His developed view will be that perishable natural substances have to be understood as referring backwards and forwards in time to other instances of the same kinds. Organisms immediately come from and produce others like themselves; pieces of elementary matter such as earth come from and produce others like themselves at one or more removes in cyclic transformation. Each is only through having come to be in this way. This immediately ensures a chain of generations back into the infinite past. A similar infinite chain futurewards is guaranteed given that nature does nothing in vain.

... the most natural of all functions for a living thing, if it is complete and not defective and does not come to be by chance, is to produce another thing of the same sort as itself (an animal, if it is an animal, a plant, if it is a plant), in order to share as far as it can in the everlasting and the divine. For this is the end they strive for, and for its sake they do every action that accords with nature. (*De Anima* II 4, 415^a26–^b2, tr. Irwin and Fine)

If the natures of all these perishing individuals are not to be exercised in vain, there must be an ongoing environment, based on an ongoing world of the elementary materials, to receive each generation, just as there must have been that same environment forever into the past. And this is possible only if there is one or more than one singly continuous eternal movement each dependent on an immutable, unextended, eternal first mover.

(g) 999^b8–12. This argument, that process must have a limit, and coming to be must end in being, seems intended to show that process and coming to be depend on something besides themselves, namely the end or limit. (The

²⁰ The attack in *a* 2 against infinite regresses of the various causes also assumes an eternal first material cause; see 994^b6–9 with Ross's comment.

argument ignores eternal celestial rotation.) It is not claimed that the end or limit is an eternal entity. Nor is it even claimed here that there is anything besides the concrete whole (as distinct from the process by which it comes to be). For in a sense the concrete whole *is* the end or limit.

(h) 999^b12–16. This is an *a fortiori* argument. If matter, because it is ungenerated, is something besides the concrete whole, this is all the more true of essence or form. It is not clear whether what there is stronger reason to hold of essence is (i) that it is something besides the concrete whole, or (ii) that because it is not subject to perishing (the analogue of the reason given for matter) it is something besides the concrete whole.²¹ Why is there more reason in the case of essence? Presumably because the matter is *in* the concrete whole (*enhuparkhousa*),²² hence not so obviously *besides* it. Also because the essence, but not the matter, is metaphysically unaffected by the coming to be of the concrete whole. While the *concretum* is coming to be, less and less of the relevant matter is available to function as the matter of anything else; and once the object is finished, something has to happen to it to release its matter as material for something else. But nothing has to happen to a given *concretum* in order to enable another to come to be with the same form. Like the Burning Bush, the form is not consumed.

(i) 999^b14–16. Lines 14–15 may be meant to meet the following thought: since form and matter are correlatives, an argument that infers the existence of one from that of the other (as in (f) plus (h)) is no stronger than one that infers the non existence of one from that of the other. That they both exist at all, rather than not, needs some defence. As Madigan observes,²³ to defend them by claiming that otherwise nothing at all would exist (a claim that in any case must be restricted to the realm of coming to be and passing away), is simply to beg the question in favour of hylomorphism. However, Aristotle could respond to such a criticism by pointing out that the only other two claimants for the status of principles have been constituents and kinds;²⁴ and that the plausibility in each

²¹ On the whole, I follow Ross's commentary on 12–13, *eti d'eiper hē hulē esti dia to agenētos einai*. Ross reads *ésti* (followed by Madigan). Ross interprets this as meaning 'exists *para ta kath'hekasta*'. I rather think it means 'exists *para to sunolon*'. (The nearest occurrence of the former is ten lines away, at 999^b3, the nearest of the latter three away, at 16.) Christ conjectured *eiper hē hulē estin <aidios> dia to agenētos einai*. If one understands 'exists' in a strong sense, amounting in fact to 'has the status of a principle of reality', one gets virtually Christ's sense without emendation.

²² Cf. *B* 1, 996^a15; 3, 998^a20–4, *A* 5, 986^b6–7.

²³ Madigan 1999, 86.

²⁴ Discussed in 6 and 7 respectively. Six first assumes that constituents and kinds cannot both be principles (*B* 3, 998^a21 ff.; 998^b3–4), then argues for this at 998^b11–14 on the ground that admitting both would mean that a single essence has two definitions. If we regard Six and Seven as two parts of a single discussion, a discussion focussed on hylomorphism is the natural sequel. If we read Six to Eight as three

case is due to a near equivalence to one of the hylomorphic principles: matter in the case of constituents, form in the case of kinds.

The preceding arguments, (e)–(i), should have left us hospitable to the thought that coming to be depends on principles that are besides the concrete whole and even in some sense ungenerated and eternal. Now follow four difficulties for this conclusion.

(j) 999^b 17–20. The question is not a mere repetition of (c), because the focus now is on hylomorphic entities. These are implicitly divided into natural and artefactual, and it is taken to be obvious (hence it is common ground) that in the artefactual cases there is nothing besides the concrete whole.²⁵ However, some of the preceding argumentation has surely made it too paradoxical to suppose that in the coming to be of an artefact there is *nothing*, no matter and no form, besides the concrete whole. Accordingly, here, ‘entities besides the concrete whole’ must mean separate and truly eternal substances.²⁶ For a discussion of

parts of a single discussion (cf. Madigan 1999, xiv), we are brought to see (*inter alia*) (i) that the claims of constituents and kinds were each at fault for being exclusive; (ii) that promoting the joint claim of matter and form is assumed not to endanger singleness of definition; and (iii) that an obligation is being incurred to explain how that assumption manages to be true. Madigan’s statement that B ‘gives no hint of Aristotle’s concern to understand the unity of a definition’ (Madigan 1999, xxxvii) seems too strong. *Z* 11 and *H* 6 should be added to Ross’s list of passages elsewhere in the *Metaphysics* that deal with problems laid out in *B* (Ross 1970 (1924), I, xxiii–xxiv; 222–3).

²⁵ Cf. *A* 991^b 3–9; *H* 3, 1043^b 18–23, where the point is tied to the non-substantiality of artefacts; *A* 3, 1070^a 13–19; *De Ideis* 79, 19–80, 7. But what to make of *K* 2, 1060^a 13–16 (in a passage roughly parallel to *B* 999^a 24–^b 24)? On the obvious reading it asks why the Platonists postulate a supra-sensible substance ‘besides some perceptibles and not others, e.g. besides the (*sc.* particular) human beings or the horses, rather than besides the other animals [*tōn allōn zōōn*], or indeed besides the inanimate things in general.’ All the translations I have checked (Eusebiotti, Madigan, Rolfes, Ross, Tredennick, Tricot, Warrington, and William of Moerbeke) take this to be the sense; so also Ps.–Alexander, Ross in his commentary, and Cherniss 1944, 242, n. 148. It is perhaps understandable that at some point Ideas were not recognized for things devoid of soul. An Idea was posited for each *epistēmē*; no doubt excellence of subject matter played a part in deciding whether a body of knowledge deserved the honorific title of *epistēmē*; and soul is one of the nobler scientific subject matters (*De Anima* I 1, 402^a 4; cf. Plato, *Parmenides*, 130c6–7). Also, anyone who took seriously the *Timaeus* doctrine that the brute species (and human females) originated as declensions from man might suggest that *only* Man was in the Demiurge’s intelligible paradigm (although this goes against *Timaeus*, 39e). On the other hand, the notion of positing Ideas for *at least two kinds of animal (for human beings and for horses), but not for others* is baffling (even if *K* is not by Aristotle), and, as far as I know, unattested elsewhere. Surely, however, the meaning is: ‘Why (according to the Platonists) is there a supra-sensible substance besides (i.e. for) the human beings and one besides the horses, etc., rather than one besides the *animals* [*sc.* in general], these being a contrasted set of beings (i.e. contrasted with the humans, the horses, the tortoises, and so on through the different species *singulatim*) for which one might postulate a supra-sensible substance . . . ?’ (For the use of *allos* see LSJ *s.v.* II. 8; in Aristotle, see e.g. *EN* VI 1, 1138^b 25–6.) The questioner demands justification for assuming as many supra-sensibles as the *singulatim* approach yields (cf. lines 16–18), and wonders whether indeed there need be more than one such principle for inanimates in general. (If only one were posited for inanimates in general, it would be no less a principle of artefacts than of naturally occurring inanimate things.)

²⁶ Apparently some MSS have *koinas* instead of *tinas* at 999^b 19–20, which fits with the fact that here that which is besides the *concretum* must be a separate substance.

reasons why the Platonists drew the line at separate Ideas for artefacts, see Section V.

(k) 999^b20–3. At 21 Ross and Jaeger read *hen gar panta* as cited by Syrianus. Many of our MSS (and apparently Alexander) have *ou gar hen hapanta*. At first sight the latter gives the opposite sense to what is required, since it seems to deny the truism, which the argument needs, that all things are one whose *ousia* is one. Madigan has seen that one can retain this sense while following the MSS, by translating interrogatively: ‘for are not all things whose essence is one one thing?’²⁷ But the same result is obtained even without the question mark if one takes Aristotle to be drawing an absurd consequence: ‘For on that assumption (*sc.* that it is the same *ousia* for all the individuals) it is not true in all cases that things are one whose *ousia* are one.’ Rather than using the truism to deduce the absurdity that the individuals are all one, he uses the plurality of the individuals to deduce the absurdity that the truism is sometimes false. However, it makes no philosophical difference.

(l) 999^b23. How does the matter come to be ‘each of these things’ (*touton hekaston*)? The meaning must be ‘each of these concrete wholes’—awkwardly enough, since six words away in the same short sentence *tauta* (standing alone) means ‘matter and form’.

(m) 999^b23–4. No doubt there is more than one puzzle here. One is about unity: how can *one* composite be those two factors? Another, perhaps, is about the relation between form and matter as principles and the composite of which they are principles. If the form and matter end up *being* the composite, how can they still be its principles given that ‘the principle and the cause must be besides the things of which it is cause, and able to be in separation from them’ (999^a17–19)?²⁸

V

Here are some somewhat speculative suggestions on why Platonists ruled out Ideas for human artefacts.

Those who dismissed as figurative the *Timaean* story of a beginning of the cosmos must have abandoned, as equally figurative, the notion of a divine demiurgic agent distinct from the intelligible Paradigm.²⁹ So nothing was left but the self subsistent, separate, Ideas to be responsible for the order of the

²⁷ Madigan (in Dooley and Madigan 1992, 161, n. 32).

²⁸ It is not clear whether this sentence states two conditions or one. If two, then presumably ‘able to be in separation’ is the stronger; but the puzzle may arise even for the weaker.

²⁹ The reasoning here is spelt out in Broadie 2007.

physical universe. Thus these Ideas had to be not only eternal, but in some way dynamic: final or paradigmatic causes inspiring indeterminate matter to imitation, and/or efficient causes somehow. Clearly, then, they were more than just *noeta*. The forms or patterns of properly made human artefacts are *noeta*, of course. For obviously a well made house does not get built by someone simply aiming to produce a thing of similar sensible appearance to an already existing house. The excellent builder follows a plan based on someone's intellectual analysis of what a house should be and of the properties of the materials. And this is a point of great importance for the project of the *Timaeus*, for on it, together with the divine-human analogy, rests the Timaeian assumption that the natural universe is intelligible. But whereas there may have been good reason to demythologize the divine side of the analogy by subtracting the notion of a demiurgic agency distinct from the Ideas, it would be impossible to do this to the human side, even though the forms that regulate the production of human artefacts are *noeta* too. So we can see why intelligible patterns for *human* artefacts are prevented from counting as Ideas. To grant them the status of Ideas would be to imply that the corresponding concrete wholes come into existence by nature, without any help from human intelligence!

Similarly, one might think that Platonistic Ideas, which are formal principles, are needed to account for the mysterious natural processes by which damaged or depleted organisms repair themselves. These processes so obviously occur for each kind according to a single intelligible plan (the teleologizing human scientist can hope to understand such natural plans) that it is hard not to think that for each kind there really is a common plan like being, an Idea, governing the individual changes. (Contemporary philosophers who tend towards realism about 'laws of nature' should feel some sympathy here.) Since artefacts present no mystery as to how they get intelligently repaired (when they do), there is no room in their case for introducing Ideas.

Again, there are self subsistent Ideas for things whose kinds are perpetual features of the universe. For if the Ideas, which are eternal, are principles or causes, they should primarily stand in this relation to *explananda* which in that respect are like themselves.³⁰ And in any case, the *perpetual* existence of any kind of perishable entity surely cries out for explanation. There are no Ideas for artefacts, because their kinds as well as the individual instances are perishable. Even if these kinds will always be reinvented (as Aristotle believes; *A* 8, 1074^b 10–12), there are still long periods during which they are extinct.

(Another consideration: it is axiomatic that the Idea of *O* fits the definition of *O*. Thus the things for which it makes most sense to postulate Ideas are those it

³⁰ Cf. *B* 4, 1000^b 29–32; *I*, 996^a 2–4; *De Caelo* III 7, 306^a 9–11.

makes most sense to think of as having definable essences. Now, arguably, a given kind (or: a thing of a given kind) comes under this latter heading only if the way to discovering what it is consists in investigating *it*: not more basic entities on which it ontologically depends, nor larger entities that extend beyond it, or lesser ones within it. By this standard, the parts of an animal lack a definable essence and therefore an Idea.³¹ By the same standard, so do artefacts. We can make no sense of them by themselves: we have to get some notion of how they are used, which means going outside them to observe the user, and we have to learn from users and makers what their purpose is; we may never find this out just by studying the artefacts.)

The situation, then, is this: for natural substances, when it was a question of accounting for their coming to be and remaining in being—not merely the eternal species, but even individual by individual—self subsistent Ideas were posited to cover an explanatory gap not felt to exist in the case of human artefacts, where the intelligible form on its own can be allowed to be inert in itself because what actually carries out the work of making and repairing is a physical craftsman, guided by but plainly distinct from the form. One might wonder whether the reason philosophers saw no explanatory gap in the case of the artefacts was because artefactual coming to be was regarded as falling below the level of intelligibility or as somehow not worth explaining. This, however, seems unlikely, since even in the midst of dialectical *Metaphysics B*, Aristotle offers an artefactual example illustrating all four causes as if this much was common ground between him and others in the debate about Ideas.³² More likely, it was because, even in the case of Platonizers, the ordinary explanation in terms of the ordinary this worldly agent, and his skill, had never been dislodged.

It is true that if one already believes in Ideas, one might wonder about the metaphysical status of the form by which the human artisan works: presumably it does not exist just in the mind of a certain individual (since many can work with the same form in view). Are we to infer that it is not only intelligible but also eternal and self subsistent like the Ideas—although unlike them it is inert: it requires a human mind, or human needs, to enable it to make any difference? Note that such a question about the metaphysical status of the artefactual forms is fuelled by a theory driven desire to place them somewhere in an ontology that already includes the recognized Ideas. It is not fuelled by the need to fill an explanatory gap concerning any ordinary objects of experience.

Where do these considerations leave Aristotle in his debate with the Idea theorists? They give him a good position from which to draw these thinkers

³¹ Cf. *Z* 16, 1040^b6 8.

³² *B* 2, 996^b5 8; cf. 996^a32 4.

over to Aristotelianism—with one proviso. The proviso is: *if only* he could get them to see, as he tries to do for example in *Z* 7–9, that the coming into being of organic natural substances from their this worldly progenitors is in meta physically relevant respects like the production of a house by a builder.³³ *Aporia* 8 shows reasons for accepting in general, hence even in the case of artefacts, that matter and form are in a sense ‘besides’ the resulting concrete object, and not subject to generation because not themselves produced in the production of the *concretum*. This was one of the appearances which, in connection with the coming to be of organisms, some thinkers interpreted as proving a literally eternal matter and form. So why, exactly, did they draw that conclusion for organisms, when they did not draw it for artefacts? What factor did they see in the production of artefacts that enabled them to rest contented with the commonplace ‘Builders make houses’ as a satisfactory account of the coming to be of a house: a factor they found to be lacking in the case of organisms—with the result that the equally commonplace ‘Man begets man’ seemed to them not explanatory enough, and the Idea of Man had to be brought in?

I believe the answer lies in the *Timaeus*, with its great dichotomy of the operations of Intelligence versus the effects of Necessity; but spelling this out has been work for a different paper.³⁴

³³ Burnyeat 2001, 30, finds it surprising, and in the context of *Z* 4 6 ‘scarcely consequential’, that artefacts figure as they do in *Z* 7 9, and takes this as one piece of evidence amongst others that *Z* 7 9 was an earlier composition inserted by Aristotle into a proto-Zeta. But the presence of artefacts in the discussion is not surprising if it gives Aristotle a good *ad homines* argument against the Idea-theorists. I agree with Burnyeat and other scholars that *Z* 7 9 is an insert, but I think its focus on artefacts is a good part of the reason Aristotle chose to insert it. See Broadie 2007 for fuller discussion.

³⁴ See n. 29.

6

Aporiai 9–10

CHRISTIAN WILDBERG

Metaphysics B is a string of condensed sketches of considerations related to highly abstract and difficult philosophical problems; in order to do justice to this highly idiosyncratic piece of writing and determine its most likely sense, it is paramount to pay very close attention to the text—not only the variants introduced in the course of the text’s transmission, but also its at times contorted syntax and subtle sarcasm. The way to proceed is slowly, by first offering a translation of the text of the *aporiai* and notes which discuss purely philological problems (A sections). There follows a detailed commentary (B sections) which first takes the wording of an *aporia*’s introduction in chapter 1 of Book *B* into account and then proceeds to discuss the component parts of the *aporia*’s theses and antitheses. For the sake of clarity, the text is broken up into *lemmata*, essentially repeating the translation offered earlier. Hopefully, this procedure will leave an impression not of redundancy but of greater accessibility and transparency. The commentary parts segue into short synopses of the *aporia*’s argument (sections C).

The Ninth *Aporia*: *B* 4, 999^b24–1000^a4

A. Translation

(999^b24) Furthermore, one could raise also the following difficulty about the principles: If¹ they are one <in the sense of ‘one’ in kind’, there will be nothing that is numerically one, not even One itself, and Being; and then: how will there be such a thing as ‘understanding’, if there is not something that is one principle for all things?

¹ εἰ μὲν γάρ: the first part of the *aporia* (thesis) ends in line 27 and is contrasted with the antithesis starting with ἀλλὰ μὴν in the same line. Strictly speaking, the μὲν in line ^b25 is answered by ἀλλὰ μὴν introducing the antithesis, not by δέ in line 31. This observation prompted Sussemihl to suggest a resumptive δὴ (instead of δέ in line 31) since 31 f. restates the premise in 28. But this change is unnecessary; δέ can have just this resumptive force, effectively picking up the previous ἀλλὰ μὴν.

(^b27) However, if each of the principles is one in number and the principles for different things are not, as they are for perceptible things, different (for example, the principles of just this syllable, which is the same in kind, are also the same in kind, since they have numerically different instantiations),

(^b31) so if the principles of beings are not one in the sense just set out, but one in number, then there will not be anything else besides the elements. For it makes no difference whether one speaks of ‘one in number’ or of ‘particular’, since we are using ‘particular’ in just this sense, ‘one in number’, whereas ‘universal’ we call that which <we predicate> of these particulars.

(1000^a1) Likewise, if the elements of speech were limited in number, the whole of literature would necessarily amount to the number of the elements—unless there are at least two of the same <elements>, if not more.

B. Commentary

1. *The Aporia’s Introduction* The ninth *Aporia* is introduced, somewhat surprisingly, with the connective phrase *ἐτι δέ*, a phrase normally used to string together a number of considerations related to a particular thesis or antithesis. Elsewhere, new *aporiai* are introduced by particles or clauses that mark them off more decisively from the preceding discussion. This in itself suggests that the present *aporia* might have somehow grown out of discussion brought forward in *Aporia* 8, and that it is thematically connected with it. *Aporia* 8 (B 4, 999^a24–^b24) broached and discussed, roughly, the following difficulties: Should we, or should we not, posit entities over and above the particular *sensibilia*. If we don’t, how could we ever understand particulars, given that they are unlimited? How would generation be possible? If we posit a material aspect as principle of perceptible compounds, is it not more reasonable also to posit a formal aspect? However, if we decide to postulate such formal principles of substance, we are presumably not entitled to do so across the board for every kind of sensible substance. *Moreover, is a principle of substance thus conceived one or many? Both options seem impossible to maintain.* Finally, how does matter become an informed substantial compound? The two italicized sentences in the second arm of *Aporia* 8 seem to be particularly relevant. Aristotle says at 999^b20–3:

There is the additional difficulty whether there will be one substance of all things <of a given kind>, for example of humans. But that would be absurd, since all things of which the substance is one *are* one. But are they many and different (*πολλά καὶ διάφορα*)? That too would be unreasonable.

Grammatically, the neuter adjectives *πολλά* and *διάφορα* in line 22 seem to refer to the things the being of which is supposed to be understood by invoking (in the language of the *Categories*) some kind of secondary substance over and

above them. But logically, *πολλά* and *διάφορα* have to refer to the *οὐσίαι*: the assumption of a plurality of *them* would be unreasonable, not the assumption of a plurality of sensible substances. Still, the argument concerning the alternative assumptions of either a single substantial principle or a genuine plurality of them is very sketchy here; although one might concede that the proliferation of substantial principles over and above sensible substances is somehow ‘unreasonable’ as it might lead to an awkward reduplication of entities on a higher level, it is not clear why the (Platonic) assumption of ‘One over Many’ should be ‘absurd’ and, as Aristotle claims, condemn all things to uniform indistinctiveness or worse, into ‘one’ thing in a strong sense. The precise nature of this difficulty does need further argument, and I presume that Aristotle wanted to provide just this by raising the *Aporia* 9. There Aristotle considers two possible ways in which principles might be called ‘one’, both of which involve considerable difficulty: either the principles of being, however many there are, are ‘one in kind’, or each one of them, again however many there are, is ‘one in number’.

In his philosophical dictionary, Book *A* chapter 6, Aristotle distinguishes several further senses of ‘unity’; we cannot fault him for not going through all these different senses in this *aporia* because some of them are clearly irrelevant to the inquiry into principles (for example the unity that exists between a thing and its accident). At the same time, the impression remains that there are *some* senses of ‘unity’ which are not mentioned in Book *B* but which might well be relevant to the discussion of principles, for example unity by analogy (mentioned at 1016^a32 immediately after numeric and generic/specific unity). But again, we may not wish to fault Aristotle for leaving aside, in a programmatic discussion of difficulties, distinctions that are part of the solution to the metaphysical problem he raises.

2. *The Announcement of the Aporia in B 1* Before we proceed any further, a couple of observations concerning the announcement of the *Aporia* 9 in the ‘table of contents’ in *B 1* are in order because there the *aporia*’s thematical agenda seems slightly, or possibly even significantly, different. The ‘announcement’, according to the text adopted by Ross and Jaeger, reads as follows, 996^a1f:

Moreover, <one must examine and discuss> whether the principles are numerically determinate or determinate in kind—both the ones in the articulated theory (*ἐν τοῖς λόγοις*) and the ones in the substrate (*ἐν τῷ ὑποκειμένῳ*).

The question as stated here is whether the principles one has to grasp in order to ground a science of being are of a specific number, for example whether there

are exactly one, two or n different and individual principles one has to grasp, or whether the principles of being form kinds.

Since it is extremely important to keep the fundamental distinction in mind with which the *aporia* seems to be operating, let me clarify a bit further what I take the distinction to be. In Book Δ Aristotle explains that of something that forms a *numeric* unity ‘the matter is one’ (1016^b32 f.). This is not really helpful when we speak of principles, which might or might not be material entities. Still, unity $\alpha\rho\iota\theta\mu\acute{\omega}\varsigma$ seems a fairly unproblematic notion: something is one in number if it consists of some one unified thing, an individual; and to say that a certain *principle* is ‘one in number’ is to say that there is one and just one such principle, a ‘singularity’, such as one might think the Platonic $\epsilon\nu$ represents. Let this be called, with Aristotle at 996^a1, a ‘numerically determinate’ principle. The objection Aristotle is going to launch against this conception of numerical determinacy stands regardless of whether one or several such principles are assumed.

Now, if there should be several such principles, each of them forming a numeric unity, they could either have nothing to do with each other and remain quite separate in virtue of their dissimilarity, or they could, in virtue of some functional, formal, or qualitative similarity, form a set or bulk, such as the Empedoclean elements. For example, one might think of ‘Fire’ as one of the principles of being; but Fire is not causally operative throughout the universe as some one individual item. Rather, the universe is interspersed with different individual bits of fire here and there. It would be wrong to say that ‘Fire’ so understood is a principle that is ‘numerically one’, or even ‘numerically determinate’, because it isn’t. The quantification of this principle is not even an issue; all that is stated is that there are tokens of a certain type which *together* serve as both causal and explanatory principle in the overall scheme of things. Fire can therefore be invoked as a high level theoretical *explanans*, but when one does enunciate it, one is not referring to some numerically singular item. A principle such as this could still be called ‘one’, but only in the sense of being unified as a kind ($\epsilon\acute{\iota}\delta\epsilon\iota$). Let this be called a ‘numerically indeterminate’ principle.

Note that Aristotle can speak of what I have called a ‘numerically indeterminate’ principle as one because it has to be, if it is indeed to serve as a principle, unified ‘in kind’ and not resemble some random ‘stuff’. This second notion of unity is evidently weaker than numeric unity, and it predicates unity on a different level. Here we are assuming the existence of several individual instances which have so much in common that they can be regarded as formally united in a set and be referred to as a whole. Aristotle does not specify in Book *B* what the logical relationship between these two concepts of unity is; he

simply treats them as mutually exclusive: a principle must either be a singularity or a bulk principle unified as a kind.²

The *aporia* as stated in this first chapter's 'table of contents' is complicated by the added qualification 'both the ones in the articulated theory and the ones in the substrate'. It is not immediately obvious what the distinction between αἱ ἐν τοῖς λόγοις and ἐν τῷ ὑποκειμένῳ exactly amounts to, especially since it is not given prominent treatment in the execution of the *aporia*. According to the text as printed by Ross (and Jaeger), the *aporia* concerns both the theoretical principles, which we have to embrace in order to give an account of being, and the actual principles that function causally as principles of being and operate on the level of that which underlies all being. The implicit assumption seems to be that the causes (αἴτια) of being are going to reappear as explanatory principles (ἀρχαί) of being in the theoretical account of the science of being. Note how Aristotle frequently lumps together αἴτια and ἀρχαί. And so, whatever is true of the causes (whether they turn out to be numerically or formally determined) should be true of the *explanantia*.³ We are now in a position to proceed to the execution of the *aporia* in chapter 4.

3. Thesis (999^b25–27): *Principles of Being are Unities in Kind (i.e. Numerically Indeterminate)* If the principles are one <in the sense of 'one' in kind', there will be nothing that is numerically one, not even One itself, and Being; and then: how will there be such a thing as 'understanding', if there is not something that is one principle for all things?

² Of course a principle that is one in number is also going to be one in kind, but in the uninteresting sense of being the sole instance of its kind. One needs at least two tokens to give good sense to the assertion that they are one in kind; cf. the δόο in 1000^a4 and the interpretation of that line below. In general, the relationship between things that are numerically one and things that are one in kind is explained in *Metaph.* Δ 6: 'The latter kinds of unity are always found when the former are, e.g. things that are one in number are one in kind, while things that are one in kind are not all one in number' (1016^b35 f.).

³ Although this does not seem to lead to anything of great interest, we should at least muster the variant readings in lines 996^a1 f.: the double omission of the article αἱ in Laurentianus 87.12 is of no consequence, but the lemma in Asclepius (147,1 + 18) reads εἰ in place of the second αἱ in line ^a1 and also omits the αἱ in line ^a2. So his text goes: ἐτι αἱ ἀρχαί πότερον ἀριθμῶ ἢ εἶδει ὠρισμένα, καὶ εἰ ἐν τοῖς λόγοις καὶ ἐν τῷ ὑποκειμένῳ.

Although the Greek is highly elliptical, according to this text the question that Aristotle poses seems to be the following: are the principles of being numerically determinate or are they determinate in kind, and if one alternative turns out to be true in theory (ἐν τοῖς λόγοις), is the same true on the level of reality (ἐν τῷ ὑποκειμένῳ)? It is open to discussion why anyone might pose such a question, i.e. why it is worth thinking about whether the principles enunciated in one's theory and the principles operative in reality are both determinate and unified in the same sense. Aristotle nowhere discusses such a 'problem'.

Asclepius does not seem to be aware of any variant readings. His own exegesis of the lines he reads is typically unhelpful, 147,19–25: 'There are two interpretations of this little passage in circulation, one is the following: either ἐν τοῖς λόγοις refers to the efficient, final, and formal causes, and the ὑποκείμενον to the material cause; or ἐν τοῖς λόγοις means the opinions of the ancients, since the more ancient philosophers assumed a limited number of principles, and the substrate. And it is certainly the case that there is not an infinite number of principles.'

There are two different ways in which one might understand the force of the argument; it seems difficult to decide which way is to be preferred. On the one hand, it is tempting to bring out an implicit reference in the first conditional and translate: 'If the principles are one in kind, none <of them> will be numerically one, ...' in order to avoid seeing Aristotle shifting too quickly between vastly different levels in his ontology, the principles and the things that rely on them. Support for this view comes from the following *οὐδέ* clause, in which Aristotle continues to make a claim about the highest level of ontology. The gist of the argument would then be that if ontological principles across the board are merely unities in kind, then none of them would be, as a matter of analytical truth about them, unities in number because unity in kind and unity in number are mutually exclusive.⁴ This then creates problems especially for the very highest ontological level, when not even 'the One' can be regarded as a numerical unity. This in turn leads quite naturally to the consideration that if the principles are not unities in some strong sense, the attempt fully to understand anything at all might well fail. For example, if the understanding of a phenomenon X at time t requires the grasping of its principle P, and if in all respects similar phenomenon X* at time t* cannot be understood in the light of this same principle P but some other principle P* which exclusively pertains to case X*, and so on, then understanding becomes a hopeless and never ending task. Hence: 'How will there be such a thing as "understanding", if there is not something that is one principle for all things?' Read in this way, the argument is fairly straightforward, at least in the sense that it does not seem to rely on any obscure unstated premises.

On the other hand, there is an alternative interpretation suggested by the more literal translation above and also advocated by Alexander of Aphrodisas and Arthur Madigan; it has the disadvantage that it has to import an unstated premise.⁵ If one takes *οὐθέν* here to mean literally 'nothing' (rather than as shorthand for 'none of them'), the first difficulty Aristotle supposedly sees is that if the principles are unified kinds, then what derives from them can only be a unified kind and never be a numerical unity; but the sensible individuals *are* numeric unities. So, the reason why this view amounts to a philosophical difficulty is (and here comes the implicit premise) that derivative entities can only have those positive properties that are bestowed on them by the principles that cause their being; there cannot be any genuine attribute in the lower ontological levels that did not have prior existence on the higher ones. For

⁴ Aristotle assumes mutual exclusivity also in the second arm of the *aporia*, see below 999^b30 f.

⁵ In his commentary *ad loc.* Madigan 1999 points out (93): 'The unstated assumption is that a principle can only cause a thing whose principle it is to possess a certain attribute if the principle itself has that attribute (cf. *a1*, 993^b23–31).'

example, matter, fire, earth and so on, being mere unities in kind, cannot *as such* bestow individuality and distinct numerical identity on anything. Hence again, it is impossible to understand reality in the light of insufficiently causative principles. It seems to me that both readings have their virtue; both certainly succeed in undermining the assumption that we can build a science of being exclusively on principles that are unities in the less restrictive sense, as unities in kind.

4. *The Antithesis: The Principles of Being are Numerically One* (^b27) However, if each of the principles is one in number and the principles for different things are not, as they are for perceptible things, different (for example, the principles of just this syllable, which is the same in kind, are also the same in kind, since they⁶ have numerically different instantiations),—

(^b31) so if the principles of beings are not one in the sense just set out, but one in number, then there will not be anything else besides the elements. For it makes no difference whether one speaks of ‘one in number’ or of ‘particular’, since we are using ‘particular’ in just this sense, ‘one in number’, whereas ‘universal’ we call that which <we predicate> of these particulars.

(1000^a1) Likewise, if the elements of speech were limited in number, the whole of literature would necessarily amount to the number of these elements—unless there are at least two of the same <elements>, if not more.

The first arm of the *aporia* faced at least two, if not three, considerable objections which were jotted down in little more than two curt lines; Aristotle now manages to dress up exactly one objection so elaborately that it becomes nearly impossible to quickly identify its exact point. Especially in the last clause (beginning 1000^a1) he thoroughly succeeds in obfuscating the argument he was trying to develop.⁷

As a first move, Aristotle interrupts his train of thought right at the beginning in order to clarify the way in which we are supposed to think of ‘principle’ in this context: not in the way a material principle might function in the sensible world, by providing different entities with different instantiations of *it* (which it can do in virtue of being an indeterminate unity in kind), but as a particular. To illustrate his point, Aristotle begins to speak about letters and syllables. What Aristotle had in mind, possibly, but certainly before his eyes, was the repeated written syllable *αλλ* in line 29: the two syllables are obviously not identical in number, but identical in kind, and the same is true of their principles, or

⁶ i.e. the principles. *ἀδται* in line 31 refers back to *ἀρχαί* of the previous line, not to an understood *συλλαβαί* (Madigan).

⁷ Already Alexander censured the argument for being ‘exceedingly verbal and dialectical.’ (218,17).

constituents, viz. $\alpha, \alpha, \lambda, \lambda, \lambda, \lambda$. These too are not numerically identical, and the example illustrates how one might take individual items of the sensible world to be constituted by their principles (in this case α and λ). And so, we are *not* supposed to think of principles in *this* way; rather, we are invited to suppose that there is just one α and just one λ which could be arranged either as $\alpha\lambda$ or $\lambda\alpha$, but not at the same time.

The general point seems to be this: If there were just (one or several) numerically distinct individual principles of being, singularities as it were, then it would be quite incomprehensible how anything else could ever arise from them (999^b32 f.). ‘If each of the principles is numerically one, beings will be no more numerous than the elements.’⁸ I don’t think it matters much whether in this context we are thinking of ‘principle’ in the sense of material ‘constituting element’, as Alexander does, or more as a formal feature. In either case, if each of the elements is, strictly speaking, a singularity, how could anything arise from them that is not just an uninteresting arrangement or rearrangement of these principles?

In order to lend additional rhetorical *gravitas* to his solitary antithesis, Aristotle adduces, in the final section of the argument, an analogy that aims to illustrate the absurd consequences of the assumption of numerically singular principles. This part of the *aporia* is particularly obscure at first sight, partly because of the imprecise language right at the end ($\mu\eta \dots \pi\lambda\epsilon\iota\acute{o}\nu\omega\nu$), partly because Aristotle seems to be juggling three different concepts: articulate sound (i.e. speech; $\phi\omega\nu\eta$), the elements of speech, and written letters, instead of just two concepts, the principles of being—and beings.

Let us suppose the elements of speech (26 in English) are particular individual entities: there is only one A, one B, one C, etc. And so, it might seem to follow that one could articulate each of them only once; a name like ‘Lille’ would not be pronounceable because the use of the first liquid pre-empted the required articulation of the second liquid. In fact, everything that could ever be said would just be this, the alphabet, and, as Ross puts it, ‘all the literature in the world would be confined to the ABC.’⁹

This would be so (and this is the force of the final genitive absolute construction), *unless* there are at least two or more of the same elements of speech such that more complex words and sentences can be uttered. That is

⁸ Alexander 217, 32.

⁹ Ross translates (*The Revised Oxford Translation* (Barnes 1984), 1579): ‘Therefore it is just as, if the elements of articulate sound were limited in number, all the literature in the world would be confined to the ABC, since there could not be two or more letters of the same kind.’ As always, Ross has a clear command of the gist of the argument, although I don’t think it is possible to translate a genitive absolute introduced by $\mu\eta$ as a causal subclause.

to say, the absurdity follows unless the principles of articulate sound are understood, as they have to be, as unities in kind. Thus the last clause neatly returns the reader to the initial assumption of the *aporia*: at least some principles will have to be numerically indeterminate, ‘one in kind’, as Aristotle puts it, as in the case of the elements of speech, if one wishes to avoid the absurd scenario of an ontology with principles but no beings, an ABC but no literary world it constitutes and inhabits.

C. *Synopsis*

In what sense are the principles of being ‘one’? They cannot be unities in the weak sense in which multiple items may be said to be ‘one in kind’, since that would turn all of them, even such principles as Unity and Being, into pluralities. Moreover, this view would undermine science, which necessarily understands the plurality of its subject matter in the light of one single principle in the strong sense.

But the principles of being cannot be one in this strong sense either; they cannot each be ‘numerically one’, since that would make it impossible for there to be anything else besides these principles.

The *Aporia* 10: B 4, 1000^a5–1001^a3

A. *Translation*

(1000^a5) A problem as difficult as any remains neglected by <thinkers> of both our own day and earlier times: are the principles of perishable and imperishable things the same or different?

(^a7) For if the principles are the same, how is it possible that some things are perishable, others imperishable, and on account of what cause?

(^a9) Hesiod and all the other theologians paid attention only to whatever makes sense to themselves, and they treated people like us with disdain. For turning the principles into gods and making them come from gods they state that whatever failed to have a taste of nectar and ambrosia became mortal. Evidently, the meaning of these words is

Madigan’s translation stays closer to the Greek but is not readily comprehensible: ‘So <it would be> just as if the elements of spoken sound were definite in number: there would necessarily be exactly as many written letters as there were elements, if there were not two or more of the same letters.’

It seems unlikely that Aristotle thought the implied reference of *ἀνθρώπων* in line 1000^a4 to be ‘letters’ (so Madigan), rather than the last mentioned ‘elements of speech’. Moreover, what is at stake is the plurality (or non-plurality) of the principles, not of that which is caused by them.

clear to them, although precisely with regard to ‘the eating’¹⁰ of these causes they have spoken above our heads. For if <the gods> consume nectar and ambrosia for the sake of pleasure, nectar and ambrosia won’t be the causes of their being; but if nectar and ambrosia *are* the causes of their being, how could the gods be everlasting if they need nourishment?

(^a18) But as a matter of fact, it is unprofitable to take those seriously who engage in mythical speculation; one must rather learn from those who use demonstrative language and ask them the question why it is that some entities are by nature eternal and others perishable despite the fact that they derive from the same principles. No reason is given, and it is also not evident that it should be this way, so that, evidently, it might not at all be the same principles that cause them.¹¹

(^a24) For even the one <philosopher> of whom one might think that he speaks in a particularly self consistent manner, namely Empedocles—it’s just the same way with him:¹² he does indeed posit a certain principle as the cause of destruction, namely Strife, but it would seem, nevertheless, that Strife too is creative, except that it does not create the One since all the other things are from Strife except the god.

(^a29) To be sure, he says: ‘From which all things that were and are and will be hereafter came forth, trees and men and women, animals and birds and water nourished fish, and the long lived gods as well.’¹³ Even if we leave this aside, it is quite clear: if <Strife> were not in the things, all things would be one, as he claims. For whenever they came together, ‘Strife receded furthest.’¹⁴

(^b3) Which is why it follows for him that the most blessed god is less knowledgeable than the other <gods>, for he doesn’t know everything, since he does not have strife, and knowledge is of like by like. ‘For earth we perceive by earth,’ he says, ‘and water by water, the bright air by air, but destroying fire by fire, love by love, but baneful strife by strife.’¹⁵

¹⁰ *προσφορά* (‘ingestion’) is translated as ‘application’ (by Ross and Barnes in *The Revised Oxford Translation*) or ‘contribution’ (by Madigan; cf. Madigan 1999, 98 f.). These choices of translating the word in this context are too abstract; *προσφέρεσθαι* means ‘to take in food or drink’ (see LSJ s.v. *προσφέρω* C), and the sense of the noun is still concrete. Aristotle is clearly poking fun at Hesiod’s gods ‘eating’ the principles of their own eternal being.

¹¹ I take it that the function of the composite negation *οὐδέ* is merely to strengthen the point made by the previous *οὐχ*-clause, a common practice; that is to say, Aristotle is denying one idea, not two. If the *οὐδέ* were taken to suggest that Aristotle makes two related but separate claims, the translation should be: ‘Evidently, there might not be the same principles nor <the same> causes of them,’ but note that the preferred translation agrees well with the syntax of line 1000^a26, where Empedocles is said to have ‘posited some principle as a cause’.

¹² Literally: ‘even he is afflicted by the same’, i.e. he gives insufficient reasons why some entities are perishable, others imperishable.

¹³ Empedocles B 23, 5–8.

¹⁴ Empedocles B 36: *τῶν δὲ συνερχομένων ἐς ἔσχατον ἵστατο Νεῖκος*. In quoting the verse from memory, Aristotle omitted the verbal prefix *ἐς* standing in tmesis. In Aristotle’s sentence, the implied subject of *συνέλθῃ* is *ἅπαντα* of the previous sentence.

¹⁵ B 109. Aristotle is the sole witness of this fragment; and he cites it another time early on in the *De Anima* (at I 2, 404^b12–15) during his survey of previous philosophers’ views about the soul. There the lines are supposed to corroborate the claim that Empedocles held that each individual soul consists of a combination of the four elements.

(^b9) But to return to the beginning of the argument: so much is at least clear that it follows for him that Strife is no more a cause of destruction than of being; likewise Love is no more a cause of being than of destruction, for when it brings together into one the other things perish. At the same time Empedocles also fails to state the cause of this change, except that it comes to pass like this: ‘But when mighty Strife was nourished in the limbs and came to honours at the end of the time which had been drawn up for them in turn by a broad oath . . .’¹⁶—<that is to say> it is something to change of necessity. But he identifies no cause of this necessity.

(^b17) Still, to a certain extent he alone tells a consistent story. For he does not make some entities perishable, others imperishable, but makes all things perishable except the elements. However, the present difficulty concerns the question of *why* some things are perishable, others not, if indeed both come from the same principles.

Let so much be said for the view that the principles might not be the same.

(^b23) But if the principles are different, one difficulty is again whether *they* will be imperishable or perishable. For if they are perishable, it is clear that they too necessarily depend on certain principles (for all things perish into that out of which they are constituted), so that it follows that there will be other principles prior to those principles, but that is impossible, both if <the regress> stops and if it goes on *ad infinitum*.

(^b28) Moreover, how will there be perishable things if their principles are going to be destroyed? But if the principles are imperishable, why will perishable things derive from *some* imperishable principles but imperishable things from *other* principles? This is not at all reasonable, but rather either impossible or in need of a long argument. Besides, no one has proposed different <kinds of> principles, but they maintain that the principles of all things are the same. Yet the difficulty set out in the beginning they bite off as if they were having it as a snack.

B. Commentary

1. *The Aporia's Introduction* Aristotle introduces the *aporia* as follows: (1000^a 5–7) A problem as difficult as any remains neglected by <thinkers> of both our own day and earlier times: are the principles of perishable and imperishable things the same or different?

So far, *Metaphysics B* has canvassed the possible subject matter of the most fundamental science by asking questions about the subject matter's unity, whether there are one or several principles, the level of their generality, and so on. In the present *aporia*, Aristotle raises, for the first time, the issue that the

¹⁶ B 30. Again, Aristotle is our sole witness. The fragment consists of three complete hexameter lines, but it still breaks off in the middle of the thought, only enough to support Aristotle's point that the changeover from the reign of Love to the reign of Strife (or vice versa) is a matter insufficiently motivated by Empedocles. The quotation interrupts the syntax of the sentence begun in line 13 with *ὅτι οὕτως πέφυκεν*.

entities that are supposed to be accounted for by the general science of being are themselves not uniform. Rather, on a very general level, they fall into two distinctly different classes: perishable and imperishable things. Any science of being has to be able to account for this important difference.

The whole discussion might be pre-empted by someone who denies that there is such a thing as a perishable *substance*. Aristotle neither justifies nor flags his general view that individual perceptible bodies, even if they are subject to generation and corruption, are substances. And there is no need to do so at this point: given the nature of the enterprise, i.e. the quest for a first science that may serve as the foundation of *Aristotelian* natural science in general, the distinction between perishable and imperishable substances might simply be taken on board as a given.

It is helpful to recall the announcement of the *aporia* in chapter *B* 1, 996^a2–4; here the question that raises the difficulty is stated more explicitly in a multiple dichotomy of questions:

<One must examine and discuss> both whether the principles of perishable and imperishable things are the same or different and whether all principles are imperishable or the principles of perishable things perishable.

Taking this text into account, and following Madigan 1999 (97 f.), we may look at the problem from a systematic point of view, noticing that there are a number of different ways in which principles might be thought to be explanatory of both perishable and imperishable being:

1. Either there is one (or one kind of) principle that cause(s) and explain(s) the substancehood of both perishable and imperishable things; necessarily, that principle will have to be imperishable. This view is discussed and criticized in the first part of the *aporia* (1000^a7–^b21; esp. 1000^a7–9; 19–24; ^b17–21).
2. Alternatively, different, and at a minimum two kinds of principles are required to cause and explain the substancehood of both perishable and imperishable things. On that assumption, one might think that whilst the principles of imperishables are imperishable, the principles of perishables are in fact perishable (cp. the *aporia's* announcement in *B* 1). This view is critically discussed at the beginning of the *aporia's* second part (1000^b24–9).
3. If the difficulties raised by that latter view are unpalatable, one might hold that the principles for the two kinds of beings are indeed different, but that they are both imperishable. This view is briefly broached, but not thoroughly discussed towards the end of *Aporia* 10, 1000^b29–32. I see no

evidence for Madigan's claim that Aristotle considers and criticizes a fourth possibility.¹⁷

If this approach to the *aporia* captures the rationale behind its argumentative content, it fails to account for its most salient and surprising compositional feature: so far, for the most part, the style of *Metaphysics B* was relentlessly terse and analytical. In view of its subject matter, i.e. fundamental problems concerning the most general science of being, the discourse proceeded unsurprisingly on an exceedingly high level of abstraction and technicality. But here, all of a sudden, Hesiod makes an appearance as someone who might have had an idea that contributes to the present inquiry—only to be laughed off the stage as a fanciful mythographer. Empedocles is repeatedly praised for his philosophical consistency and extensively cited—only to be censured in the end for not having thought the problem through.¹⁸ It is only in the second part of the *aporia* (1000^b3 ff.) that Aristotle returns to the 'familiar' mode of stenographically condensed objections against a particular view under consideration. The question arises: what put Hesiod and Empedocles in Aristotle's mind in the first place as he approached the problem of whether the principles of perishable and imperishable things are the same or different?

This, as well as other features of the *aporia* (viz. the absence of e.g. Democritus and Plato, discussed below), remains puzzling as long as we suppose that the formulation of this *aporia* is simply the result of a 'brainstorm' approach to problems that come up when one begins to think about first philosophy.¹⁹ *Prima facie*, Aristotle develops in this *aporia* a further and different take on the question of the number and kinds of principles; in this sense, it serves as an extension of the previous *aporia*. Yet it seems more to the point to say that the question that lies at the heart of *Aporia* 10 is a salient part of Aristotle's broader agenda.

In Book *A*, when Aristotle discusses the sets of first principles embraced by both his predecessors and contemporary philosophers, he repeatedly censures

¹⁷ Cf. Madigan 1999, 98: '(d) Imperishables have imperishable principles, perishables have both imperishable principles and perishable principles (criticized by implication at 1000^b32–1^a3).' Madigan translates these final lines of the *aporia* referred to in this quote as follows: 'Further, no one has even tried to posit different principles <for perishables and imperishables>; they say that the principles of all things are the same.' In interpreting these lines in the sense of the fourth alternative (d), Madigan seems to overinterpret their significance; his discussion of this sentence (104–6) is longer than his discussions of any other section of this *aporia*, and it relies too heavily on what Madigan takes to be Aristotle's response to it (esp. in books *Z* and *A*).

¹⁸ Cf. 1000^b17: 'No cause of this necessity (of change) is pointed out by him.'

¹⁹ Madigan 1999 writes (98): 'Perhaps Aristotle thought when he composed *B* that the atomists did not deserve serious consideration; but a frank confrontation with their position would have strengthened *aporia* 10. *Aporia* 10 is remarkable for the endoxic material that it might have included, but does not.'

them for failing, either entirely or partially, to identify a principle of the dynamic processes in nature. The gist of this criticism is that although others may have identified a number of eternal unchanging principles, like some particular kind of matter, or forms, these principles by themselves do not explain change, and in particular they do not explain the generation and corruption of substances. Why are there real changes alongside, and in the framework of, cosmic stability? The present *aporia*, which addresses the identity and difference of the principles of stability as opposed to the principles of change, properly falls within the horizon of just this preliminary discussion. For one might suppose, not unreasonably, that the proper principles of perishable substances are somehow causally involved in the substantial changes these substances undergo. If the discussion of *Aporia* 10 suggests, as it well might, that the principles for imperishables and perishables, properly understood, will turn out to be different, and different in such a way that the principles of the perishable substances account also for the latter's undergoing substantial change, then the *aporia* immediately raises the question which *A* 3 repeatedly foregrounded as central to the inquiry into first philosophy, viz.: what are the principles of cosmic *change* broadly conceived?

Linking the 10th *aporia* to the discourse of Book *A* in this way not only explains why Aristotle explicitly marks it as a momentous one, but also why Hesiod and Empedocles feature in it. For in chapter *A* 3, Aristotle censures the earlier cosmologists for failing to enunciate anything more than the material cause. However, at the beginning of *A* 4, Hesiod is singled out as the first thinker who actually tried to identify a principle of change.²⁰ Not much later, Empedocles and his concepts of Love and Strife are paraded as another example of early approximations to the moving cause. But even if these early attempts might count as genuine attempts to explain the existence of nature's cycle of coming to be and passing away, these philosophers failed, as Aristotle is going to show in our text of Book *B*, to see the full magnitude of the difficulty.

If this explains fairly well why Hesiod and Empedocles are mentioned and extensively discussed, a puzzle remains over the question of why more refined cosmologists (such as Democritus) and contemporary thinkers such as Plato are left out.²¹ As the first sentence implies, Aristotle thought that these too, in fact everybody hitherto known, had neglected to address this crucial issue in the proper way. How so?

²⁰ Cf. *A* 4, 984^b 23 ff. Parmenides is also mentioned in the same breath.

²¹ It is also quite puzzling why Heraclitus' idea of cosmic Fire, which is at once stable and dynamic, does not receive a proper discussion in Book *A*.

To be sure, Democritus and Plato have made an enormous contribution to the study of first principles, and in other contexts, even in this same book,²² Aristotle tends to acknowledge the general significance of their ideas to his own enterprise. However, it seems to have been Aristotle's view, whether rightly or wrongly, that neither of them made a significant contribution to the question of the principles of cosmic *change*. The atomists' principles are immutable atoms and the void, but as to the question of substance formation they rely on some mysterious notion of spontaneity. In *A* 3, Aristotle dismisses the resort to spontaneity and chance as misconceived.²³

The case of Plato is more difficult, for in the *Timaeus* Plato speaks at great length about a cause of cosmic change, the world soul. When Aristotle outlines Plato's 'system' of principles in *A* 6 and 7, he nowhere mentions 'soul' as anything that plays an important explanatory role in it. Aristotle claims that Plato was essentially a dualist, his principles being limited to form and matter (*A* 6, 988^a7–11). Even when Aristotle is forced to acknowledge that at least *some* of his predecessors did in fact address the question of change, Plato is not mentioned as one who had anything useful to say about the principles that explain change.²⁴ Given that 'soul' plays such an important role in Plato, Aristotle's silence is, to say the least, surprising; only much later in the *Metaphysics*, in *A* 6, do we get an idea of the way in which Aristotle might have justified his wholesale truncation of Plato's cosmology: soul cannot be a principle, Aristotle argues, because it is 'later (than motion) and contemporary with the heavens, as Plato says' (1072^a2 f.). Aristotle, who elsewhere too takes the exposition of the *Timaeus* as literally as possible, clearly censures Plato for introducing soul at such a late stage in his cosmological myth, after the original disorderly motion (cf. *Tim.* 30a). Although Plato reiterates that the soul is eternal and prior to body,²⁵ it is described in the *Timaeus* as 'crafted' by the demiurge (34c). One could say that with his conception of the world soul, Plato has identified something that causes and explains a whole range of natural motions and changes; but strictly speaking he cannot be regarded as having

²² Platonic themes and theses are repeatedly discussed throughout Book *B*, and cf. also the extensive discussions of Empedocles, the atomists and Plato in *Cael.* III 1 2, 7 8; *Gen. et Corr.* I 1 2, 8.

²³ Cf. *A* 3, 984^b14 f.: 'Furthermore, it is certainly not good to give such an important task (i.e. causation of change) to the 'automatic' and to chance.' The atomists are not mentioned explicitly, but it seems clear that they, perhaps among others, are the target.

²⁴ Cf. Ross 1970 (1924) I, 176, who comments on 988^a9: 'Aristotle ignores various suggestions of an efficient cause in Plato – the self-moving soul of *Phaedrus* 245c, d, *Laws* 891 9, the demiurge of *Soph.* 265b d and of *Tim.* 28c ff., the αἰτία τῆς μίξεως of *Phil.* 23d, 26 e 27b, and various suggestions of a final cause – the ultimate good or οὐδ' ἄρ' of *Phil.* 20d, 53e, the object of the creator's purpose in *Tim.* 29d ff., and in *Laws* 903c. He doubtless thinks Plato's treatment of these causes inadequate, but that does not justify him in speaking as if Plato ignored them entirely.'

²⁵ Cf. *Phaedr.* 245c 246a; *Laws* 894c 896e with *Tim.* 34c.

identified a *first* principle of motion. Therefore, just as the atomists, he has made no useful contribution to the question of the principle of change as required by first philosophy: his views on the world soul do not promote an answer to the question whether the principles of eternal and unchanging substances and the principles of perishable, changing substances are the same or different, because 'soul' is no such first principle of change.

2. *The Thesis (1000^a7–8): The Principles of Perishable and Imperishable Substances are the Same* Aristotle's starting point is the hypothesis that the principles of both sets of substances are the same. The identity thesis immediately runs into the following difficulty: if the principles are the same, it remains unclear why the things of which they are principles have such a radically different ontological status. The way Aristotle puts this is to ask a double question: $\pi\omega\varsigma$ and $\delta\iota\alpha\ \tau\acute{\iota}$, which, as I will argue below, has a subtle significance.

(^a7 f.) For if the principles are the same, how is it possible that some things are perishable, others imperishable, and on account of what cause?

In contrast to other *aporiai* in this book, where one hypothesis usually gives rise to any number of difficulties (which are typically strung together by conjunctions like $\epsilon\tau\iota\ \delta\epsilon$), in the present *aporia*, the assumption of a uniform set of imperishable principles is objectionable only in one, albeit crucial, respect:²⁶ on the assumption of a uniform set of ontological principles, the difference between perishable and imperishable being, or the presence of perishable being at all, remains *underdetermined* and hence *inexplicable*. Note that precisely the same objection is reiterated at 1000^a22–4 shortly after the Hesiod episode and again at 1000^b20 f., after the Empedocles episode.

3. *The Hesiod Episode (1000^a9–18)* (^a9) Hesiod and all the other theologians paid attention only to whatever makes sense to themselves, and they treated people like us with disdain. For turning the principles into gods and making them come from gods they state that whatever failed to have a taste of nectar and ambrosia became mortal. Evidently, the meaning of these words is clear to them, although precisely with regard to 'the eating' of these causes they have spoken above our heads. For if <the gods> consume nectar and ambrosia for the sake of pleasure, nectar and ambrosia won't be the causes of their being; but if nectar and ambrosia *are* the causes of their being, how could the gods be everlasting if they need nourishment?

Hesiod mentions nectar and ambrosia three times in the *Theogony*, but they are never used explicitly in his narrative to explain the gods' immortality. At 640

²⁶ Note that there is no locution such as $\epsilon\tau\iota\ \delta\epsilon$ in the whole first half of the *aporia*.

and 642, nectar and ambrosia are simply what the gods like to eat, or happen to eat, and in this particular passage the divine meal contributes to their resolve to fight against the Titans. At 796, deprivation of nectar and ambrosia is part of the punishment of a god, e.g. if he or she swears a false oath. This deprivation of divine nourishment is said to last for nine years (796–804), and although it makes the so punished god ill, there is no suggestion that, if further deprived, the immortal might in fact die. But this is not problematic; Aristotle seems to be thinking of the general notion prevalent in Greek mythology that the gods are immortal on account of their peculiar diet. Although the etymology of νέκταρ, the gods' drink, is disputed,²⁷ it is evident that the gods' more solid food, ambrosia, has, as the name indicates, the power to make one ἄμβροτος, immortal. At *Iliad* XIX, 38 f., Thetis pours ambrosia and nectar into the dead Patroclus' nose, ἵνα οἱ χρώς ἔμπεδος εἴη. Thanks to her care, Patroclus' body will not decay.²⁸

Someone who abstracts from the particularities of the myth might wish to respond to the problem raised by Aristotle (how to explain perishability on the basis of imperishable principles alone) in the following way: quite generally, one might retort, the ontologically deficient state (perishability) occurs when the principle of the ontologically complete state (imperishability) is absent. When Aristotle dismisses Hesiod and his colleagues as unintelligible, does his dismissal have merely the force of an *ad hominem* argument or does it also carry weight against the more general view?²⁸

The substantial objection against Hesiod is formulated in lines ^a15–18: 'For if <the gods> consume nectar and ambrosia for the sake of pleasure, nectar and ambrosia won't be the causes of their being; but if nectar and ambrosia *are* the causes of their being, how could the gods be everlasting if they need nourishment?' This, I take it, could be generalized against any view which tries to explain ontological differences between, say, X and Y, by the presence and absence of some third thing Z. If Z has to be present to a being Y in order for Y to be *eternal*, then Z is not as such the principle of Y's *being*; conversely, if Z is a principle of Y's being, how can Y, in and of itself, be regarded as eternal if it is in need of the presence of Z?

To give an example that illustrates just one specific application of this general argument: it would be quite wrong to think of the heavens as eternal and imperishable simply on the grounds that something else is present to them, or that some other condition is fulfilled, e.g. divine benevolence. The heavens, if they are indeed eternal beings, better consist of, and are essentially identical with, something that is eternal in and of itself.

²⁷ Cf. Frisk 1970, s.v., and Griffith 1994, 20–3.

²⁸ For a general complaint against Presocratic natural philosophy that is strikingly similar in tone cf. Plato, *Sophist*, 243 a6–b1.

If one believes in the eternity of the world, as Aristotle surely does, some such metaphysical consideration would generate a considerable amount of pressure to postulate the existence of a separate celestial element—an option that Aristotle so famously embraced.

It ought to be noted, finally, that Aristotle does well to keep Hesiod's case separate from the other cases implicitly or explicitly referred to, not just because Hesiod was a 'theologian' and the other metaphysicians philosophers, but also because Hesiod, knowingly or unknowingly, looked at the matter from an entirely different viewpoint. Whereas ever since Parmenides philosophers felt obliged to identify one or several imperishable principles and were then at pains to explain the phenomena of coming to be and passing away, Hesiod, in contrast, thought that invariably all things came to be, but that some acquired immortality *ex post facto*.²⁹

4. *Restatement of the Difficulty* (1000^a18–24) (^a18) But as a matter of fact, it is unprofitable to take those who engage in mythical speculation seriously; one must rather learn from those who use demonstrative language and ask them the question why it is that some entities are by nature eternal and others perishable although they derive from the same principles? No reason is given, and it is also not evident that it should be this way, so that, evidently, it might not at all be the same principles that cause them.

After the discussion of Book *A*, one can easily imagine whom Aristotle had in mind at this point, and hence it is unproblematic that he does not explicitly name any philosophers. Yet it does come as a slight surprise that of all candidates it is Empedocles who is singled out as the most representative because he is ostensibly the most consistent thinker.

5. *The Empedocles Episode* (1000^a24 ^b21) (^a24) For even the one <philosopher> of whom one might think that he speaks in a particularly self consistent manner, namely Empedocles—it is just the same way with him: he does indeed posit a certain principle as the cause of destruction, namely Strife, but it would seem, nevertheless, that Strife too is creative, except that it does not create the One since all the other things are from Strife except the god.

(^a29) To be sure, he says: 'From which all things that were and are and will be hereafter came forth, trees and men and women, animals and birds and water nourished

²⁹ Cf. *De caelo* III 1, 298^b 24–29: 'Others again, as if intentionally, maintained the opposite view (from Parmenides and Melissus): That is to say, it has been suggested that nothing is ungenerated, but everything comes to be: once in being, some things last for ever, others perish again. Of this view are Hesiod and his school, and the earliest natural philosophers' (trans. Guthrie).

fish, and the long lived gods as well.’ Even if we leave this aside, it is quite clear: if <Strife> were not in the things, all things would be one, as he claims. For whenever they came together, ‘Strife receded furthest.’

^(b3) Which is why it follows for him that the most blessed god is less knowledgeable than the other <gods>, for he doesn’t know everything, since he does not have strife, and knowledge is of like by like. ‘For earth we perceive by earth,’ he says, ‘and water by water, the bright air by air, but destroying fire by fire, love by love, but baneful strife by strife.’

^(b9) But to return to the beginning of the argument: so much is at least clear that it follows for him that Strife is no more a cause of destruction than of being; likewise Love is no more a cause of being than of destruction, for when it brings together into one the other things perish. At the same time Empedocles also fails to state the cause of this change, except that it comes to pass like this: ‘But when mighty Strife was nourished in the limbs and came to honours at the end of the time which had been drawn up for them in turn by a broad oath . . .’—<that is to say> it is something to change of necessity. But he identifies no cause of this necessity.

^(b17) Still, to a certain extent he alone tells a consistent story. For he does not make some entities perishable, others imperishable, but makes all things perishable except the elements. However, the present difficulty concerns the question *why* some things are perishable, others not, if indeed both come from the same principles.

Prima facie, the discussion of Empedocles seems far too long, over inflated, and at times irrelevant; this impression makes itself most painfully felt in the digression of lines ^b3–9, where Aristotle complains that Empedocles’ deity is partially ignorant because it lacks strife (and therefore cannot recognize it).³⁰ However, it is *not* objectionable that Aristotle shows his readers in detail why he thinks that Empedocles failed in enunciating principles that fully explain the existence of both perishable and imperishable being. For along with his claim that this poses a genuine problem, Aristotle also has to justify his further claim that the problem has been neglected by his predecessors. Empedocles is a good example of an early philosopher who was arguably aware of the fact that physical theory has to account for *both* stable *and* transitory being; hence his embrace of Eleatic pluralism and the introduction of further cosmic ‘forces’ or modes of being, Love and Strife.

Aristotle seems to acknowledge just this when he introduces Empedocles as the thinker who might well be regarded as the least self contradictory (or inconsistent) philosopher (^a24 f.). I don’t think this line ought to be understood as a piece of unqualified praise for Empedocles. The latter may, within the confines of this *aporia*, be praiseworthy because, as Alexander explains, he makes all things that derive from the principles perishable, whereas only the

³⁰ As Madigan points out (101), a similar complaint could be brought against Aristotle’s prime mover.

principles are imperishable.³¹ Still, it is certainly the case that Empedocles is censured for having made some kind of mistake. What is the mistake? That is, what is the enigmatic clause *οὗτος τὰντὸν πέπονθεν* (^a26) referring to?

Two possibilities suggest themselves: the first and in my opinion less plausible one is to suppose that *τὰντὸν* refers back to line 10, in which the mythographers are criticized for adhering only to those tenets that made sense to themselves. Although Aristotle does not count Empedocles among the mythographers in this passage (although one might argue that he could have done), his short coming would be comparable to that of the early theologians. I don't think that a claim such as this would be entirely off the mark, but it seems to me that this is probably not what Aristotle is complaining about. At line ^a18 Aristotle turns his attention to philosophers, i.e. those who use argument and demonstration in their narrative. Empedocles is clearly counted among these; in fact he is singled out as one of the most consistent among them. The *τὰντὸν* then seems to refer to a common mistake the philosophers made: failing to state the reason why some things are eternal, others perishable (^a22 f.).

But, as everyone knows, Empedocles *does* address *precisely* this issue by the introduction of Love and Strife; so perhaps the lengthy excursus on Empedocles is designed to pre-empt just this objection and to show that even though Empedocles displayed a laudable amount of consistency, and even though he enunciated separate principles that operate on perishable being, he still failed *fully* to explain the fact that there should be perishable being alongside imperishable being.

Although this is not the point to discuss Empedocles' theory of cosmic cycles and the modern debate over it, it is relevant to say that Aristotle, here as elsewhere in the corpus,³² seems to subscribe to an interpretation of Empedocles which assumes the successive existence of several different stages of cosmic order. Beginning from a wholly uniform and undifferentiated sphere A (the One or God), a new phase B is initiated when Strife begins to differentiate things out at the circumference of that uniform sphere, working its way inward, as it were. At the sphere's centre, the activity of Strife necessarily comes to a halt and ceases to operate; the cosmos is now fully differentiated and separated out (C). At this point Love, working from the centre outward, begins to unite what had been separated (phase D) until it has driven Strife out all the way to the periphery (E). Phase E would have to be regarded as essentially identical to phase A, only that it has a different history.

³¹ Cf. Alexander's commentary 221,15 ff. with 1000^b18–20.

³² Cf. *De Caelo* III 2, 301^a14–20; *GC* I 1, 315^a4–19; II 6, 334^a1–10. For different accounts of Empedocles' cosmology, see Long 1974, and O'Brien 1995.

Aristotle's complaint about Empedocles in this *aporia* seems to be two pronged. The first complaint is that, viewed in this way, Strife appears to be not only a cause of destruction but in fact also a cause of bringing things forth (Aristotle emphasizes this point twice, cf. lines ^a26–8 and ^b9–11). Likewise, Love turns out *not* to be the benign force of generation that one might suppose it to be, but also, and perhaps rather, a force of destruction (^b11 f.), as it ultimately absorbs all individual things again into a state of entropy. This in and of itself does not seem to be a damaging criticism; Empedocles might well have agreed with Aristotle's interpretation³³ and reiterated that indeed two countervailing forces are necessary to explain the current (if temporary) equilibrium of cosmic differentiation and ongoing change.

One might think that the reason why Aristotle belabours this point so extensively was that he regarded it as inherently unsatisfactory that Empedocles operates with two explanatory principles, both of which are causes of becoming and causes of perishing. But Aristotle never says as much explicitly, and this suggests that the point of the whole argument seems to have been a different one: even if Love and Strife can explain how higher level entities are formed from the elements and dissolved again into them, it still remains unclear why it is that at one point in the cosmic cycle Strife operates, at another Love. This is Aristotle's second complaint. The weak spot in Empedocles' system is in fact not the talk of Love and Strife *per se*, but the fact that the changeover (*μεταβολή*) from one cosmic state to another remains obscure (^b12–17): what Empedocles has to say about this changeover ('But when mighty Strife was nourished in the limbs and came to honours at the end of the time which had been drawn up for them in turn by a broad oath . . .') sounds as if the back and forth between Love and Strife is a matter of necessity—but necessitated by what (^b17)? Ultimately, the cycles of generation and corruption in Empedocles remain unexplained, and *this* amounts to a shortcoming he shares with all other philosophers.

Going back to lines ^a7 f. at the very beginning of the *aporia*, it is tempting to contrast the Hesiod and the Empedocles episodes in the following way: Aristotle opened the discussion of the thesis with a double question: 'For if the principles are the same, how (*πῶς*) is it possible that some things are perishable, others imperishable, and on account of what cause (*διὰ τί* *αἰτίαν*)?' One might say that Hesiod gave us a clear statement of the *διὰ τί* portion of the question, but failed in that it remained incomprehensible how (*πῶς*) this 'ingestion' of principles was supposed to work. Empedocles, although he gave a detailed account of the mode in which (*πῶς*) things come to be and perish under the influences of Love and Strife respectively, failed in that he was unable to say why

³³ In fact, Fr. 31 B 17, 1–13 seems to agree well with it.

(διὰ τῶν) these cycles of change take place. If the two episodes are related in this way, we would have a clear sign of the very careful composition of this *aporia*.

6. *The Antithesis* (1000^b22–1001^a3): *The Principles of Perishable and Imperishable Substances are Different* (^b22) Let so much be said for the view that the principles might not be the same. But if the principles are different, one difficulty is again whether *they* will be imperishable or perishable. For if they are perishable, it is clear that they too necessarily depend on certain principles (for all things perish into that out of which they are constituted), so that it follows that there are other principles prior to those principles, but that is impossible, both if <the regress> stops and if it goes on *ad infinitum*.

(^b28) Moreover, how will there be perishable things if their principles are going to be destroyed? But if the principles are imperishable, why will perishable things derive from *some* imperishable principles but imperishable things from *other* principles? This is not at all reasonable, but rather either impossible or in need of a long argument. Besides, no one has proposed different <kinds of> principles, but they maintain that the principles of all things are the same. Yet the difficulty set out in the beginning they bite off as if they were having it as a snack.

In the second arm of the *aporia* Aristotle discusses, and develops objections to, the alternative thesis that the principles of perishable and imperishable things are different. First of all, one might suppose that the principles of perishable being are different in the sense that they are themselves perishable. This is at first sight attractive because it would readily explain what seems so puzzling to Aristotle and what his predecessors neglected to address, viz. why there are substantial changes in nature.

But as it turns out, the assumption of perishable principles is incoherent. For if the principles are indeed perishable, we have to suppose other principles from which they came to be. Things do not come out of nothing, nor do things vanish without a trace; rather, when things perish, they break up again into those things from which they were originally constituted (^b24–6). Well, let us suppose that perishable principles as the principles of perishable being are themselves constituted by perishable principles. That, Aristotle argues, is impossible. Why? For one thing it is a strange notion to enunciate principles which themselves have principles (^b26 f.). That alone would count against them, as not being principles at all. But this is not the full force of Aristotle's objection. Even if we suppose that there is a chain of principles of perishable being, it is impossible (*ἀδύνατον*) to make sense of this. For the regress cannot come to a halt at some point because then *that* first principle would no longer be a *perishable* principle. And so, the ultimate principle of perishable being would turn out to be imperishable after all. Nor could the causal chain never come to a

halt as that would constitute an infinite regress, and there would be no principle to speak of at all (^b28).

A further objection runs that things on a more complex level of being could not very well sustain existence for any length of time (^b28 f.). What if all perishable principles, gradually or at one point, perished? There would no longer be such a thing as the physical world. Aristotle again ‘jots down’ objection after objection, and we get the sense that he could have gone on to generate further difficulties for the inherently problematic notion that part of the principles of one’s ontology should be perishable items.

If, however, in order to avoid this host of difficulties, one embraces the apparently safer view that the principles are imperishable, positing perhaps that there might be different sorts of them, one is still left with the necessity to explain how perishable being can arise from imperishable principles. This is either *per se* unreasonable, or, and here Aristotle seems to be lifting the veil for a moment, indicating the way in which a solution might be sought, it requires a lot of reasoning. And it does require a lot of reasoning in particular since so far ‘no one’ (this claim is surely too strong) has tried to pursue this route; all philosophers think, Aristotle claims, that the principles of being must ultimately come together in such a way that the proposed ontologies issue in a unified highest level, as in the shape of a pyramid. With a considerable amount of gleeful irony, Aristotle derides them for being entirely unaware of the difficulties they have created for themselves. The jocular remark about Aristotle’s rivals ‘biting off the difficulty as if they were having a snack’ (*μικρόν τι*) may well be an intentional allusion to Hesiod’s absurd view that the gods are eating the ‘principles of eternal being’. For just as the theologians suppose that the swallowing or not swallowing of a substance explains something, so do philosophers other than Aristotle delude themselves in that their swallowing a difficulty and taking it to be a trifle will not help them to solve it.

C. Synopsis

A further question, one that nobody has properly addressed yet: are the principles of perishable and imperishable substances the same or different? If the principles are the same, it is not clear why they should be the causes of fundamentally different modes of being.

Hesiod and other mythographers thought to explain the difference by assuming the presence and absence of a certain principle, viz. imperishable making food. Their view is unintelligible.

All previous philosophers, affirming the uniformity of the principles, underdetermine the difference in ontological status of perishable and imperishable substances.

Empedocles too makes this mistake, even though he assumes, over and above the imperishable four elementary bodies, a further pair of principles to explain substantial change, viz. Love and Strife.

It seems, then, that the principles of perishable and imperishable substances ought to be regarded as different. However, if they are different, it will be impossible to suppose on the one hand that the principles of perishable things are themselves perishable. If, on the other hand, the principles of perishable things are imperishable, just as the principles of imperishable things, then the ontological difference between perishable and imperishable substances, again, will be underdetermined. Either this last view is impossible, or it has not yet been thought through properly.³⁴

³⁴ I would like to express my sincere thanks to the two anonymous readers for having read this piece so carefully and saved me from numerous infelicities.

Aporia II

WALTER CAVINI

1. Stating the *Aporia* (1001^a4–8)

II.1 (a) Πάντων δὲ καὶ θεωρῆσαι χαλεπώτατον καὶ πρὸς τὸ γνῶναι τάληθές ἀναγκαιότατον (b) πότερόν ποτε τὸ ὄν καὶ τὸ ἐν οὐσίαι τῶν ὄντων εἰσί, καὶ (c) ἐκότερον αὐτῶν οὐχ ἕτερόν τι ὄν τὸ μὲν ἐν τὸ δὲ ὄν ἐστιν, ἢ (d) δεῖ ζητεῖν τί ποτ' ἐστὶ τὸ ὄν καὶ τὸ ἐν ὡς ὑποκειμένης ἄλλης φύσεως.

(a) Most difficult of all even to study, and most necessary for knowledge of the truth, is whether (b) being and one are really the substances of beings (and (c) it is not by being something different that they are one and being respectively),¹ or whether (d) it is necessary to inquire what being and one really are, on the supposition that another nature underlies them as subject.²

This is indeed the most difficult *aporia* to solve, and yet its solution is the most necessary for the knowledge of truth: we find here the same description as in *aporia* 8 (πασῶν χαλεπωτάτη καὶ ἀναγκαιοτάτη θεωρήσαι) with two superlatives ('most difficult and most necessary').³ Scholars are divided on the superlative importance of the *aporia*. In Thomas Aquinas' view, for example, it is the most difficult *aporia* to consider 'propter efficaciam rationum ad utramque partem', and its solution is the most necessary if one is to reach knowledge of truth 'quia ex hoc dependet iudicium de substantiis rerum'; but he gives a different explanation for the 'superlative' difficulty of *aporia* 8. For Bonitz, the difficulty comes down to the fact that these notions are the most universal and the furthest from perception, and the necessity or 'seriousness' to the fact that this issue divides the whole of Greek metaphysics (i.e. the

¹ The inversion is not significant. *Contra* Couloubaritis 1983, 51: 'chacun d'eux n'est pas autre chose que l'autre d'entre eux'. Same inversion at 1001^a12.

² I henceforth adopt as standard translation of *Metaphysics B* Madigan 1999 (sometimes slightly modified).

³ *Metaph. B* 4, 999^a24–5. For the two superlatives, see also *Pol. VI* 8, 1321^b40–1. The *aporia*'s superlative difficulty is already emphasized at *B* 1, 996^a4–5.

physicists on the one hand, Plato and the Pythagoreans on the other) and deals with the very principles of primary philosophy. But he keeps silent on its relation to the superlatives of *aporia* 8, which he does not argue out.

In my view, the ‘historical’ importance of this *aporia* must be underlined: it is precisely the breaking point between the ‘physiologists’ and the Pythagoreans, as mentioned at *A* 5, 987^a13–19, which is used again and now applied to Plato. Indeed,

the Pythagoreans, while they likewise spoke of two principles [sc. Material and efficient cause], made this further addition, which is peculiar to them (τοσοῦτον δὲ προσεπέθεσαν ὃ καὶ ἰδίον ἐστὶν αὐτῶν): they believed, not that the limited and the unlimited are certain different natures (οὐχ ἑτέρας τινας . . . φύσεις), like fire or water or some other such thing, but that the unlimited itself and the one itself are the substance of those things of which they are predicated (οὐσίαν εἶναι τούτων ὧν κατηγοροῦνται), and hence that number is the substance of all things (τὴν οὐσίαν πάντων). (*A* 5, 987^a13–19)

For Plato, cf. *A* 6, 987^b22–4, where there is the same technical expression as in *aporia* 11: ‘But in saying that the one is substance and is called one *not by being something different*, <Plato> spoke like the Pythagoreans’ (τὸ μέντοι γε ἐν οὐσίαν εἶναι, καὶ μὴ ἑτερόν γέ τι ὃν λέγεσθαι ἐν, παραπλησίως τοῖς Πυθαγορείοις ἔλεγε). Such is the breaking point of Greek metaphysics that *aporia* 11 underlines and takes up in a superlative way, and the emphasis on it can be paralleled by the ‘Gigantomachy’ about *ousia* in Plato’s *Sophist* (246a4–5).⁴

The new point about the One introduced by the Pythagoreans and applied to being and to Plato is precisely what becomes the thesis of the *aporia* and the first horn of the dilemma. As in *A* 6, 987^b22–4, with regard to the one, the thesis is given by the conjunction of (b) ‘being and one are really the substances of beings’ and (c) ‘it is not by being something different that they are one and being respectively’.⁵ In the first statement of the thesis at *B* 1 (996^a7), there is rather an adversative clause, and its components are in reverse order: οὐχ ἑτερόν τί ἐστὶν ἀλλ’ οὐσία τῶν ὄντων; the technical phrase οὐχ ἑτερόν τι is made simpler, and we read the singular οὐσία τῶν ὄντων instead of the plural οὐσίαι τῶν ὄντων.⁶ We must also note that in *A* 6 Aristotle does not mention οὐσία τῶν ὄντων but only οὐσία: the one is *ousia*, and it is said to be one without being anything different. But how are we to understand the conjunction in both cases, concerning the one (*A* 6), and concerning being and the one (*B* 4)?

⁴ ‘But how are we to interpret this *aporia* that Aristotle characterizes as “the greatest impasse” (πλείστη ἀπορία)? I suggest that it is connected with the leading problem that faces his own projected science of first philosophy; i.e. what are the substances of things’ (Cleary 1995, 212).

⁵ I cannot understand why Madigan puts (c) in brackets in his translation.

⁶ As in 1001^a20.

I suggest it fulfils an explanatory function: **(c)** is the explanation of **(b)** (**(b)**, i.e. **(c)**). Such a conclusion can be reached if we focus on the meaning of **(c)**, and in particular on the meaning of the circumstantial participle *οὐχ ἑτερόν τι ὄν*.⁷ Aristotle provides us with the explanation of it in *APo.* I 4, 73^b5–10, with regard to the second meaning of ‘in itself’ (*τὸ καθ’ αὐτό*): *ἔτι δὲ μὴ καθ’ ὑποκειμένου λέγεται ἄλλου τινός, οἷον τὸ βαδίζον ἑτερόν τι ὄν βαδίζον ἐστὶ καὶ τὸ λευκὸν λευκόν, ἢ δ’ οὐσία, καὶ ὅσα τὸδε τι σημαίνει, οὐχ ἑτερόν τι ὄντα ἐστὶν ὅπερ ἐστίν. τὰ μὲν δὲ μὴ καθ’ ὑποκειμένου καθ’ αὐτὰ λέγω, τὰ δὲ καθ’ ὑποκειμένου συμβεβηκότα*.⁸

In itself is what is not said of another subject: e.g., what is walking is walking while being something else (a man who is walking), what is white is white while being something else (a white surface, some white wood), whereas substance and everything meaning a *tode ti* are precisely what they are without being anything else. The negative condition *οὐχ ἑτερόν τι ὄντα* gives the definition of what is in itself, i.e. of the substance.

Therefore, to come back to our text, if being and one are respectively being and one without being anything else (*οὐχ ἑτερόν τι ὄν*), then they are in themselves, i.e. they are substances, and the alternatives of the *aporia* consist, to put it in Aristotelian terms, in being either substances or accidents of substance.

But one could object that clause **(c)** says only that being and one are *substances*, whereas clause **(b)** says that they are substances *of beings*.⁹ Likewise, in the first statement of the thesis in *B* 1: they are not something different (they are not accidents of substance), but substance (in the singular) *of beings*. On

⁷ In his paper (p. 220 n. 15), Stephen Menn understands the negation *οὐχ* as not applying to the participle but to ‘the conjunction of the participial phrase and the following main clause’, and hence, according to him, the translation of **(c)** should be: ‘each of them is not, being something different, one and being respectively’ (see, for example, his translation of *APo.* I 4, 73^b7–8: ‘but substance, and whatever signifies this, are not, being something else, what they are’). This construction can be attested in Greek (Menn finds an example in Antiphon), even if Moorhouse 1959 in his book on the Greek negatives does not mention it (on the contrary ‘if the negative is second, the verb *must* follow immediately’, p. 92). But in Aristotle’s case, the negation normally applies rather to the participle, as attested by usage; see for example *Ph.* I 4, 188^a7–9: *εἰ οὖν μέμικται τὰ χρώματα καὶ αἱ εἴξεις, ἐὰν διακριθῶσιν, ἔσται τι λευκὸν καὶ ὑγιεινὸν οὐχ ἑτερόν τι ὄν οὐδὲ καθ’ ὑποκειμένου* (‘If colours and states are mixed together, then if they get separated out, we shall have a pale or a healthy *which is nothing else*, which is not even *of* an underlying thing’ [Charlton’s translation]); and many similar phrases: *APo.* I 22, 83^a13–14: *οὐχ ἑτερόν τι ὄν ἢ ὅπερ ξύλον ἢ ξύλον τι*; 83^a31–2: *καὶ μὴ εἶναι τι λευκὸν δὲ οὐχ ἑτερόν τι ὄν λευκὸν ἐστίν*; 83^b22–3: *οὐδὲν γὰρ τῶν τοιούτων τιθεμεν εἶναι δὲ οὐχ ἑτερόν τι ὄν λέγεται δὲ λέγεται*; *Metaph.* N 1, 1088^a27–9: *οὐδὲν γὰρ ἐστίν οὔτε μέγα οὔτε μικρόν, οὔτε πολλὸν οὔτε ὀλίγον, οὔτε ὅλως πρὸς τι, δὲ οὐχ ἑτερόν τι ὄν πολλὸν ἢ ὀλίγον ἢ μέγα ἢ μικρόν ἢ πρὸς τί ἐστιν*; *H* 1, 1042^a27–8: *ὕλην δὲ λέγω ἢ μὴ τὸδε τι οὐσα ἐνεργείᾳ δυνάμει ἐστὶ τὸδε τι*. The same in Greek commentators: Ascl. *In Metaph.*, 201, 4–5 H.: *οἱ τοίνυν Πυθαγόρειοι καὶ ὁ Πλάτων αὐτὸ ἐλεγον εἶναι τὸ ὄν καὶ αὐτοῦ καὶ οὐχ ἑτερόν τι ὄν* (cf. also 203, 20, 29 H.). See below, II.3.

⁸ Cf. *Metaph.* Z 1, 1028^a20–8, and the passage in *N* 1 (1087^a31–6) pointed out by Menn in his essay (below p. 219).

⁹ ‘Or perhaps “essences”’, as Madigan suggests in his translation of the commentary by Alexander of Aphrodisias (Dooley and Madigan 1992, 174 n. 385). And in his commentary *ad* 1001^a4–6: ‘whether being and one are the *ousiai*, substances or *essences*, of beings’ (1999, 108) (italics mine).

the contrary, in the explicit restatement of the *aporia* about the one at I 2, 1053^b 9–16, the alternatives are just being a certain substance or an accident of a certain substance. One might think that the ambiguous expression *οὐσίαι τῶν ὄντων* means at the same time that being and one are separate substances and essences common to all beings, according to the Platonic conception of Ideas as separate substances existing outside the things of which they are the essences.¹⁰ But if we go back to the passage of book *A* mentioned above, where Aristotle characterizes what is ‘peculiar’ (*ἴδιον*)¹¹ to the Pythagoreans, we can see both aspects (substance and substance of beings) already combined with regard to the unlimited and the one: not being another nature, i.e. being by itself or substance (cf. *A* 6, 987^b 22–3), and, at the same time, being the substance of all things:

the Pythagoreans, while they likewise spoke of two principles, made this further addition, which is peculiar to them (*τοσοῦτον δὲ προσεπέθεσαν ὃ καὶ ἴδιόν ἐστιν αὐτῶν*): they believed, not that the limited and the unlimited are certain different natures (*οὐχ ἑτέρας τινας . . . φύσεις*), like fire or water or some other such thing, but that the unlimited itself and the one itself are the substance of those things of which they are predicated (*οὐσίαν εἶναι τούτων ὧν κατηγοροῦνται*), and hence that number is the substance of all things (*τὴν οὐσίαν πάντων*). (*A* 5, 987^a 13–19)

And that means, as Aristotle explains at *A* 6, 987^b 11–12, that, according to the Pythagoreans, ‘things exist by imitation of numbers’ (*μιμήσει τὰ ὄντα φασὶν εἶναι τῶν ἀριθμῶν*), as they do, according to Plato, by participation in Ideas.

2. *Aporia*: The Opinions (1001^a 8–19)

II.2 οἱ μὲν γὰρ ἐκείνως οἱ δ’ οὕτως οἴονται τὴν φύσιν ἔχειν.

For some think that nature is the former way, others the latter.

II.3 (a) Πλάτων μὲν γὰρ καὶ οἱ Πυθαγόρειοι οὐχ ἑτερόν τι τὸ ὄν οὐδὲ τὸ ἐν ἀλλὰ τοῦτο αὐτῶν τὴν φύσιν εἶναι, (b) ὥς οὐσης τῆς οὐσίας αὐτοῦ τοῦ ἐν εἶναι καὶ ὄντι.¹² (c) οἱ δὲ περὶ φύσεως, (d) οἶον Ἐμπεδοκλῆς ὥς εἰς γνωριμώτερον ἀνάγων

¹⁰ Berti 1979, 91 2. Cf. Couloubaritis 1983, 51: ‘si l’étant et l’un sont les essences ou, plus exactement, les étances des étants (*οὐσίαι τῶν ὄντων*)’. The phrase *οὐσίαι τῶν ὄντων* can be read also in *aporia* 12 (*B* 5, 1002^a 28), but in a very different context: διαφεύγει τί τὸ ὄν καὶ τίς ἡ οὐσία τῶν ὄντων, to be compared rather with the celebrated τί τὸ ὄν, τοῦτό ἐστι τίς ἡ οὐσία at *Z* 1, 1028^b 4 (see also *GA* II 1, 731^b 34).

¹¹ For a similar use of *ἴδιον* in *Metaphysics A*, see also *A* 3, 984^b 1 (the Eleatics); 6, 987^a 31, ^b 27 (Plato).

¹² *αὐτοῦ τοῦ ἐν εἶναι καὶ ὄντι*: this is Christ’s text, following the emendation suggested by Bonitz 1849, 163, who however made it only tentatively: ‘quamquam ne eam quidem scripturam prorsus sufficere libenter confiteor’. Ross 1970 (1924), 244, agrees to this correction (unconditionally: ‘certainly right’), and Jaeger too.

λέγει ὅ τι τὸ ἔν ἐστιν' **(e)** δόξειε γὰρ ἂν λέγειν τι τοιοῦτο¹³ τὴν φιλίαν εἶναι (αἰτία γοῦν ἐστὶν αὕτη τοῦ ἐν εἶναι πᾶσιν), **(f)** ἕτεροι δὲ πῦρ, οἱ δ' ἀέρα φασὶν εἶναι τὸ ἐν τοῦτο καὶ τὸ ὄν, ἐξ οὗ τὰ ὄντα εἶναί τε καὶ γεγενέσθαι.

(a) Plato and the Pythagoreans think that neither being nor one is something different, but that this is what their nature is, **(b)** supposing that its substance is to be one and being. **(c)** But the natural philosophers <hold the latter view>. **(d)** Empedocles, for instance, in so far as he reduces the one to something more familiar, says what it is, **(e)** for he would seem to say that it is friendship; this at any rate is the cause, for all things, of their being one. **(f)** Others say that this one and being is fire, while others say that it is air, from which they say beings are and come to be.

II.4 ὥς δ' αὐτως καὶ οἱ πλείω τὰ στοιχεῖα τιθέμενοι ἀνάγκη γὰρ καὶ τούτοις τοσαῦτα λέγειν τὸ ἐν καὶ τὸ ὄν ὅσας περ ἀρχὰς εἶναί φασιν.

In the same way too, those who posit a plurality of elements—for they too necessarily say that one and being are as many as the principles that they say exist.

Once Aristotle has stated the *aporia*, he gives us the opinions *in utramque partem*: Plato and the Pythagoreans on the one hand, the monist and dualist natural philosophers on the other. This *aporia* is therefore the expression of a conflict between philosophers (ὅσα τε περὶ αὐτῶν ἄλλως ὑπειλήφασί τινες [B 1, 995^a25–6]),¹⁴ contrary to *aporia* 8, the other superlative *aporia* (πασῶν χαλεπωτάτη καὶ ἀναγκαιοτάτη θεωρῆσαι), that does not explicitly refer to any conflict (Aristotle does not mention his predecessors and the thinkers of his time), and contrary to *aporia* 10 too (οὐθενὸς δ' ἐλάττων) 'which has been overlooked by thinkers of the present time and by their predecessors as well' (even if Hesiod and Empedocles are mentioned).¹⁵ For Aristotle, *aporia* 11 divides the whole Greek metaphysical tradition.

The opinion of Plato and of the Pythagoreans corresponds of course to the first alternative, that is to the *thesis* of the *aporia*, previously stated. But its restatement here is quite different in some aspects: 'neither being nor one is something different (οὐχ ἕτερόν τι), but [...] *this* is what their nature is', which is not far from clause **(c)** in **II.1** (καὶ ἐκάτερον αὐτῶν οὐχ ἕτερόν τι ὄν τὸ μὲν ἐν τὸ δὲ ὄν ἐστιν): it is not by being something different (another underlying nature) that they are one and being respectively (nor by being, like Empedocles' Friendship, the cause of being one); 'but... *this* is what their

¹³ I follow Jaeger's emendation.

¹⁴ As long as ἄλλως is to be understood as ἄλλοι ἄλλως and not as 'differently <from the doctrine we want to suggest>': cf. Alex. Aphr. *In Metaph.*, 172, 4 6 H. and Colle 1922, 198. As for the notion of 'underdetermined' or 'overdetermined' dialectical problem, i.e. on which 'people hold no opinion either way' or hold contrary opinions, cf. *Top.* I 11, 104^b3 5, and Cavini 1989, 22.

¹⁵ Cf. B 1, 995^a26 7 (κἂν εἴ τι χωρὶς τούτων τυγχάνει παρεωραμένον).

nature is', i.e. being not accidents of a substance, but being substances themselves, in so far as they are being and one. But clause **(b)** of **II.I**: 'being and one are really the substances of beings' is not repeated; we find instead a genitive absolute preceded by a subjective *ὡς*, but the text is debated and its meaning remains unclear. Bekker, according to most manuscripts, had given the following text: *ὡς οὐσης τῆς οὐσίας αὐτὸ τὸ εἶναι καὶ ὄν τι*. But Bonitz (1849, 163) found it difficult to accept for two reasons, of grammar and of content: (1) of grammar, for the accusative could not be taken with a genitive absolute (this is true in general, at least in literary prose, but Alexander [*In Metaph.*, 224, 2–3 H.] and Asclepius [*In Metaph.*, 204, 6 H.], for instance, do not reject it);¹⁶ (2) of content, for the being debated here is not some being (*ὄν τι*), but being itself, the substance of beings.¹⁷ That is why Bonitz suggested the following correction: *ὡς οὐσης τῆς οὐσίας αὐτοῦ τοῦ ἐν εἶναι καὶ ὄν τι*, and, in spite of Bonitz's reservations ('quamquam ne eam quidem scripturam prorsus sufficere libenter confiteor'), his correction was agreed by Christ, Ross (unconditionally: 'certainly right' [1970 [1924], 244]) and Jaeger. The text with this correction has been understood by all scholars as if the essence (Ross 1928) or the substance (Barnes 1984)¹⁸ of the one and of the being were the being or the essence of the one and of the being (*αὐτοῦ τοῦ ἐν εἶναι καὶ ὄντι*),¹⁹ which in my view sounds plainly tautological. As a tentative conclusion, I would like to suggest another interpretation, that of Thomas Aquinas, which has at least the merit of not being tautological and of restoring the identity of the thesis in both its 'theoretical' statement and its 'historical' restatement. According to Aquinas, the *οὐσία* in question in the clause in the genitive absolute is not the essence or the substance of the one and the being, but the substance of *beings*: 'Plato enim et Pythagorici non posuerunt quod unum et ens advenirent alicui naturae, sed unum et ens essent natura rerum, quasi hoc ipsum quod est esse et unitas sit substantia rerum' (§ 489 Cathala/Spiazzi, my emphasis).²⁰ It means that for Plato and the Pythagoreans being and the one are not accidents, but it is their nature to be substances, as if *the* substance, that is the substance of *beings*, were (if we want to

¹⁶ See also the use of the accusative of quotation or 'lemmatized neuter' taken with a genitive absolute in the Greek lexicographers (I thank Simonetta Nannini for this remark).

¹⁷ See also Schwegler 1847, 140 1.

¹⁸ Likewise Colle 1922, 270 1, Tredennick 1933, Tricot 1953, Apostle 1966, Reale 1968, Russo 1973, Viano 1974, Madigan 1999, Szlezák 2003, Reale 2004. But Colle, Tricot, and Reale adopt the emendation suggested by Bonitz and read *τοῦ ἐν εἶναι καὶ ὄντι*; on the contrary, Tredennick, Apostle, Russo, Viano, Madigan, and Szlezák translate as if the text were *τοῦ ἐν εἶναι καὶ ὄν* (even if Madigan says (1999, 162) he is adopting Ross's and Jaeger's text).

¹⁹ See also Alex. Aphr. *In Metaph.*, 225, 7 8: *καὶ οὐσίας αὐτὰ λέγειν καὶ τὸ εἶναι αὐτοῖς εἶναι ἐν τῷ ἐν εἶναι καὶ ὄντι*.

²⁰ *Contra Averroes*: 'comme si leur substance était d'être une et être' (cf. Bauloye 2002, 272).

follow Bonitz's correction) the being itself (or the essence) of being and the one. But actually I can see no reason at all for the essence of being and the essence of the one (τοῦ ἐνὶ εἶναι καὶ ὄντι) intruding into the thesis of the *aporia* we are discussing.²¹ In my view, the following reading would sound more natural and less tautological: 'as if *the* substance <of beings> were just to be one and being' (ὡς οὐσης τῆς οὐσίας αὐτοῦ τοῦ ἐν εἶναι καὶ ὄν), by deleting the final *τι* (against, as a matter of fact, all the direct and indirect tradition).

3. *Diaporia*: The Thesis (1001^a19–29)

11.5 (a) συμβαίνει δέ, εἰ μὲν τις μὴ θήσεται εἶναί τινα οὐσίαν τὸ ἐν καὶ τὸ ὄν, μηδὲ τῶν ἄλλων εἶναι τῶν καθόλου μηθέν (b)(ταῦτα γὰρ ἔστι καθόλου μάλιστα πάντων, εἰ δὲ μὴ ἔστι τι ἐν αὐτὸ μηδ' αὐτὸ ὄν, σχολῇ τῶν γε ἄλλων τι ἂν εἴη παρὰ τὰ λεγόμενα καθ' ἑκαστα), (c) ἔτι δὲ μὴ ὄντος τοῦ ἐνὸς οὐσίας, δῆλον ὅτι οὐδ' ἂν ἀριθμὸς εἴη ὡς κεχωρισμένη τις φύσις τῶν ὄντων (d)(ὁ μὲν γὰρ ἀριθμὸς μονάδες, ἡ δὲ μονὰς ὅπερ ἐν τί ἐστιν)· (e) εἰ δ' ἔστι τι αὐτὸ ἐν καὶ ὄν, ἀναγκαῖον οὐσίαν αὐτῶν εἶναι τὸ ἐν καὶ τὸ ὄν (f) οὐ γὰρ ἕτερόν τι καθόλου²² κατηγορεῖται ἀλλὰ ταῦτα αὐτά.

(a) But the consequence, if one does not posit that one and being are a substance, is that none of the other universals exists either, (b) for they are the most universal of all. And if there is not some one itself and being itself, there would hardly exist any other <universals> alongside the so called particulars. (c) Further, if one is not a substance, clearly neither would number exist as a separated nature among beings. (d) For a number is <a collection of> units, while a unit is precisely a kind of one. (e) But if there exists some one itself and being, then one and being are necessarily their substance. (f) For nothing different is predicated <of them> universally, but rather they themselves.

This is a *reductio ad absurdum* in an *ad hominem* argument, in order to support the thesis that one and being are substances, or, to put it in Platonic words,²³

²¹ According to Aristotle, the Pythagoreans were the first to talk about essence and definition, even if in a superficial and wrong way: 'regarding the question of essence (περὶ τοῦ τί ἐστιν) they began to make statements and definitions, but treated the matter too simply. For they both defined superficially and thought that the first subject of which a given term would be predicable was the substance of the thing (τὴν οὐσίαν τοῦ πράγματος), as if one supposed that double and 2 were the same, because 2 is the first thing of which double is predicable. But surely to be double and to be 2 (τὸ εἶναι διπλασίω καὶ δυνάδι) are not the same; if they are, one thing will be many' (*Metaph. A* 5, 987^a20–7 [Ross's translation]).

²² καθ' οὗ Bonitz, Jaeger, and among interpretations Colle 1922, Reale 1968 and 2004, and Szlezák 2003. *Contra* Bekker, Christ, Ross, and among interpretations the Greek commentators, Averroes, Thomas, Robin 1908, Tredennick 1933, Tricot 1953, Apostle 1966, Viano 1974, Berti 1979, 92 n. 9, and Barnes 1984.

²³ *Metaph. Z* 16, 1040^b33 4: προστιθέντες τοῖς αἰσθητοῖς τὸ ῥῆμα τὸ 'αὐτὸ' (even if one and being are not 'sensible things').

that there is a certain one itself ($\alpha\upsilon\tau\acute{o}\ \epsilon\acute{\iota}\nu$) and a certain being itself ($\alpha\upsilon\tau\acute{o}\ \delta\acute{\upsilon}\nu$). Two arguments are clearly detectable. The first one is an *a fortiori* argument, presupposing that one and being are the most universal things, as stated previously in debating *aporia* 7 (*B* 3, 998^b21):²⁴ if one and being are the most universal things, then, if they are not substances (if there is not a certain one in itself nor a certain being in itself), even less ($\sigma\chi\omicron\lambda\eta$) the other universals will be substances or there could be other universals *in themselves* alongside the particulars.²⁵ This is of course absurd when seen from a Platonic point of view. The second argument ($\epsilon\acute{\iota}\tau\iota\ \delta\acute{\epsilon}$) does not deal with universals but with numbers and presupposes the thesis that one is the principle and the element of numbers, for numbers are made of combinations (or pluralities) of units,²⁶ and the unit is a certain kind of one;²⁷ therefore, if one is not substance, the unit and number cannot be substances either: ‘clearly neither would number exist as a separated nature among beings’ ($\omicron\upsilon\delta\prime\ \alpha\acute{\iota}\nu\ \alpha\rho\iota\theta\mu\omicron\varsigma\ \epsilon\acute{\iota}\eta\ \acute{\omega}\varsigma\ \kappa\epsilon\chi\omega\rho\iota\sigma\mu\acute{\epsilon}\nu\eta\ \tau\iota\varsigma\ \phi\acute{\upsilon}\sigma\iota\varsigma\ \tau\acute{\omega}\nu\ \delta\acute{\nu}\tau\omega\nu$).²⁸ And this conclusion, as pointed out by Alexander (*In Metaph.*, 225, 1–3 H.), will be seen as an absurd one by those who consider number as a separate substance belonging to the intermediate substances, even if such a conclusion is not absurd at all for Aristotle.

The final clauses **(e)**–**(f)** raise at least two problems: (1) their relation with the two above mentioned reductions to absurdity; and (2) the correction of $\kappa\alpha\theta\acute{o}\lambda\omicron\upsilon$ into $\kappa\alpha\ \omicron\upsilon\delta$ at 1001^a28 suggested by Bonitz (1849, 164) and accepted by Jaeger. As to the question of the argumentative relation, Alexander (*In Metaph.*, 225, 4–32 H.) takes this passage as the beginning of the antithesis rather than the end of the thesis,²⁹ whereas Asclepius (*In Metaph.*, 205, 4–10 H.) and Thomas Aquinas (§ 492 Cathala/Spiazzi) take it as a consequence of the arguments supporting the thesis. But for Asclepius, the consequence is not so clear ($\epsilon\acute{\iota}\ \tau\omicron\iota\omicron\nu\nu\ \acute{\epsilon}\sigma\tau\acute{\iota}\ \tau\iota\ \alpha\upsilon\tau\acute{o}\ \acute{\epsilon}\nu\ \kappa\alpha\acute{\iota}\ <\ \delta\acute{\nu}\ >, \ \acute{\alpha}\nu\acute{\alpha}\gamma\kappa\eta\ \pi\acute{\alpha}\sigma\alpha\ \omicron\upsilon\delta\acute{\iota}\alpha\nu\ \alpha\upsilon\tau\acute{\omega}\nu\ \acute{\epsilon}\acute{\iota}\nu\alpha\iota\ \tau\acute{o}\ \delta\acute{\nu}\ \kappa\alpha\acute{\iota}\ \tau\acute{o}\ \acute{\epsilon}\nu$); and for Thomas it is completely wrong (*‘Si ergo detur alia pars divisionis,*

²⁴ The Stoics will contest the argument, considering the *something* ($\tau\acute{o}\ \tau\iota$) the highest genus (cf. Brunschwig 1988).

²⁵ I follow Ross and Jaeger *contra* Bekker, Christ, Colle 1992, Barnes 1984, and Madigan 1999, considering $\tau\acute{\alpha}\upsilon\tau\alpha\ \gamma\acute{\alpha}\rho\ \acute{\epsilon}\sigma\tau\iota\ \kappa\alpha\theta\acute{o}\lambda\omicron\upsilon\ \mu\acute{\alpha}\lambda\iota\sigma\tau\alpha\ \pi\acute{\alpha}\nu\tau\omega\nu$ as the beginning of **(b)** rather than the end of **(a)**, and clauses **(a)** **(b)** as stating a single argument, where **(b)** is a variation on this argument and an explanation of the consequences of **(a)** in Platonic words. Cf. Aquinas’s commentary *ad loc.* (§ 490 Cathala/Spiazzi).

²⁶ $\sigma\acute{\upsilon}\nu\theta\epsilon\sigma\iota\varsigma\ \mu\omicron\nu\acute{\alpha}\delta\omega\nu$ *Z* 13, 1039^a12–13 (Frede/Patzig 1988, II, 202); $\pi\lambda\acute{\eta}\theta\omicron\varsigma\ \mu\omicron\nu\acute{\alpha}\delta\omega\nu$ *I* 1, 1053^a30.

²⁷ ‘So here the unit is identical with one kind of one, presumably that kind which is not thought of as having part but as perfectly simple’ (Ross 1970 (1924), I, 244); for the distinction between $\delta\pi\epsilon\rho\ \acute{\epsilon}\kappa\epsilon\acute{\iota}\nu\omicron$ and $\delta\pi\epsilon\rho\ \acute{\epsilon}\kappa\epsilon\acute{\iota}\nu\omicron\ \tau\iota$, Ross refers to *APo.* I 22, 83^a24–5.

²⁸ $\tau\acute{\omega}\nu\ \delta\acute{\nu}\tau\omega\nu$ is a genitive of separation governed by $\kappa\epsilon\chi\omega\rho\iota\sigma\mu\acute{\epsilon}\nu\eta$, and not a partitive genitive, as Madigan implies (1999, 162): *beings* are things whose substance is made of one and being (1001^a6); no need to translate ‘the individual things’ like Ross and Barnes 1984. For $\tau\acute{\omega}\nu\ \delta\acute{\nu}\tau\omega\nu$ as a partitive genitive, cf. 1001^b9; for $\tau\acute{\alpha}\ \delta\acute{\nu}\tau\alpha$ in general ($\acute{\alpha}\pi\alpha\nu\tau\alpha\ \tau\acute{\alpha}\ \delta\acute{\nu}\tau\alpha$), cf. 1001^a31 and 33.

²⁹ Apparently Averroes too (Bauioye 2002, 275).

scilicet quod aliquid sit ipsum unum et ens separatum existens, necesse est quod ipsum sit substantia omnium eorum, de quibus dicitur unum et ens'). Among modern scholars, Léon Robin (1908, 517–18 n. 2) suggests, like Alexander, that the passage is not the end of the thesis but the beginning of the antithesis. But, as Gaston Colle rightly objects (1922, 273), the words ἀλλὰ μὲν (1001^a29) clearly mark the beginning of the antithesis (Ross and Jaeger put even a dash before them). In particular, 'Robin [as well as Alexander, we may add] n'explique nullement comment l'argument, tel qu'il l'entend (s'il y a un Un en soi et un Etre en soi, ils n'ont d'autre substance qu'eux mêmes), servirait à démontrer que l'Un et l'Etre ne sont pas des substances'. Madigan (1999, 111–12) seems to follow Alexander's and Robin's suggestion (even if he does not quote them), for he considers this passage as preparing the first argument in support of the antithesis, i.e. the argument of monism in its Parmenidean version: 'if one is all that one is, then one is the substance of one . . . if being is all that being is, then being is the substance of being'.³⁰ But the first argument supporting the antithesis, as we shall see, actually lies on the Parmenidean thesis that what is different from being is not at all, and has nothing to do with the 'substance' of being and one. As to Colle, he suggests that clause (c) (the second reduction to absurdity, the one dealing with numbers [or the third one, in his division of the text]) should be transferred at the end of the thesis, after clause (f), and that clauses (e)–(f) should be related to the first argument (or to the first two arguments in his division), the one dealing with universals and one and being themselves. Now, it is true that clauses (e) and (f) deal with the one in itself and being in itself, and are directly related to clause (b) in that respect; but it is also clear that, according to Aristotle, 'being in itself' and 'being a substance' mean the same here (see for instance 1001^b1–2: ἄν τε γὰρ μὴ ᾗ τὸ ἐν οὐσία ἄν τε ᾗ τι αὐτὸ ἐν). Thus we do not need to suppose, like Colle, that the text has been displaced, but we can consider (e)–(f) the conclusion of the discussion of the thesis that one and being are substances, i.e. that there are a one in itself and a being in itself.

We still have to examine Bonitz's correction and the meaning of this conclusion. According to the text of all manuscripts and the standard interpretation,³¹ the qualification Aristotle added in this passage would mean that if there is a one itself and a being itself, then necessarily their substances or essences will be

³⁰ Madigan 1999, 111–12, cf. 113: 'if the substance of one itself is to be one, then one is the only one, and if the substance of being itself is to be being, then being itself is the only being'. Likewise, at least to judge by their translations, Apostle 1966 and Viano 1974.

³¹ At least among modern scholars: cf. Christ 1895, Robin 1908, Ross 1970 (1924), Tricot 1953, Apostle 1966, Russo 1973, Viano 1974, Berti 1979, 92 n. 9, Barnes 1984. Alexander, on the contrary, gives four different interpretations, only the last of which (225, 29–32 H.) is common to moderns (cf. also Syrian. 46.10–16 K.); but we must recall that he considers this passage rather as the beginning of the antithesis.

one and being respectively,³² for, as they are the most universal things (cf. 1001^a21–2 and *aporia* 7, 998^b20–1), nothing more universal could be predicated of them. If, on the contrary, we accept Bonitz's correction καὶ οὐδ',³³ we should say that if there is a one itself and a being itself, then their substances will necessarily be one and being respectively, for one and being are not accidents but substances (as in the first statement of the thesis: καὶ ἐκάτερον αὐτῶν οὐχ ἕτερόν τι ὄν τὸ μὲν ἐν τὸ δὲ ὄν ἐστιν). But this seems to be 'merely tautological', as rightly pointed out by Robin (1908, 517–18, n. 2), for by saying 'if there is some one itself and being itself' one has already assumed that they are substances.

4. *Diaporia*: The Antithesis (1001^a29–^b16)

II.6 —ἀλλὰ μὴν εἴ γ' ἔσται τι αὐτὸ ὄν καὶ αὐτὸ ἐν, πολλὴ ἀπορία πῶς ἔσται τι παρὰ ταῦτα ἕτερον, λέγω δὲ πῶς ἔσται πλείω ἐνὸς τὰ ὄντα.

But on the other hand, if there is to be some being itself and one itself, there is much *aporia* about how anything different will exist alongside them: I mean, how beings will be more than one.

II.7 τὸ γὰρ ἕτερον τοῦ ὄντος οὐκ ἔστιν, ὥστε κατὰ τὸν Παρμενίδου συμβαίνειν ἀνάγκη λόγον ἐν ἅπαντα εἶναι τὰ ὄντα καὶ τοῦτο εἶναι τὸ ὄν.

For that which is different from being is not. So, in line with the argument of Parmenides, the necessary consequence is that all beings are one and that this is being.

II.8 ἀμφοτέρως δὲ δύσκολον· ἂν τε γὰρ μὴ ᾖ τὸ ἐν οὐσία ἂν τε ᾖ τι³⁴ αὐτὸ ἐν, ἀδύνατον τὸν ἀριθμὸν οὐσίαν εἶναι.

But either way it is difficult. For if the one is not a substance, and if there is a one itself, it is impossible for number to be a substance.

II.9 ἐὰν μὲν οὖν μὴ ᾖ, εἴρηται πρότερον δι' ὅ· ἐὰν δὲ ᾖ, ἡ αὐτὴ ἀπορία καὶ περὶ τοῦ ὄντος.

If the one is not a substance, the reason has been stated previously. But if the one is a substance, it is the same *aporia* as with being.

II.10 ἐκ τίνος γὰρ παρὰ τὸ ἐν ἔσται αὐτὸ ἄλλο ἐν . . . ἀνάγκη γὰρ μὴ ἐν εἶναι· ἅπαντα δὲ τὰ ὄντα ἢ ἐν ἢ πολλὰ ὄν ἐν ἑκάστων.

[F]rom what, alongside the one, will another one itself be derived?³⁵ It is of necessity not one, but all beings are either one or a many of which each is one.

³² But at 1001^a11–12, if we follow Bonitz's correction, the substance of one in itself and being in itself is rather the very essence of one and being (αὐτοῦ τοῦ ἐν εἶναι καὶ ὄντι).

³³ Accepted by Colle, Jaeger, and Reale.

³⁴ A^b Bekker, Christ, Jaeger.

³⁵ Madigan 1999, 15, cf. 113, translates as follows: 'from what, alongside the one, will another one itself be derived', relating αὐτὸ to the second ἐν (see also his translation of Alexander *ad loc.* in Dooley and Madigan 1992, 181); but αὐτὸ must be related to the previous τὸ ἐν (cf. αὐτὸ τὸ ἐν 1001^b7 and Alex. Aphr. *In Metaph.*, 226, 21 H.).

The antithesis also is based on an *ad hominem* argument and on a *reductio ad absurdum*. The argument assumes that there is some one in itself and some being in itself (that was the conclusion of the reductions to absurdity supporting the thesis), from which we can draw two conclusions that are equally absurd to Plato and the Pythagoreans: on the one hand, the monism of Parmenides (all beings will be one) (1001^a29–^b1); on the other, numbers will not be substances (we get to the same conclusion if we assume the contradictory of the thesis: ἀμφοτέρως δὲ δύσκολον), for a plurality of numbers will not even exist (1001^b1–6). The argument for monism presupposes that ‘what is different from being is not’, and Plato does not agree on such a thesis in the *Sophist*: there is one meaning of ‘non being’ by which what is not exists as *being different* (256d–258a). From this standpoint, Aristotle’s argument seems more eristic than dialectical.³⁶ But Aristotle also agrees on the objection that ‘if being and one were substances, as they are common to everything, everything would have the same substance, and hence would be but one’;³⁷ and he considers ‘old fashioned’ the way of arguing about being and non being in Plato’s *Sophist*.³⁸

The second argument is what is called a ‘simple constructive dilemma’,³⁹ i.e. a dilemma of the following form:

- (1) $(\neg A \text{ f } \neg B) \P (A \text{ f } \neg B)$
- (2) $A \vee \neg A \text{ à}$
- (3) $\neg B$ ⁴⁰

If one is not a substance, number cannot be a substance (as we have seen at 1001^a24–7), and if one is a substance (if there is some one in itself), number cannot be a substance either, for the same *aporia* about being will occur (1001^a29–^b1), i.e. there will be no other one alongside one in itself, and then there will be no plurality, not even of numbers, for ‘all beings are either one or a many of which each is one’. But either one is not a substance, or it is a substance. Thus it is impossible for number to be a substance. (Aristotle can accept this conclusion, but it looks absurd for Plato and the Pythagoreans.) The appendix at the end of the *aporia* (1001^b17–25) will consider the possibility of

³⁶ Cleary 1995, 218.

³⁷ Berti 1979, 96 and n. 28; cf. Z 16, 1040^b16–19.

³⁸ N 2, 1088^b35–1089^a6; cf. Annas 1976, 199 ff.; Cleary 1995, 218 and n. 62. Madigan 1999, 113, considers 11.5 (e) (f) (1001^a27–9) proleptic of the argument for monism, and suggests that Aristotle implicitly assumes that ‘if the substance of one itself is to be one, then one is the only one, and if the substance of being itself is to be being, then being itself is the only being’; but the assumption is not at all evident.

³⁹ Cf. in particular Parry and Hacker 1991, 396.

⁴⁰ This conclusion can be drawn from the first assumption by contraposition ($B \text{ f } A$ or $B \text{ f } \neg A$), transitivity of implication, and negative *consequentia mirabilis* ($B \text{ f } \neg B \text{ H } \neg B$).

another principle, besides one in itself, from which to derive the plurality of numbers; but this will in turn raise the *aporia* about the derivation of both numbers and magnitudes.

II.11 ἔτι εἰ ἀδιαίρετον αὐτὸ τὸ ἓν, κατὰ μὲν⁴¹ τὸ Ζήνωνος ἀξίωμα οὐθέν ἂν εἴη· ὁ γὰρ μήτε προστιθέμενον μήτε ἀφαιρούμενον ποιεῖ μείζον μηδὲ ἔλαττον, οὐ φησιν εἶναι τοῦτο τῶν ὄντων, ὥς δηλονότι ὄντος μεγέθους τοῦ ὄντος· καὶ εἰ μέγεθος, σωματικόν· τοῦτο γὰρ πάντῃ ὄν· τὰ δὲ ἄλλα πῶς μὲν προστιθέμενα ποιήσκει μείζον, πῶς δ' οὐθέν, οἷον ἐπίπεδον καὶ γραμμὴ, στιγμὴ δὲ καὶ μονὰς οὐδαμῶς. Further, if one itself is indivisible, by the axiom of Zeno, it would be nothing. For to that which neither makes something larger when added to it nor makes something smaller when taken away from it, he denies a place among beings, clearly supposing that a being is magnitude, and that if it is magnitude, it is corporeal, for this is complete being. Other things will make something larger when added to it in one way, but added in another way they will not make it any larger—for example, a plane and a line—while a point and a unit in no way make anything larger.

II.12 ἀλλ' ἐπειδὴ οὗτος θεωρεῖ φορτικῶς καὶ ἐνδέχεται εἶναι ἀδιαίρετόν τι, ὥστε καὶ οὕτως καὶ πρὸς ἐκεῖνόν τιν' ἀπολογίαν ἔχειν· μείζον μὲν γὰρ οὐ ποιήσκει πλείον δὲ προστιθέμενον τὸ τοιοῦτον.

But since Zeno is considering the matter crudely, and it is possible for some thing indivisible to exist—so that even against him there is a reply: such a thing will not make something larger by being added to it, but will make it more numerous . . .

A third *reductio ad absurdum* occurs here (ἐτι), quite different from the first two but equally supporting the antithesis and the ensuing negation of plurality of beings and numbers. This argument deals with one in itself and its indivisibility (as one),⁴² and presupposes the 'axiom' of Zeno according to which being is magnitude,⁴³ and hence anything added to something or taken away from it that makes it neither bigger nor smaller does not exist: one in itself as indivisible is not a magnitude making something bigger or smaller. Therefore it is nothing. But this reasoning relies on a crude theory and cannot give rise to a real *aporia*.⁴⁴ Aristotle answers immediately that what is indivisible cannot make the magnitude of anything bigger or smaller, but can make a set of things more or less numerous. Therefore something indivisible can exist.

⁴¹ μὲν *solitarium*.

⁴² τὸ ἐνὶ εἶναι τὸ ἀδιαίρετῳ ἔστιν εἶναι (I 1, 1052^b17, cf. Δ 6, 1016^b3 6).

⁴³ Zeno 29 A21 DK; cf. 29 B1 and B2 DK *ap. Simp. In Ph.*, 139 40 D.: this argument is probably directed against the plurality of beings.

⁴⁴ Cf. *Ph.* I 2, 185^a10 11: μᾶλλον δ' ὁ Μελίσσου φορτικὸς καὶ οὐκ ἔχων ἀπορίαν; Jaulin 1999, 30.

The text of the passage including Aristotle's reply (II.12) is highly debated. Bekker and Christ separate it from the question introduced by ἀλλὰ πῶς at 1001^b17 by a raised point, and Ross by a raised point and a dash; Jaeger takes it as a sentence with a full stop. From a syntactic point of view, it is usually seen as an anacoluthon, in which no explicit apodosis follows the protasis (ἀλλ' ἐπειδή), so that it must be supplied ('But let's leave that, for . . .').⁴⁵ Madigan (1999, 163), on the contrary, suggests relating the sentence introduced by ἐπειδή to the question introduced by ἀλλὰ πῶς as the main clause, and translating ἐπειδή by 'although', following Alexander's paraphrase εἰ καὶ and his construction of the sentence. This is quite possible (even if ἐπειδή meaning 'although' is rather uncommon), but not necessary at all: for an anacoluthon can be tolerated in such a prose (as it is in 1001^a12 mentioned above: οἱ δὲ περὶ φύσεως, οἷον Ἐμπεδοκλῆς ὡς εἰς γνωριμώτερον ἀνάγων λέγει . . .).

The real point of the passage looms rather in the following clause: ὥστε καὶ οὕτως καὶ πρὸς ἐκείνόν τι ἀπολογίαν ἔχειν, in particular in the interpretation of καὶ οὕτως καὶ πρὸς ἐκείνον. On Ross's view (1970 (1924), I, 246), '[i]t seems impossible to make anything of this', and he therefore deletes καὶ οὕτως as interpolated from a marginal note.⁴⁶ Arguments of different kinds have been provided to justify καὶ οὕτως,⁴⁷ but Schwegler's solution (1847, ii. 144)⁴⁸ seems to me still the best, for want of a better one: there is something indivisible so that, from this point of view (οὕτως, i.e. against the denial of the indivisible in general) as well as against Zeno's argument in particular, the Platonic and Pythagorean one in itself can be justified.

5. Appendix (1001^b17–25)

II.13 ἀλλὰ πῶς δὴ ἐξ ἑνὸς τοιούτου ἢ πλείονων τοιούτων ἔσται μέγεθος . . . ὅμοιον γὰρ καὶ τὴν γραμμὴν ἐκ στιγμῶν εἶναι φάσκειν.

[S]till, how then will magnitude be derived from such a one, or from several such ones? It is like saying that a line is derived from points.

⁴⁵ Schwegler 1847, ii. 144; Bonitz 1849, 165; Colle 1922, 278 ('l'apodose qu'Aristote oublie de formuler'); Ross 1970 (1924), I, 246. As for Tricot, he 'forgets' to translate ἐπειδή ('Mais c'est là assurément une théorie grossière'). Ross maintains the anacoluthon in his translation ('But, since his theory is of a low order, and an indivisible thing can exist in such a way as to have a defence even against him'), but Barnes 1984 (followed by Cleary 1995, 222) makes it disappear, as he does not translate the first καί: 'But since he argues crudely, an indivisible thing *can* exist'.

⁴⁶ Followed by Reale 1968 and 2004, Barnes 1984, and Madigan 1999.

⁴⁷ See for example Colle 1922, 278–9, but he forgets to translate καὶ οὕτως.

⁴⁸ Followed by Apostle 1966.

II.14 ἀλλὰ μὴν καὶ εἴ τις οὕτως ὑπολαμβάνει ὥστε γενέσθαι, καθάπερ λέγουσί τινες, ἐκ τοῦ ἑνὸς αὐτοῦ καὶ ἄλλου μὴ ἑνὸς τινος τὸν ἀριθμόν, οὐθέν ἦττον ζητητέον διὰ τί καὶ πῶς ὅτε μὲν ἀριθμὸς ὅτε δὲ μέγεθος ἔσται τὸ γενόμενον, εἴπερ τὸ μὴ ἐν ἡ ἀνισότης καὶ ἡ αὐτὴ φύσις ἦν.

But on the other hand, even if one's suppositions are such that number comes to be, as some say, from one itself and something else not one, nonetheless we must inquire why and how that which has come to be is at one time a number, at another time a magnitude, if the not one was inequality and the same nature.

II.15 οὔτε γὰρ ὅπως ἐξ ἑνὸς καὶ ταύτης οὔτε ὅπως ἐξ ἀριθμοῦ τινὸς καὶ ταύτης γένοιτ' ἂν τὰ μετέθῃ, δῆλον.

That there is no way in which magnitudes could come to be from one and this nature, or from some number and this nature, is clear.

Aristotle presents his two remaining objections in this passage:

- (1) But how can a magnitude derive from one in itself or from several ones in themselves (**II.13**)?
- (2) And even if there is another principle of generation alongside one in itself, e.g. inequality, how can the *same* principles generate number, i.e. a discrete quantity, as well as magnitude, i.e. a continuous quantity?

Alexander (*In Metaph.*, 228, 5–10 H.) takes the first objection as meant for the Pythagoreans, for they think numbers are the principles and the elements of everything, and then of continuous quantities as well. We could suppose it to be an objection raised by Zeno against the theory of the early Pythagoreans:⁴⁹ to derive magnitude from one in itself or from several ones in themselves would be similar to deriving a line from points, i.e. from something that has no effect either on magnitude or on number.

The second objection is clearly directed against the Academy and its doctrine ('as some say') of the indefinite dyad or 'the dyad of the unequal, i.e. of the great and small' (*N* 1, 1087^b7–8). This dyad would be of the same mathematical kind as the one itself, but should be able to explain the generation of continuous quantities and of non-mathematical natural bodies (see at the end of the passage, 1001^b23, the 'philosophical imperfect' ἡν, which Alexander understands as 'was according to Plato' [*In Metaph.*, 228, 24–26 H.]).⁵⁰

The last remark suggests two possible theories of the generation of magnitudes: either directly from one in itself and inequality, or indirectly from some number (generated in its turn directly from the one in itself and inequality) and the same inequality.⁵¹

⁴⁹ Cleary 1995, 222 and n. 70.

⁵⁰ *Contra Colle* 1922, 281, who takes the imperfect as referring rather to the priority of matter.

⁵¹ Warm thanks are due to David Sedley's sharp eye and philosophical acumen for both improving my English and correcting some mistakes of my text; I am also grateful to Sean Kelsey for his very helpful comments.

8

Aporia 12 (and 12 bis)

IAN MUELLER

I shall divide my discussion into two parts, the first concerning *aporia* 12, which occupies all of *B* 5, the second and briefer concerning *B* 6, 1002^b12–32, which I shall call *aporia* 12 bis.

I.A. General Description of *B* 5

Aristotle begins with a statement of the *aporia*:

1. An *aporia* which follows these is whether numbers and bodies and planes and points are certain substances or not. For if they are not, it escapes us what being is and what the substances of beings are. (1001^b26–9)

In this statement bodies are apparently represented as quite parallel to numbers, planes, and points, but in the development of the *aporia*, bodies (or solids¹) are contrasted with planes (or surfaces), lines (or lengths), points, and units (or numbers). In the sequel for brevity I shall use the word ‘bodies’ for ‘bodies (or solids)’ and the phrase ‘surfaces, lines, etc.’ for ‘planes (or surfaces) lines (or lengths), points, and units (or numbers)’. The remainder of *aporia* 12 may be outlined as follows:

- 2.1 (1001^b29–1002^a4). Argument that only body is substance.
- 2.2 (1002^a4–8). Argument that surfaces, lines, etc. are more substantial than bodies.
- 2.3 (1002^a8–12). Historical remark about who held the views put forward in 2.1 and 2.2.
- 3 (1002^a12–^b11). Arguments that surfaces, lines, etc. are not substantial.
- 3.1 (1002^a15–18). Surfaces, lines, etc. do not exist in perceptibles.
- 3.2 (1002^a18–20). Surfaces, lines, etc. are divisions of bodies.

¹ The word ‘solid’ (*stereon*) occurs only at 1002^a21 in *B* 5.

- 3.3** (1002^a20–8). Divisions of bodies do not exist in bodies in a determinate way.
- 3.4** (1002^a28–^b4). Surfaces, lines, etc. are and are not without *genesis* or *phthora*.
- 3.5** (1002^b4–5). Question: ‘If points, lines, and surfaces come to be, what do they come to be from?’
- 3.6** (1002^b5–11). Comparison of points, lines, and planes with the temporal present.

So the general strategy of the *aporia* is to start from the idea that body is substance, argue that surfaces, lines, etc. are more substantial than bodies, and then to argue against the substantiality of surfaces, lines, etc. It is reasonably clear that Aristotle himself rejects both **2.1** and **2.2** and accepts some form of the arguments of **3**, but that fact is more a hindrance than a help for determining the origins and motivations of the view on which Aristotle focuses, the view that surfaces, lines, etc. are more substantial than bodies.

It is important, I think, to distinguish between the topic of *aporia* 12 and the mathematical aspects of *aporia* 5 in which the question is raised whether ‘intermediates’ (*ta metaxu*) or ‘mathematicals’ (*mathematika*)—words not used in *aporia* 12—are substances and whether they exist in sensibles or separately from them. *Aporia* 5 operates with a definite sense of a particular kind of object studied by mathematics, but, although mathematical terms are central to *aporia* 12, there they designate features of physical bodies and not specifically the subjects of the mathematical sciences (contrast *B* 2, 997^b2–3). This difference is connected with another. In *aporia* 12 there is no reference to anything specifically associated with mathematical sciences other than arithmetic and geometry, such as astronomy, optics, and harmonics, sciences which are central to *aporia* 5.

Aristotle’s response to *aporia* 5’s question about mathematical comes in *M* 2 and 3, and since in *M* 2 he makes two explicit references (1076^a38–^b4 and 1076^b39–1077^a9) back to *aporia* 5, it is unlikely that he is conscious of a direct connection of *M* 2 and 3 with *aporia* 12. In fact, as the outline shows, Aristotle does not address the question whether surfaces, lines, etc. exist separately from perceptibles in *B* 5. Indeed, the objections under **3** all seem to take for granted that the opponents are committed to the view that surfaces, lines, etc. in some way exist in perceptibles. Such arguments can, of course, be read as objections to the idea that surfaces, lines, etc. exist in perceptibles, but, even so construed, they are different from the ones he uses for the same kind of conclusion in *aporia* 5 and in *M* 2, as we will see in section I.C.1.a.

For this reason it is also important to separate *aporia* 12 from what is usually taken to be its analogue, the last member in the listing of *aporai* in *B* 1, which also brings in the question of separate existence:

Whether numbers and lengths and figures (*skhēmata*) and points are certain substances or not, and if they are substances whether they are separated from perceptibles or inhere in them. (*B*1, 996^a13–15)

Here the first question does correspond to *aporia* 12, but the second does not. This difference in the formulation in *B* 1 may be connected with the fact that the analogue of *aporia* 5 in *B* 1 (995^b13–18) does not mention the question whether mathematical are separated from perceptibles or inhere in them.

Although Aristotle does mention numbers again in a significant statement at 1002^a12 and units at 1002^a5 and 25 (both times in conjunction with points), his explicit argumentation concerns surfaces, lines, and points, so that it is reasonable for Madigan (Dooley and Madigan 1999, 183, n. 425) to say that ‘numbers appear to be forgotten.’ However, for reasons which will become clear in the next section it is important to leave open the question whether units and numbers are relevant to Aristotle’s discussion.

I.B. On 2.1–2.3

The twelfth *aporia*, then, has the form of a complete disjunction: are surfaces, lines, etc. substances, or aren’t they? Aristotle develops the *aporia* by giving a brief argument that body is substance (2.1), and then (2.2) an even briefer argument that ‘a body is less a substance than a surface, a surface less than a line, and a line less than a unit or point.’ Then, before launching into arguments against the substantiality of surfaces, lines, etc., he makes a historical statement about people who held the two views:

2.3. Therefore most people and the earlier ones thought substance and being is body, other things being *pathē* of this, so that also the principles of bodies are the principles of beings. Later people (who are also thought to be wiser) held them to be numbers.

There has been disagreement about what Aristotle is saying later people held to be numbers. It could be either substance and being or the principles of being.² ‘Substance and being’ seems to fit best with the formulation of the *aporia*, but the characterization of the alternative to body as substance as the view that ‘a

² Alexander (230.11 13) opts for principles, Madigan for substance and being. In his commentary Ross 1970 (1924), I, 247, supplies ‘substance’. However, in his translation Ross 1928, followed by Barnes 1984, supplies ‘principles’.

body is less a substance than a surface, a surface less than a line, and a line less than a unit or point' suggests that in that view units, which are perhaps thought of as equivalent to points, and numbers have some kind of ultimate status.

Alexander says that the later people to whom Aristotle refers include 'the Pythagoreans and Plato', and he is followed by Ross ([1924] 1970, ad 1002^a11). Aristotle most consistently assigns a view according to which numbers (or their principles) are the principles of all things to people he calls Pythagoreans.³ But it is not clear to me that Aristotle would refer to the Pythagoreans as 'later'. At the beginning of *A* 5 Aristotle characterizes the Pythagoreans as contemporaries and predecessors of people he has been discussing, of whom the last mentioned and chronologically latest is Democritus, thought to have lived into the fourth century. But at the beginning of chapter 6 he says that Plato's philosophizing came after the ones he has been discussing, and at 1053^b12–13 in *I* 2 he ascribes the view that the one itself is substance to 'the Pythagoreans earlier and to Plato later'. Aristotle does not describe Plato as someone who thought that numbers were ultimate principles; and although he does describe Plato as someone who thought of them and other mathematical as substances, the thesis which Aristotle argues against in the discussion of *aporia* 12 is, as I have said, quite different from the kind of Platonic view he discusses in *aporia* 5 and elsewhere. For a brief further discussion of the difficulty of determining who these later people are see section I.E below.

It is generally agreed that the earlier thinkers to whom Aristotle refers in 2.3 are the so called Presocratics, whose views he discusses in *A* 3–4. He gives a somewhat fuller statement of the reasoning of these people at the beginning of the development of the *aporia*:

2.1. For properties (*pathē*) and changes and relations and dispositions (*diatheseis*) and ratios (*logoi*) are not thought to signify the substance of anything since all of them are said of some substratum, and none is a *tode ti*;⁴ but heat and cold and such properties belong to the things which are thought most to signify substance, water, earth, fire, and air, from which composite bodies are composed, and are not substances; and only body, which is what has these properties, endures as a being and a substance.

At the symposium several people argued that in the second half of this passage Aristotle is moving beyond the 'ordinary' ultimate bodies of the Presocratics to a qualityless substratum of the kind invoked in the explanation of matter in *Z* 3; at least one participant maintained that what Aristotle has in mind is the

³ See especially *A* 5.

⁴ First occurrence in the *Metaphysics*. The phrase occurs again four times at the very end of *B* (1003^a 9–12) and then not again until *Δ* 8 (on *ousia*); see passage *Δ* 1 below.

receptacle of Plato's *Timaeus*. As I understood the argument of these people, it involved distinguishing between the ordinary properties of things referred to at the beginning of the quotation and the properties hot, cold, wet, and dry, which for Aristotle are constitutive features of the four elements.⁵ An apparent substance, such as earth, which is constituted by dryness and coldness, can, say, change its colour and 'endure as a being and a substance', but it cannot endure if it ceases to be dry or cold. On the traditional interpretation of Aristotle such changes show that underlying earth there is an enduring qualityless substratum, usually referred to as prime matter.

This reading of the text seems to me difficult in itself, and I also think there are several other grounds for rejecting it. First, I see no good reason to distinguish what is being said here from the view assigned some four lines later in 2.1 to 'most people and the earlier ones', who did not believe in such a qualityless substratum. Moreover, Aristotle consistently describes the corporeal elements of the Presocratics as an enduring substratum without, of course, suggesting that it is qualityless.⁶ Finally, there are in the *Metaphysics* two other parallel descriptions of views of substance which suggest that Aristotle is here only thinking of traditional and relatively standard views about what is substantial. The first is in the chapter in the lexicon on substance. There the first sense of substance is:

The simple bodies, e.g. earth and fire and water and whatever is of this kind, are called substance and so are bodies in general, and the animals and *daimonia*, and the parts of these things. All these are called substance because they are not said of a substratum, but the other things are said of these. (Δ 8, 1017^b10–14)

The second parallel occurs at the beginning of Z 2:

Substance is thought to belong most clearly to bodies (and so we say that both animals and plants and their parts are substances), and the natural bodies such as fire and water and earth and all such things, and whatever are parts of these or are made from them (either from parts or from all of them), for instance, both the heaven and its parts, the stars and the moon and the sun, <are substances>. (Z 2, 1028^b8–13)

In B 5, after giving the argument that body is substance, Aristotle moves immediately to a concise argument that surfaces are more substantial than bodies, lines than surfaces, units and points than lines:

⁵ See GC II, 1 4 and, for the traditional interpretation of Aristotle's views, the commentary of Joachim 1992.

⁶ See, for example, A 3, 983^b6 18.

2.2 (end). For body is delimited (or defined: *hōristai*) by these things; and they are thought to be capable of being without body, but it is impossible for body to be without these. (1002^a6–8)

This passage corresponds to the second view of substance introduced in Z 2:

Z. Some people think that the limits (*perata*) of body, things like surface, line, point, and unit, are substances and more so than body and solid. (Z 2, 1028^b16–18)

In Δ 8 the second view of substance is that it is form, and the third is that it is:

Δ 1. Whatever parts⁷ inhere in such things [body and form] and delimit or define them and signify a *tode ti*, and which are such that when they are done away with the whole is done away with; for example, according to some people, a body is done away with when a plane is, and a plane when a line is. And in general number is thought by some people to be of this kind; for nothing is if it is done away with, and it delimits or defines all things. (Δ 8, 1017^b17–21)

In Δ 8 the fourth and final view of substance is that it is essence. In Z 2 Aristotle goes on to describe the views of Plato, Speusippus, and Xenocrates on forms and mathematical.⁸ None of these views seems relevant to *aporia* 12, but it is important to note that those views are apparently distinguished from the view described in Z.

2.2 and Δ 1 suggest a number of different reasons for saying that *x* is more substantial than *y*:

- (i) *y* is delimited or defined by *x*;
- (ii) *x* can be without *y* being, but not vice versa;
- (iii) if *x* is done away with, *y* is done away with, but not vice versa.

In *Metaphysics* Δ 11 Aristotle uses (ii) to characterize what he calls priority in nature and substance and I will call Platonic substantial priority:

⁷ On the word ‘parts’ see Ross 1970 (1924) *ad loc.*

⁸ I translate the sentence linking the description of these views and the view that limits are substances along the lines of pseudo-Alexander *ad loc.*: ‘Furthermore some people do not think that there is any substance (*ouden toiotouton*) beside perceptibles, but others think there are more substances and that these are more substantial, since they are eternal; for example Plato thought that forms and mathematical are two kinds of substance, the substance of perceptible bodies being a third’ (1028^b18–22. *ἔτι παρὰ τὰ αἰσθητὰ οἱ μὲν οὐκ οἴονται εἶναι οὐδὲν τοιοῦτον, οἱ δὲ πλείω καὶ μᾶλλον ὄντα αἰδία ὥσπερ Πλάτων τὰ τε εἶδη καὶ τὰ μαθηματικά δύο οὐσίας, τρίτην δὲ τὴν τῶν αἰσθητῶν σωμάτων οὐσίαν . . .*). An alternative translation of the first clause (cp. Tarán 1979) would be ‘Furthermore, some people do not think there is any such thing as surface, line, point, or unit beside perceptibles, . . .’. I am inclined to think that this translation makes the transition from the first part of the sentence to the next too harsh.

Δ 2. Things which can be without other things whereas the others cannot be without them are said to be prior in nature and substance. Plato made use of this meaning⁹ <of priority>. (Δ 11, 1019^a2–4)¹⁰

It seems clear that (ii) and (iii) are equivalent. They are also connected with (i), but determining the exact connection depends on specifying the sense of the Greek verb *horidzesthai*, which I have translated ‘be delimited or defined’. When Aristotle uses this word and related expressions in the *Topics*, it seems clear that he is talking about defining things. In *Topics* VI 4 he takes up the question of when the definition of a thing gives its essence (*to ti en einai*). He makes clear that a definition which gives the essence will use terms which are more intelligible in themselves (*haplos gnorimoteron*) rather than more intelligible to us. He says:

So what is prior is without qualification more intelligible than what is posterior, for example, point is more intelligible than line, line than plane, and plane than solid, just as the unit is more intelligible than number, since the unit is the principle of all number. (*Topics* VI 4, 141^b5–9)

Aristotle goes on to rebuke people who define (as Euclid does) points as limits of lines, lines as limits of planes, and planes as limits of solids since ‘they explain the prior by means of the posterior.’ He then turns to definition of a species in terms of its genus and differentia:

... It is necessary for the person who defines <a species> correctly to use its genus and differentia, and these are in themselves more intelligible and prior to the species. For if the genus and differentia are done away with, so is the species, so that these are prior to the species. And they are more intelligible, since if the species is understood it is necessary that the genus and the differentia be understood (since the person who understands human being also understands animal and footed), but it is not necessary that the species be understood when the genus or differentia is understood; consequently the species is less intelligible than the genus. (*Topics* VI 4, 141^b25–34)

These passages make it seem likely that underlying the argument of 2.2 is an idea of understanding which we can perhaps best capture in terms of explaining

⁹ Translating Alexander’s paraphrase *semainomenōi* of Aristotle’s *diarēsei* (division, distinction).

¹⁰ Immediately before these words Aristotle has invoked the priority of line to surface. In his commentary Alexander (387, 2 5) suggests, reasonably enough, that Aristotle goes on to explain the sense of priority which he has just made use of. Something like this sense of priority is also found at *Cat.* 12, 14^a29–35; *Top.* IV 2, 123^a14–15; VI 4, 141^b28–9. In section I.D.1 I will point out that elsewhere Aristotle uses another notion of substantial priority in an argument against the substantiality of surface, line, etc.

In the discussion which follows I attempt to take into account some comments of David Charles on Platonic substantiality. I wish to thank David for handing over to me his notes on the paper I presented to the Symposium.

what something is. One can see what is meant reasonably well when it is said that the unit is more intelligible than number, given that a number is a collection of units, so that if we don't have at our disposal the notion of a unit we cannot have an understanding of the notion of number. On the other hand, it is not clear to me how one would explain the notion of priority which is invoked for the geometric cases in **2.2** in terms of definitions, and perhaps the idea that prior geometric notions limit and, in that sense, define posterior ones is also in play there and elsewhere. Similarly one might say that individual things, including points, are definite only insofar as they are one thing, so that units are prior to points,¹¹ and that collections are definite only insofar as they have a determinate number, so that unit and number delimit or define all things. We might express the general idea by saying that x is substantially prior to y if y is what it is only because and insofar as x is what it is. I suspect that from our perspective this idea is best grasped in terms of correct definitions or accounts, but I am convinced that in the Platonic/Aristotelian environment correct accounts were seen as correct descriptions of the nature of things.

As I have already indicated, from a formal perspective *aporia* 12 is the question whether or not planes, lines, etc. are substances. But the argument for their being substances starts from a generally held Presocratic doctrine that body is substance and proceeds by claiming that surfaces, lines, etc. are more substantial than body. There is nothing which we might call absolute here, just an opinion of certain thinkers and an argument which develops a different conclusion starting from that opinion. It is in the transition from opinion to argument that the contrast between the physical and the mathematical, which I set aside at the beginning of section I.A, rears its head. For the simple bodies are certainly physical, and surfaces, lines, etc. do not appear to be so. However, there does not seem to be any way to make the transition from physical bodies to mathematical solids on the basis of the Platonic notion of substantial priority; some other consideration would have to be invoked to justify that transition. It seems to me preferable to say that the argument as we have it does not make the contrast and therefore does not need to make the transition at all.¹²

¹¹ I here leave out of account the further, merely verbal, complexities introduced by the Greek distinction between one and number. Frede and Patzig (1988, II, 30) argue that 'unit' in **Z** is just an alternative way of referring to points, and suggest that the same is true in *aporia* 12. But the *aporia* also mentions numbers, where 'number' is presumably not an alternative way of referring to collections of points, and it seems to me that **DI** ought to play a role in interpreting both **Z** and the *aporia*.

¹² Frede and Patzig 1988 (II, 30–1) see in the words 'body and solid' in **Z** a distinction between 'der physische und der mathematische Körper'. They admit that there is no mention of mathematical bodies in *aporia* 12; and there is clearly none in **Δ I**. Moreover, in their context both **Z** and **Δ I** seem to involve the same movement directly from physical body to surface or plane.

I.C. On 3

In any case Aristotle has moved from the idea of earlier philosophers that body is substance to the notion that surfaces, lines, points, and most especially numbers or units, are substance, using the notions of substantial priority and of boundedness. He now turns to raising difficulties for the claim that surfaces, lines, etc. are substances.¹³ His arguments are, unfortunately, very brief.

I.C.1. On 3.1

3.1. However, if it is agreed that lengths and points are more substance than bodies are, but we do not see what sort of bodies <lengths and points> could belong to (for it is impossible for them to be in perceptible <bodies>), there will not be any substance.

The reasoning here seems to presuppose that the only things substantial lengths and points could exist in are perceptible bodies. There is no suggestion that there might be, distinct from perceptible solids, mathematical solids in which these lengths and points might exist and no suggestion that they might exist separate from perceptibles, as in Aristotle's standard representation of Plato's position. Aristotle frequently makes assertions like the one he makes here, that it is impossible for lines and points to exist in perceptible bodies, but those assertions can all be understood and should be understood with the qualification which is more or less explicit here: it is impossible *if* they are substances. For Aristotle's own philosophy of mathematics implies that surfaces, lines, etc. are in sensible or physical bodies in some sense and that mathematics is true of sensible bodies in some sense. If Aristotle is here only rejecting the view that surfaces, lines, etc. cannot both be substances and exist in perceptible things, we do not have to suppose that he is invoking a 'Protagorean' view ('perceptible lines are not like those the geometer speaks of'), which in *aporia* 5 appeared to be a factor drawing people *to* the view that mathematical are independently existing substances. We might look to other arguments Aristotle gives against substantial mathematical existing in perceptibles in *aporia* 5 and *M* 2, but unfortunately, as I will show in the next section, most of these arguments would not fit well in *aporia* 12.

¹³ I shall not discuss the transitional 1002^a12–14, which I understand as follows: 'So, as we said, if these things [surfaces, lines, etc.] are not substance, there is no substance or being at all; for it is not right to call the accidents of these things [bodies] beings [i.e. substances]'. I take these lines to be a rough restatement of 1001^b26–1002^a4.

I.C.1.a. Aristotelian Objections to the View that Substantial Mathematical Exist in Perceptibles The first three objections which Aristotle raises in *aporia* 5 are:

- (α) one could equally well maintain that forms exist in perceptibles (*B* 2, 998^a11–13);
- (β) two solids, the mathematical and the perceptible, will be in the same place (*B* 2, 998^a13–14);
- (γ) mathematical will move since they will be in moving perceptibles (*B* 2, 998^a14–15).

Aristotle concludes his objections by saying (δ) that all the absurdities (*atopa*) involved in postulating separately existing intermediates (997^b12–34) will apply to this view. In particular:

There will be a heaven other than the heaven, but it will not be separate, but in the same place, and that is even more impossible. (*B* 2, 998^a17–19)

It should be clear from what I have already said that none of these objections would apply to the view under attack in *aporia* 12 as it is presented. For forms play no role there, solids are not being claimed to be substantial, the issue of the motion of limits is never raised, and mathematical sciences like astronomy are not relevant.

Aristotle starts his discussion in *M* 2 with a reference back to *aporia* 5:

It was said in the *aporai* (*diaporēmasin*) that it is impossible that mathematical exist in perceptibles and at the same time that the theory is a fabrication . . . (*M* 2, 1076^a38–9)

I take ‘fabrication’ to be a reference to the general claim (δ) that all the absurdities involved in postulating separately existing intermediates will apply to mathematical in perceptibles. Aristotle goes on to restate (β) (1076^b1) and reformulates (α), avoiding the reference to forms by substituting ‘other powers and natures’ for ‘forms’ (1076^b1–3). The substitution seems artificial and in any case doesn’t make the difficulty more relevant to *aporia* 12. For reasons which I do not know Aristotle does not mention (γ) specifically, but he does announce that he has another objection, an objection which is more like the kind of objections he makes in *aporia* 12:

(ε) <With this view> it is impossible that any body be divided, since a body would be divided at (*kata*) a plane, a plane at a line, and a line at a point, so that, if it is impossible to divide a point, it is also impossible to divide a line, and if that is impossible, it is also impossible to divide the other things. (*M* 2, 1076^b5–8)

Unfortunately, we do not know the basis on which Aristotle is able to attach this difficulty to the view that mathematical substances exist in perceptibles.

Annas 1976 (*ad loc.*, p. 139) calls his reasoning ‘not a good argument. Aristotle only obtains his conclusions by foisting implausibly crude conceptions on to his opponent, making him think of mathematical operations as if they were precisely analogous to physical operations . . .’ It is certainly true that Aristotle’s argument looks very crude in the light of relatively modern ideas about continuity and divisibility, but the literature that has come down to us suggests that Aristotle himself was the first person to work out detailed ideas on these notions. And it is quite clear that Aristotle’s ideas involved assigning a special sense in which points are in lines, lines in planes, and planes in bodies by saying that one of these things is only potentially rather than actually in another. It is not unreasonable for him to insist that a person who lacks the potentiality–actuality distinction must think of, e.g., points as actually in lines. And, although he normally assigns to such people the false view that the points in a line are consecutive (i.e. lie next to one another), he might here be invoking the correct view and so insisting that the people he is considering have to think that the divisibility of bodies implies the divisibility of points.¹⁴ Whatever we say about this particular case, it is important to realize that understanding of the issues involved in these sorts of questions was undoubtedly quite partial and tentative in the fourth century, and that Aristotle’s detailed ideas probably gave him a dialectical superiority relative to his contemporaries

I.C.2. On 3.2

3.2. Further all these things are clearly divisions of body, the one in regard to (*eis*) breadth, another in regard to depth, another in regard to length.

This objection is often associated with a fuller analogue in *K* 2, but I think it is again important to note the significant differences. The *K* 2 passage is preceded by an objection against someone who sounds quite like the Plato described in *A* 6:

K 1. . . . How can the assertion of those who say that the first principle is the one and this is substance, and generate number first from the one and matter, and say that this <number> is substance be true? For how is it possible to think of two and each of the other composite numbers as one? For they do not say anything about this, and it is not easy to say anything. (*K* 2, 1060^b6–12)

Then comes the analogue of **3.2**:

K 2. But if someone were to posit lines and what follows these (I mean the primary surfaces) as principles, these, at least, are not separate substances, but they are cuts (*tomaî*)

¹⁴ Cp. Ross 1970 (1924), *ad loc.*, who, however, follows pseudo-Alexander in thinking Aristotle’s opponents actually held the correct view.

and divisions—lines of planes, the primary surfaces of bodies (as points are of lines); further they are limits of these same things. All of these things inhere in other things and none of them is separate. (1060^b 13–17)

It appears that this (possibly hypothetical) person is being distinguished from the people referred to in *K* 1. But the mention of primary surfaces suggests that we are still in a Platonist domain.¹⁵ This is confirmed by the final sentence which insists on the inseparability of surfaces, points, and lines from the things they are in.

3.2 does not tell us why being a division of a body counts against being a substance. Alexander (here followed by Madigan *ad loc.*) says that divisions are *pathe* and that Aristotle is relying on the idea that *pathe* are not substances. I suspect that a better explanation is provided by the next argument, according to which divisions don't exist in bodies 'in a determinate way'.

I.C.3. On 3.3

In **3.3** Aristotle argues that divisions cannot be in bodies in a determinate way on the grounds that no particular body is in a body, no particular statue in a block of stone, and no particular shape, such as the half cube, in a cube; consequently the divisions of the body which produce these shapes cannot be in the body either.

3.3 (start). In addition to these things any figure is equally in a solid as any other, so that if not even Hermes is in the stone in a determinate way,¹⁶ neither is the half cube in the cube in a determinate way; therefore, neither is the surface; for if any surface were in it, so would the one which determines the half cube be. The same argument applies to line and point and unit . . .

It is of some interest that, unlike the author of *K* in *K* 2, Aristotle does not introduce the term *peras* into *aporia* 12 until its very last sentence (1002^b 10). For the argument that surfaces, lines, etc. are more substantial than bodies because they 'delimit or define' bodies would seem to correspond to the idea of them as limits (cp. **Z**) rather than to the idea of them as divisions. Indeed, there would seem to me to be no way to argue that the limits of a body are not in it 'in a

¹⁵ Aristotle refers to primary length, breadth, and depth at *De Anima* I 2, 404^b 16–27 in a passage discussing Platonist views. But to whom he is referring specifically and what the doctrine in question is are moot issues. For relevant passages and discussion see Ross 1951, 206–12.

¹⁶ One might expect that Aristotle would use the notion of actuality here; cf. *Δ* 7, 1017^b 6–8 and *Θ* 6, 1048^a 32–3. In fact, in the *aporiai* potentiality and actuality are only mentioned in *aporia* 14. Note also that again in this argument the 'physical' and the 'mathematical' case are treated in parallel, and that the idea that a solid or body cannot exist in a solid or body in a determinate way is taken for granted, not argued for.

determinate way'. Moreover, even if one allows the transfer from limits to divisions, there is no reason why one couldn't insist that Hermes is in the stone in a determinate way, but just hasn't been brought to light yet and will never be brought to light if, for example, someone produces a smaller statue of a god, which also exists in the stone in a determinate way.

I.C.4. On 3.4–6

Aristotle concludes 3 with a kind of restatement of the original *aporia*:

3.3 (end). . . . If body is most substance, and these divisions are substance more than body, but these things do not exist and are not certain substances,¹⁷ it escapes us what being and the substance of beings are. (1002^a26–8)

But he goes on to mention further 'anomalies' (*atopa*) for the view that points, lines, and planes are substances, anomalies relating to being at one time and not at another.

3.4 (start). It is thought that if a substance was not before and is now or was before and was not later, it undergoes these things along with coming to be or ceasing to be, but it is not possible for points, lines, and planes, when they are at one time and not at another, to come to be or cease to be. (1002^a30–4)

The formulation is not as transparent as it might be, but it seems clear that the argument rests on the idea that there is a process involved when a substance comes to be or is destroyed, but, for example, points exist simultaneously with the being divided of lines and cease to exist simultaneously with their being joined. The idea that in the case of perceptible substances there is a process involved in the change between being and not being is certainly Aristotelian and may be taken to be a reasonable enough position, which anyone might share. However, Aristotle gives no reason for believing that all things come to be and cease to be via a process, and, of course, even if points, lines, and planes are taken to be perceptibles, it is not necessary to think that they come to be or cease to be at all.

Aristotle might have ended his argument at this point, but he proceeds to offer a description of what happens when bodies are made to touch or are divided:

3.4 (end). When bodies touch or are divided they [the surfaces] become one at the same time as the bodies touch and two at the same time as they are divided. Consequently it

¹⁷ This is Alexander's understanding of the words *mē esti de tauta mēde ousiai tines*, and is adopted by Madigan. Ross 1928 translates 'these are not even instances of substance'.

[the surface] is not but has been destroyed when the bodies are together, and they [the surfaces] which previously were not are when the bodies are divided. For the indivisible point is not divided into two things. (1002^a34–^b4)

It is easier to discuss what Aristotle says here in terms of lines and points than in terms of bodies and surfaces. When Aristotle remarks on this kind of topic elsewhere it is in terms of the situation depicted in the figure, and the contrast he makes is between AC as a continuous straight line and as a line consisting of two segments AB and BC (A _____ B _____ C, A _____ B _____ C). In the latter situation B is the rightmost point of AB and the leftmost point in BC. Aristotle describes this situation by saying that B is one in number and two in *logos*. It also looks as if he holds that B is only potentially in AC unless it is somehow marked out, in which case it becomes actual. One might suppose that Aristotle has this sort of thing in mind here despite the absence of any explicit reference to the two distinctions I have just mentioned. However, because Aristotle speaks of bodies touching or being together and being divided, I am inclined to think that the passage is more naturally read as contrasting the situation in the first figure with the situation in the next figure, and saying that B is one point in the first situation and two in the second. But it is not easy to see how to read the second and third sentences on this understanding. For Aristotle would seem to be saying that only one of the Bs exists in the first situation, but that in the second two Bs come into existence. He then adds that the two Bs are not produced by the division of a point. Presumably no one thinks that a point is divisible, but the claim that it is seems no less problematic than the apparent claim that one point becomes two. This second reading is more problematic than the first, but I'm inclined to think it is closer to the text.

At the end of this passage Aristotle raises and does not answer the question what points, lines, and planes come to be from (3.5),¹⁸ presumably expecting his audience to see that, as Alexander says (232, 17–18), 'it is impossible for anyone to say from what substratum surfaces, lines, etc. come to be.' That may well be correct, but presumably no one thinks that the generation of surfaces, lines, etc. by division is like the carving of a statue in a block of stone, and on the view under consideration they may not come to be at all.

Aristotle concludes (3.6)¹⁹ by comparing points, lines, and planes with the temporal present, which does not undergo *genesis* and *phthora*, is always different, and is not a substance; like points, lines, and planes, it is a division or limit.

¹⁸ That is, if we accept Ross's accentuation (adopted by Jaeger) of *tinós*. The MSS have Aristotle simply asserting that if they come to be and are destroyed they come to be from something, presumably expecting his audience to see that there is no answer to the question of what they come to be from.

¹⁹ For a minor textual issue concerning 1002^b7–8 see Madigan 1999, 163–4.

In using the comparison Aristotle is presumably taking for granted that the temporal present is not a substance, so that its also being a division or limit lends support to the claim that points, lines, and planes are not substances. But, again, nothing requires one to assume that things alike in one respect are alike in all, particularly when the two things are connected with two such different realms as space and time.

I.D. The Relation of *Aporia* 12 to Other Parts of the *Metaphysics*²⁰

I.D.1. *M* 2, 1077^a24–^b17

I take it to be clear that, whatever Aristotle's account of substance is, it is his answer to the suggestion that things like the simple bodies are substances in the fullest sense. As far as I can recall, there is nothing in the *Metaphysics* dealing directly with the arguments from *B* 5 against the idea that surfaces, lines, etc. are substances, but I see no reason to doubt that Aristotle for the most part accepts them or at least their conclusions. *M* 2 gives Aristotle's arguments against the substantiality of mathematical in general and *M* 3 his positive alternative account of their status. In that material the closest Aristotle comes to dealing with the claim that surfaces, lines etc. are more substantial than bodies is at the end of his refutation of the view that mathematical are substances *separate* from perceptibles.

Aristotle begins by invoking the way in which geometricals are generated, first length, then breadth, and finally depth.

So if what is posterior in generation is prior in substance, body would be prior to plane and length. And it is also more complete and whole because it can come to be alive. (1077^a26–9)

Annas (1976, 146) takes this last remark as a 'forceful' indication that Aristotle's reasoning involves a confusion between physical objects and mathematical solids, but it is not clear whether the alleged confusion is Aristotle's own or connected to the doctrine he is concerned with. The more important point is that the reasoning invokes a sense of substantial priority—which we might call Aristotelian—inconsistent with the one invoked in the argument for the substantial priority of surfaces, lines, etc. in 2.2, that is, Platonic substantial priority. Aristotle never really argues for the claim that what is posterior in

²⁰ There is a lengthy discussion of this topic in Madigan 1999, 128–30.

generation is substantially prior, but what he means is clear enough from Θ 8, where he argues that actuality is prior to potentiality in substance, in *logos*, in time, and in the sense that eternal things are prior to perishable ones. His first argument for the substantial priority of the actual is:

... The things which are posterior in generation are prior in form and substance; for example man is prior to boy and human being to seed, since the one already has the form, the other doesn't. (Θ 8, 1050^a4–7)

In the *Physics* Aristotle explicitly contrasts the notion of substantial priority with the notion of priority used in **2.2**:

One thing is said to be prior to another when if it is not the others will not be, or it is prior in time, or it is prior in substance. (*Ph.* VII 7, 260^b17–19)

Subsequently he refers to Aristotelian substantial priority as priority in nature, the other term used in Δ 2 for Platonic substantial priority:

... what is posterior in generation is prior in nature. (*Ph.* VII 7, 261^a14; cp. *Metaph.* A 8, 989^a15–16, *GA* II 6, 742^a20–2, *Rhet.* II 19, 1392^a20–3)

In any case it is clear that in *M* 2 Aristotle rejects the argument of **2.2** by rejecting the criterion for substantial priority which it employs and substituting a contrary one.

At 1077^a31 Aristotle asserts that body is a *kind* of substance (*ousia tis*) because it is in a way (*pos*) complete, and insists that lines cannot be substance, since they are neither form or shape nor matter.²¹ It seems that here Aristotle simply ignores the fact that the argument of **2.2** treats lines as the cause of the shape of a plane surface by delimiting or defining it; no doubt one could argue that the shape of a plane surface is not given simply by the lines, but by their configuration, and also that there are lots of lines which do not play the role of limits of surfaces, but it seems that Aristotle ought to have gone into more detail here.

At 1077^a37 Aristotle introduces a label for Platonic substantial priority, priority in *logos*:

Let them be prior in *logos*. But not everything which is prior in *logos* is substantially prior, since things are substantially prior if they continue to exist when separated, and they are prior in *logos* when their *logoi* are contained in the *logoi* of other things. These two things do not coincide. (1077^a36–^b4)

Here, as elsewhere, the criterion of substantiality is the capacity to exist separately, a notion which we have seen plays no role in *aporia* 12. And the

²¹ I note that in the lexicon (Δ 17, 1022^b5–6) Aristotle gives as one sense of 'limit' 'whatever is the form of a magnitude or what has magnitude'.

two types of priority are illustrated with a standard example of dubious relevance to the issue at hand when Aristotle points out that the definition of pale is contained in the definition of pale man, so that pale is prior to pale man in *logos*, but pale cannot exist independently of pale man.²²

At the conclusion of *M* 2 at 1077^b12–14 and again in *M* 3 at 1078^a9 ff. Aristotle reasserts that mathematics are prior in *logos*. On the other hand, in *Z* 1 Aristotle insists that substance is primary in *logos* because ‘the *logos* of substance must inhere in the *logos* of each thing’ (*Z* 1, 1028^a35–6), and at *Z* 13, 1038^b27–9 he as much as says that anything prior in *logos* to substance is separable.²³ One might conclude that priority in *logos*, like priority itself, has more than one sense, but I, for one, wish that Aristotle had made that point explicitly rather than using the term in apparently incompatible ways.

I.D.2. N 3, 1090^b5–13²⁴

The argumentation in *aporia* 12 suggests that those who believed in the substantial priority of planes, lines, etc. located them (at least implicitly) in bodies. But the related ideas we have considered in the previous section occur in the discussion of a position which makes them separate from perceptibles. The same thing is apparently true of one other brief passage in which Aristotle deals with the ‘extremely feeble’ argument of ‘some people who think that because the point is the limit and extremity of the line, the line of the plane, and the plane of the solid, there must be entities (*phuseis*) of this kind’ (1090^b5–8). For he ends his discussion by saying, ‘But even if they are <substances>, they will all be <substances> of perceptible things here (since the argument was focused on them). Why then will they be separate?’ (1090^b11–13). In between he makes a claim about extremities analogous to the suggestion about divisions in *3.2* and *K2*:

Extremities are not substances—all these things are limits since there is also a limit of walking and of motion in general, so that this limit would also be a *tode ti* and a substance, which is absurd. (1090^b8–11)

Tarán (1981, 358–9) takes the ‘some people’ being discussed in this passage to be ‘in all probability’ Speusippus on a variety of grounds, none of which seems to me to be strong. Here I wish to mention only that one of his grounds is the fact

²² Cp. *Δ* 11, 1018^b34–7, where the example is musical man.

²³ Cp. *Ph.* VIII 9, 265^a22–4: ‘The complete is prior to the incomplete in nature and *logos* and time, and so is the imperishable to the perishable.’

²⁴ I thank Michel Crubellier for calling my attention to this passage.

that Aristotle's argument seems to be directed against an opponent who holds the limits to be separate. For, as I have argued, *aporia* 12 does not seem to be directed against people who take limits to be separate. Hence even if the present passage is directed against Speusippus, the *aporia* would not seem to be.

I.E. Who Held the View that Surfaces, Lines, etc. are More Substantial than Bodies?

We do not know. One obstacle to our knowledge is that the view is compatible with a generally Platonic position on the priority of mathematical to perceptibles, although few would care to argue that Plato would have characterized surfaces, lines, etc. as existing in bodies. The Pythagoreans are frequently invoked in this context because Aristotle tells us that the Pythagoreans do not make number separate from perceptibles and construct the perceptible world out of numbers.²⁵ However, Aristotle does not assign to the Pythagoreans (or anyone else) any specific views about limits, and he really tells us nothing about Pythagorean views of geometricals. When in 2.3 Aristotle seems to refer to the view he is attacking as the view that numbers are substance, he could be speaking of either a Pythagorean or a Platonic view, but the fact that he says that the view is held by *later* people suggests he is thinking about Plato or at least Platonists rather than Pythagoreans. We have also seen that in Δ 2 Aristotle assigns the principle used in the argument for the substantiality of surfaces, lines, etc. to Plato. But, of course, Plato needn't be the only person to have used the principle. And perhaps we shouldn't place as much weight on **I** as on the way in which the substantiality of surfaces, lines, etc. is argued for, since **I** is a very general formulation. Unfortunately, we are not in a position to assign that argumentation to any specific thinker or group of thinkers. And I would rather say we just don't know than to say with Madigan (1999, 122) that the people Aristotle is thinking about 'would seem to include the Pythagoreans but also Plato, Speusippus, Xenocrates, and perhaps other associates of Plato'.

II. *Aporia* 12 bis (*B* 6, 1002^b 12–32)

Ross (1953 (1924), I, xvii) calls this passage an 'appendix' to *aporia* 12. Following Syrianus (51, 12), he also says (*ad loc.* 1002^b 12–32) that it is 'akin'

²⁵ Cf. *De Caelo* III 1, 300^a 16–17, *Metaph.* I 8, 990^a 21–2, *M* 7, 1080^b 16, *M* 8, 1083^b 12, *N* 3, 1090^a 21.

to *aporiai* 5 and 9; see section II.C below. There is no analogue of 12 bis in *B* 1 or *K*, and no discussion relating specifically to it in the *Metaphysics*. These seem to be the only reasons for not counting it as a separate *aporia*, and it seems more reasonable to count it as a separate *aporia*, as, for example, Madigan does. I shall run through the *aporia* before discussing it briefly.

II.A. 1002^b 12–14. Statement of the General *Aporia*

In general someone might raise the difficulty why it is necessary to seek something else besides perceptibles and intermediates²⁶ such as the forms which we postulate. (1002^b 12–14)

II.B. 1002^b 14–30. The Reason for Postulating Forms

Aristotle offers the reason in a long conditional sentence, extending from 1002^b 14 to 26 and thought by some to be anacoluthic.²⁷ After the sentence Aristotle indicates why it is a conditional:

For, even if those who say there are forms do not articulate it well, nevertheless this is what they mean, and it is necessary for them to say these things because each of the forms is some substance and nothing accidental. (1002^b 27–30)

The following is my paraphrase of the reasoning Aristotle ascribes to the believers in separately existing forms:

1. Mathematics and perceptibles (*ton deuro*) are alike in that there are indefinitely many mathematical which are the same in form (e.g. many triangles) and indefinitely many perceptibles which are the same in form (e.g. many horses).
2. Consequently the principles of mathematics and perceptibles will be indefinitely many,²⁸ and, unless there are forms in addition to mathematics and perceptibles, there will not be a substance which is one in number,²⁹ nor will the principles of things be determinate in number.

²⁶ I note that here the word ‘intermediates’ is used for mathematical quite independently of there being two kinds of things for them to be intermediate between.

²⁷ See Madigan 1999, 164.

²⁸ Aristotle illustrates this inference by reference to linguistic syllables and sounds, such as *ba*, for which the principles (letters) are determinate in form but not in number unless one is talking about a token of a syllable or sound (*tēsdi tēs sullabēs ē tēsdi tēs phōnēs*), such as *this* *ba*.

²⁹ At 1002^b 24 the MSS. have ‘and in form’ (*kai eidei*). Alexander’s proposal (233, 26) that a better text would say ‘but in form’ (*all’ eidei*) is adopted by Ross 1953 (1924). Jaeger brackets ‘and in form’.

II.C. 1002^b30–2. The Difficulties of Postulating Forms or Principles which are One in Number

But if we are going to postulate that there are forms and that the principles are one in number rather than in form, we have said what impossibilities necessarily follow. (1002^b30–2)

There is no passage in the *aporiai* in which Aristotle discusses both the view that there are forms and the view that the principles must be one in number, although the present *aporia* indicates that the two views are closely related in Aristotle's mind. Alexander (235, 6–7) takes the primary reference to the difficulties involved in the doctrine of forms to be to book *A* (presumably *A* 9 and perhaps *A* 6). Ross (1970 (1924), *ad loc.*) cites 999^b27–1000^a4 in *aporia* 5, a passage which also refers back to *A*. The question whether the principles are one in number or only one in form is the topic of *aporia* 9, where Aristotle apparently argues 'in an extremely dialectical and verbal way' (*sphodra logikos kai dialektikos*, Alexander, 218, 17) that if the principles were one in number then the only existing things would be the principles or elements (or perhaps that there would be no more existing things than there are elements).³⁰

Madigan (p. 136) gives *A* 9, *Z* 13–15, *I* 10, and *M* 4–5 as passages showing 'that Aristotle does not recognize separately existing forms'. Aristotle answers the question of the sense in which the principles are one in *A* 4–5, the conclusion of which is summed up at *M* 4, 1079^a29–36. There Aristotle does not speak about being one but about being the same, and he does not use the phrases 'in form' and 'in number'. Moreover, he speaks specifically of his own principles, matter, form, privation, and moving cause, which, he says, are the same by analogy, although the ultimate moving cause, the prime mover, is unique. *M* 10 contains similar material, which seems to pick up on *aporia* 9, and raises the question whether the principles of substances are universal or particular.

The only important feature distinguishing *aporia* 12 bis from *aporia* 9 and general difficulties about there being forms is its formulation as the question whether there are forms in addition to mathematical intermediates and perceptibles. The view that there are independently existing mathematical like Plato's intermediates but no Platonic forms is usually assigned to Speusippus.³¹ It is tempting to think that the reasoning in the *aporia* is also Speusippean, but there

³⁰ Cf. *M*10, 1086^b19–32.

³¹ See, e.g., Tarán 1981, 12, with nn. 53 and 54.

is no independent evidence for this claim. Indeed, as the material related to our *aporia* shows, there is no clear reason why the *aporia* couldn't have been formulated as the question why there should be forms in addition to perceptibles. The fact that the *aporia* is never discussed in its specifically Speusippean form in the *Metaphysics* may indicate that Aristotle came to see that there was nothing special to that formulation.³²

³² I would like to thank Gisela Striker for vetting the manuscript of this chapter and making several corrections.

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Aporiai 13–14

STEPHEN MENN

I. Introduction

The last two *aporiai* of *Metaphysics B* are stated very briefly, #13 at 1002^b32–1003^a5 and #14 at 1003^a5–17. They appear almost as a perfunctory appendix, after the elaborate development of the *aporiai* about unity and being (#11, 1001^a4–1002^b25) and about mathematical objects (#12, 1001^b26–1002^b32). But both *aporiai* will be important in the further development of the *Metaphysics*; *B* #13 will be taken up in *Metaphysics Θ* and #14 in *M*, and both of them in Aristotle's positive account of the ἀρχαί in *A*.¹

Both *aporiai* are explicitly formulated as problems about the ἀρχαί, *B* #13 asking whether the ἀρχαί (or the στοιχεῖα) are 'in δύναμις or in ἐνέργεια' (996^a9–11; 'in δύναμις or in some other way', 1002^b32–4), *B* #14 asking whether they are universal or individual (996^a9–11, 1003^a5–7). These *aporiai* are thus continuing the questioning of *aporiai* #6, #7, #9, and #10, all of which were explicitly asking about the ἀρχαί; *aporiai* #5, #8, and #11–12 are not

I would like to thank the participants in the Symposium Aristotelicum, especially Hendrik Lorenz and Annick Stevens, for their comments on the version I presented there. Some of my introductory section presents in abridged form ideas I develop more fully in a book-manuscript, 'The Aim and the Argument of Aristotle's *Metaphysics*'. I will typically refer to the text of *B* not by chapters but by *aporia*-numbers, with a #-sign. In deference to the numbering of the *aporiai* adopted by the Symposium, I call the *aporia* at 1002^b32–1003^a5 *B* #13 and the *aporia* at 1003^a5–17 *B* #14, counting twelve *aporiai* before them, whereas in my book-manuscript, following Bonitz and Madigan, I count 1002^b12–32 not as part of *B* #12 but as a separate thirteenth *aporia*, so that 1002^b32–1003^a5 would be *B* #14 and 1003^a5–17 would be *B* #15. I apologize for any resulting confusion.

¹ I do not accept, and will have nothing to say about, the view (developed for instance by C. D. C. Reeve 2000) that *B* #14 sets the agenda for the *Metaphysics* as a whole. Apart from the texts of *A* and *M* that I will discuss, universals as such are discussed only in *Z* 13, and there without any obvious reference to *B* #14 (*Z* 13's focus on the claim that the universal is a cause of, and οὐσία of, its individuals, seems quite different from *B* #14). Other chapters (*Z* 12, *Z* 14, etc.) talk about genera and their relations with differentiae in the λόγος of a species, but this is a different concern and responds to different *aporiai* from *B* (#6, #7, also #9 if its ἀρχαί/elements are taken to be genera and differentiae).

explicitly about the *ἀρχαί* but rather about whether there are *οὐσίαι* beyond the sensibles or the individuals, or whether some given X is an *οὐσία* or has separate existence; but, as we will see, these questions too form part of an inquiry into the *ἀρχαί*. In *Metaphysics A* (to which *B* refers back at 995^b4–6, 996^b8–10, and 997^b3–5) Aristotle had described wisdom as the science of the *ἀρχαί* and first causes, and he regards this as the consensus of all who pursue knowledge for its own sake. Each pre Socratic physicist tries to explain all things by tracing them back to the *ἀρχαί*, where the *ἀρχαί* are the *first* of all things, whatever there was before the ordered world came to be out of them: the correct *ἀρχή* for beginning the narrative discourse about the world is with the *ἀρχή* or *ἀρχαί* from which the world itself began, and the only first causes that we can use to explain the things in the world are the *ἀρχαί* that we have posited at the beginning. Plato, in proposing dialectic rather than physics as a way to wisdom, puts forward a rival account of the *ἀρχαί*, as he does for the causes: as the *Phaedo* says that the Forms, rather than the things the physicists cite in explanations, are the real causes of things, so the *Republic* says that the Form of the Good is the one first *ἀρχή*, ‘the unhypothetical *ἀρχή* of all things’ (511^b6–7), ‘not *οὐσία* but even beyond *οὐσία*, surpassing it in seniority [*πρεσβεία*] and power’ (509^b8–10). And we know that Plato and others in the Academy also gave different accounts of what the *ἀρχαί* are and of how other things proceed from them in sequence. One such account would be the one Aristotle attributes to Plato in *Metaphysics A* 6, according to which the one and the great and small are the *ἀρχαί*, and the numbers proceed from the one as formal cause and the great and small as material cause, and then sensible things proceed from the numbers as formal causes and the great and small as material cause (987^b20 ff.). Another such account, and one that we have more control over, is in the second hypothesis of the second part of the *Parmenides*, where, having posited the one and being and a relation of participation between them, Plato tries to ‘generate’ the numbers and the attributes of sameness, difference, motion, rest, and so on. Both of these accounts would be rivals to the ways that the physicists ‘generate’ the contents of the world from the *ἀρχαί* that they posit in the beginning. Of course, Plato does not mean the priority of the *ἀρχαί*, or the procession of things from the *ἀρχαί*, to be temporal, but he deliberately takes up the physicists’ temporal language, especially in speaking of the Good as surpassing the other Forms in *πρεσβεία*.

Aristotle’s predecessors thus agree that wisdom will be a knowledge of the *ἀρχαί*, even if they have very different views on what these *ἀρχαί* are, how they are causes, and what discipline leads us to know them. When Aristotle says that wisdom is the science of the *ἀρχαί*, he does not mean ‘*ἀρχή*’ simply in the broad sense in which it is coextensive with ‘cause’ (in that sense, *all* sciences are

sciences of ἀρχαί), but in the same strict sense in which the physicists and Academics meant it, the first of all things. And in *A* and *B* he is pursuing the questions of what these ἀρχαί are, how they are causes (and of what), and whether any of the disciplines that have so far been practised as means to the ἀρχαί—physics, dialectic, and Pythagorizing mathematics—have succeeded in reaching the ἀρχαί, or whether some new discipline must be found. Aristotle will claim, in *Metaphysics E* 1, that wisdom must be a ‘first philosophy’ considering separately existing immaterial things, distinct from physics (which deals with things that have separate existence but are material) and from mathematics (which, Aristotle says, deals with things that are immaterial but do not exist separately); dialectic, as a science of immaterial, separately existing Platonic Forms, might be such a first philosophy if there were Platonic Forms, but there are not, and a fourth discipline is needed.² And one of Aristotle’s reasons for raising *aporiai* about the ἀρχαί (both in *A* and in *B*) is to show that earlier philosophers, and the disciplines they practise, are not able to solve these *aporiai*, and thus to motivate the *Metaphysics*’ project of constructing a new discipline for reaching the ἀρχαί; he will take up many of the *aporiai* in *A*, and will argue there that he is able to solve the *aporiai*, and (especially in the polemical conclusion *A* 10, 1075^a15–1076^a4) that his competitors are not.³

² I accept, with Ross and Jaeger, Schwegler’s χωριστά for the manuscript ἀχώριστα in *E* 1 1026^a14. That the positing of a new discipline of first philosophy comes from a rejection of the claims of the existing disciplines, physics and mathematics and dialectic, to be wisdom, is made especially clear in a text of *K* which restates *B* #5 (are there οὐδαί beyond the sensibles? if so, either Forms or mathematical, and there are objections to both) as a ‘methodological’ *aporia*: ‘in general there is *aporia* whether the science we are now seeking is about the sensible οὐδαί, or not, but about some others: if others, it would be either about the Forms or about the mathematical. But it is clear that there are no Forms [sc. so the science is not dialectic] . . . Nor is the science we are now seeking about the mathematical, for none of them is separate [sc. so the science is not mathematics]; nor about the sensible οὐδαί, for they are corruptible [sc. so the science is not physics]’ (*K* 1, 1059^a38^b₃ and ^b₁₂ 14).

³ It has been urged on me (particularly by Annick Stevens) that ‘ἀρχή’ in Aristotle is simply coextensive with ‘cause’, so that his answer to questions ‘are the ἀρχαί causes in this way or that way?’ would be that the ἀρχαί are causes in *every* way, some in one way and others in another. Of course Aristotle sometimes uses ‘ἀρχή’ coextensively with ‘cause’ (e.g. *I* 2, 1003^b22 s), but the question is whether there is also a strict sense of ‘the ἀρχαί’ – ‘the first of all things’, such that Aristotle in the *Metaphysics* and other philosophers with competing accounts of wisdom would be looking for ἀρχαί in this strict sense. It seems clear that *B* does mean ‘ἀρχή’ in this sense, so that *aporiai* ‘are the ἀρχαί causes in this way or that way’ would turn on which kind of causes are *first*, but Stevens suggests that this is because Aristotle poses the *aporiai* on the basis of his predecessors’ assumptions rather than his own, and that his solutions to the *aporiai* will turn on showing that there are different kinds of cause, and thus different kinds of ἀρχαί. However, the texts that use ‘the ἀρχαί’ to mean ‘the first of all things’ are not limited to *B* or to aporetic contexts: a notable example is *N* 1, 1087^a31–6 which I will discuss below, ‘if the ἀρχή of all things cannot have anything prior to it, it would be impossible for the ἀρχή, being something else, to be an ἀρχή; for instance, if someone said that white, not *qua* something else but *qua* white, is an ἀρχή, but that nonetheless it is said of some underlying thing, and, being something else, is

Aporiai #13–14 are immediately taking up Aristotle's confrontation with the physicists and Platonists; #13 is raising a fundamental challenge against the physicists' explanations of the world through a cosmogonic narrative, and #14 is raising a crucial issue that divides the physicists from the Platonists, and pointing out objections that each side can bring against the other. Both issues will be central in *A*. Thus *A* 1 says that 'the moderns posit the universals as more [μᾶλλον] οὐσίαι, since the genera (which they say are more ἀρχαί and οὐσίαι, due to their investigating λογικῶς) are universals; whereas the ancients [posited, as ἀρχαί and implicitly as οὐσίαι] the individuals, like fire and earth, not the universal body' (1069^a26–30).⁴ The connection of #13 with the projects of the physicists is perhaps less obvious than the connection of #14 with the dispute between the physicists and the dialecticians. To see the point, it helps to note that the questions whether the ἀρχαί are potential or actual, and whether they are individual or universal, are closely bound up with the question of how the ἀρχαί are causes. At the end of *Physics* II 3, after dividing up causes in various other ways, Aristotle adds that causes are also said

either as the individual or as the genus {or as an accident; I'll skip this}, and all are either ἐνεργούντα or κατὰ δύναμιν. There is the important difference that ἐνεργούντα and

white: for that [underlying thing] will be prior': you might say that the work here is done not by 'ἀρχή' but by 'ἀρχή of all things', but Aristotle substitutes simply 'ἀρχή' as equivalent, and this is just what the strict sense of 'ἀρχή' is. See *Physics* I 6, 189^a30–32, where a similar argument is made, in the same context of arguing that contraries cannot be ἀρχαί, using and not 'first ἀρχή' or 'ἀρχή of all things'. As will become clear, Aristotle thinks that the test given in this passage shows that no universal can be an ἀρχή, so it cannot be right to say e.g. that both individual and universal causes are ἀρχαί. For the demarcation of wisdom as the science of the ἀρχαί or of the first causes, where 'science of the causes' would not distinguish it from other sciences, see *A* 1, 981^b27–9, where everyone agrees that what is called wisdom is περὶ τὰ πρότα αἴτια καὶ τὰς ἀρχάς, *Γ* 1, 1003^a26–7 'we are seeking τὰς ἀρχάς καὶ τὰς ἀκροτάτας αἰτίαι' (*A* 2, 982^b9–10 does say that wisdom is τῶν πρώτων ἀρχῶν καὶ αἰτιῶν . . . θεωρητική, but here πρώτων governs αἰτιῶν as well as ἀρχῶν: he does not and could not say τῶν πρώτων ἀρχῶν καὶ τῶν αἰτιῶν . . . θεωρητική). Likewise Theophrastus at the beginning of his *Metaphysics* describes the science he is pursuing as ἡ ὑπὲρ τῶν πρώτων θεωρία (4^a2–3), and goes on to use ἀρχή and πρότον equivalently (so 4^a13–16, and repeatedly from 4^b6 on). (Stevens suggests that Aristotle demarcates wisdom, not as the study of those causes which are first, but as the study of those causes which are causes of being; but in *A B* this conception has not been introduced, and when it is introduced in *Γ* 1 it is as a means to seeking τὰς ἀρχάς καὶ τὰς ἀκροτάτας αἰτίαι: the ἀρχαί will be the highest causes, and these will be causes of the most widely extended effects, namely being and its *per se* attributes.)

⁴ I take 'μᾶλλον' as 'more', but it might be taken as 'instead'. The contrast between ancients and moderns here is not simply between physicists and dialecticians, since Aristotle elsewhere (*Physics* III 4, 203^a33–^b2) says that Democritus posited the universal body [τὸ κοινὸν σῶμα] as an ἀρχή. (This parallel supports reading τὸ κοινὸν σῶμα at *A* 1, 1069^a29–30 with Bonitz and Jaeger, rather than τὸ κοινόν. σῶμα with Ross; but *Metaphysics A* 9, 992^a2–6 supports Ross). So Democritus is a physicist but a modern. Likewise, those Academics who posited three-dimensional extension or its boundaries as οὐσίαι and ἀρχαί (as discussed in *B* #12) are moderns, although they are citing not dialectical but mathematical ἀρχαί, or even physical ἀρχαί, if the Receptacle and the triangles of the *Timaeus* count as physical.

individual [causes] are and are not simultaneously with the things of which they are causes, e.g. this person who is curing with this person who is being cured, and this person who is housebuilding with this house which is being built, whereas this does not always hold for *κατὰ δυνάμιν* [causes and their effects], since the house and the housebuilder do not perish simultaneously. One must always seek the highest cause of each thing, as in other cases (for instance, the man housebuilds because he is a housebuilder, and the housebuilder [housebuilds] according to [the art of] housebuilding: so this [i.e. the art] is the cause first; and likewise in all cases). Again, genera [should be given as causes] of genera, and individuals of individuals (so sculptor is the cause of statue, *this* [sculptor] of *this* [statue]), and *δυνάμεις* of *δυνατά*, and *ἐνεργούντα* of *ἐνεργούμενα*. (195^b13–28)

Here a *δυνάμενον* cause (I take this term from 195^b4) is something like house builder (that is, someone who possesses the art or *δύναμις* of housebuilding), or like the art of housebuilding; an *ἐνεργούν* cause is like a housebuilder housebuilding, that is, actually exercising his art. *B* #13 is asking whether the *ἀρχαί*, the first things and first causes of all things, are causes like the housebuilder (or his art), or causes like the housebuilder housebuilding. Almost all of the pre Socratic physicists will answer that they are causes like the housebuilder. The distinction works most naturally for the efficient cause, so consider an efficient *ἀρχή* like the *νοῦς* of Anaxagoras. *Νοῦς* is an *ἀρχή* because it existed (along with the different material *ἀρχαί*) before the ordered world came to be. *Νοῦς* acts by stirring up a circular motion, but before the world came to be, *νοῦς* was not yet doing this, or the world would already have been coming to be; rather, *νοῦς* and the material *ἀρχαί* were quiescent, not yet acting. So *νοῦς*, as it existed before the world, was like a housebuilder not currently exercising his art; it is only *νοῦς* actively stirring up a vortex, existing not before the world but simultaneously with it, which is like a house builder housebuilding. Indeed, the pre Socratic narrative model of explanation (accepted also in the *Timaeus*) seems to imply that the *ἀρχαί* must be potential rather than actual causes: the *ἀρχαί* have existed from eternity (or else there would be other prior *ἀρχαί* from which they arose), and if the *ἀρχαί* had been acting, exercising their causality, from eternity, then the world too would have existed from eternity, and we could not narrate its formation. Aristotle can accept that the first *ἀρχή* is essentially *ἐνέργεια* because he accepts that the world is eternal; but this means breaking with the narrative model of explanation, and with the temporal conception of the priority of the *ἀρχαί*.

Aristotle also thinks that the Platonists, as well as the physicists, are taking their *ἀρχαί* as *δυνάμενα* causes; and this brings out a connection between *aporiai* #13 and #14. Our *Physics* text seems to closely associate being an *ἐνεργούν* cause and being an individual cause. There is no reason why an individual cannot be a

δυνάμενον cause (this housebuilder); but Aristotle does seem to think that a universal cause is *always* a *δυνάμενον* cause. Thus, as he says at the end of *Θ* 8, if there is a Platonic Form of Motion, it will not actually be moved in any way (since it remains eternally in the same state), and if there is a Platonic Form of Knowledge, it will not actually be knowing anything in particular; likewise, presumably, the Form of Fire is not actually burning anything. So Aristotle's assertion that the *ἀρχή* is *ἐνέργεια* is contradicting the Platonists as well as the physicists.

So far I have been speaking exclusively in terms of *ἀρχαί*; but Aristotle goes constantly back and forth between asking about *ἀρχαί* and asking about priority. The way to argue that the *ἀρχαί* are not P (for some given predicate P) is to argue that, if the *ἀρχαί* were P, then there would, absurdly, be something prior to the *ἀρχαί*. Thus all parties (physicists, dialecticians, mathematicians, Aristotle) agree that the *ἀρχαί* must have existed from eternity, since otherwise they would have come to be out of something, and this something would be prior to the supposed *ἀρχαί* (so argued at *B* #10 1000^b24–8). Aristotle is introducing an argument of the same type in the half of *B* #13 that argues that the *ἀρχαί* are in *δύναμις*: 'for if they are in some other way, something else will be prior to the *ἀρχαί*: for the *δύναμις* is prior to *that* cause [i.e. the *δυνάμενον* cause, or the *δύναμις* which it bears, is prior to the *ἐνεργούν* cause], and not everything that is *δυνατόν* is necessarily in *that* way [i.e. not everything which exists or obtains possibly, exists or obtains actually]' (1002^b34–1003^a2).⁵ So one way to resolve *aporia* #13 will be to determine whether *δυνάμεις* or *ἐνέργειαι*, or *δυνάμενα* or *ἐνεργούντα* causes, are prior in general: if to every *ἐνεργούν* cause there is a prior *δυνάμενον* cause, then the *ἀρχαί* must be *δυνάμενα* causes, while if to every *δυνάμενον* cause there is a prior *ἐνεργούν* cause, then the *ἀρχαί* must be *ἐνεργούντα* causes.

But this question, and questions like it, threaten to be vague and irresolvable if we cannot specify what we mean by 'prior', and how we determine when one thing is prior to another. For the physicists, priority is just temporal priority in the cosmogonic narrative (with the assumption that what comes earlier in the narrative will also be prior in the order of scientific explanation). But already for Plato, this is problematic, since there are many eternal things, and we will need another criterion to determine which of them are prior and which posterior; and if, as Aristotle thinks, the ordered world has existed from eternity, then we will not be able to reach *ἀρχαί* by looking for what is temporally first. One means for resolving these problems is the test that Aristotle attributes

⁵ I will come back later to the difficulties of construing this passage. But the present point will not be affected.

to Plato: X is prior to Y *κατὰ φύσιν καὶ οὐσίαν* if X can exist without Y and Y cannot exist without X (the attribution to Plato is at *Metaphysics* Δ 11, 1019^a1–4; in the *Categories* chapter on priority (12), Aristotle adds, as a tiebreaker if neither can exist without the other, that X is prior to Y if X is a cause of being to Y).⁶ Aristotle sometimes lists different senses of priority, contrasting priority in *οὐσία* with priority in time, with priority in *λόγος* (X is prior to Y if X occurs in the *λόγος* of Y), and with priority in scientific knowledge (some times, but not usually, distinguished from priority in *λόγος*). Presumably the physicists put forward *ἀρχαί* which are prior in time, and the Platonists *ἀρχαί* which are prior in *λόγος*, but both groups will claim that their *ἀρχαί* are prior in *οὐσία* (and also in scientific knowledge), and should be willing to accept Plato's test for priority in *οὐσία* as a neutral criterion for adjudicating their claims. And so for Aristotle priority in *οὐσία*, as measured by Plato's test, will be the crucial standard for resolving disputes about what things are *ἀρχαί*. Plato's test is clearly being invoked in the initial arguments of *B* #13 (the *δύναμις* is prior because 'not everything that is *δυνατόν* is necessarily in *that* way', 1003^a1–2), and, as we will see, it will also be crucially involved in arguments on both sides of *B* #14.

However, just the fact that Plato's test supports both sides of *B* #14 shows that something more than Plato's test is needed. One important use of Plato's test in arguing about the *ἀρχαί* is to establish that an *ἀρχή* must be something that exists in its own right [*καθ' αὐτό*], and not simply as an attribute of some other underlying nature: 'if the *ἀρχή* of all things cannot have anything prior to it, it would be impossible for the *ἀρχή*, being something else, to be an *ἀρχή*: for instance, if someone said that white, not *qua* something else but *qua* white, is an *ἀρχή*, but that nonetheless it is said of some underlying thing, and, being something else [*ἐτερόν τι ὄν*], is white: for that [underlying thing] will be prior' (*N* 1, 1087^a31–6).⁷ The underlying nature might not be temporally prior to its attribute, but it will be prior by something like Plato's test (if the attribute is a *necessary* attribute, we will have to supplement Plato's test by something like the 'cause of being' test—the white exists only because the underlying nature exists and is white, so the underlying nature is the cause of being to the white). And indeed all philosophers will claim that their *ἀρχαί* exist *καθ' αὐτά* in this way. But, as Aristotle argues in the *Categories*, this test supports the priority of individuals to universals: 'if the primary [i.e. individual]

⁶ The *Categories*' example for X being prior to Y because X can exist without Y but not vice versa is the priority of one to two (12, 14^a29–35), which nicely brings out the original Platonic context of the test. So too the applications to mathematical objects at *B* #12 1002^a4–8 and already at *Protrepticus* B33 Düring.

⁷ See below for a discussion of Aristotle's expression 'X, *ἐτερόν τι ὄν*, is X' and its equivalence to 'X exists not *καθ' αὐτό*'.

substances did not exist it would be impossible for anything else to exist: for everything else is either said of these as of underlying things or is in these as in underlying things; so that if the primary substances did not exist it would be impossible for anything else to exist' (2^b 5–6^c),⁸ and this is presumably the reason for calling the individual substances 'primary'. Unfortunately, as Aristotle also argues in the *Categories*, the same test also supports the priority of universals to individuals: 'the genera are always prior to the species, since the implication of existence is not reciprocal: for example, whenever aquatic [animal] exists, animal exists, but when animal exists it is not necessary for aquatic to exist' (15^a 4–7). The *Categories* does not seem to be troubled by the tension between these two arguments, but the *Categories* is not undertaking to determine the true ἀρχαί of things, and the *Metaphysics* is.⁹

Unfortunately, Aristotle never says explicitly how he is going to supplement or refine Plato's test to avoid this kind of difficulty.¹⁰ But I think we can see roughly how he approaches the problem. We can state the problem for the cases of being and one, τὸ ὄν καὶ τὸ ἓν. The Platonist will argue that, by Plato's test, being and one are the ἀρχαί of all things, because, whenever any X exists (and is therefore one), τὸ ὄν καὶ τὸ ἓν exist, whereas the reverse implication, that if τὸ ὄν καὶ τὸ ἓν exist, X also exists, generally does not hold (τὸ ὄν καὶ τὸ ἓν are also eternal, because at any given time, something has existed).¹¹ The non Platonist will object that this is much too easy a method of establishing ἀρχαί. One perhaps crude way to explain why this is too easy is to say that, although whenever any X exists, *some* being and *some* one exist (namely, X, which exists and is one), it will not be the *same* being and the *same* one in each case: there are no such things as τὸ ὄν καὶ τὸ ἓν. What Aristotle says is more subtle, but it can be seen as a refinement on this crude explanation. Rather than say that a genus or τὸ ὄν or τὸ ἓν do not exist at all, Aristotle will

⁸ Keeping the text of (most) manuscripts with Minio-Paluello. If we delete 6 πάντα . . . 6^c εἶναι with Simplicius and most editors, or 5 μή . . . 6^b εἶσθαι with Bodéüs, the argument will still be the same.

⁹ Note that simply on the grounds of Plato's test, the case for the priority of the universal seems stronger: animal can exist without Socrates (although it cannot exist without *some* individual animal), whereas Socrates cannot exist without animal.

¹⁰ However, at Δ 11, 1019^a 11 (not in the parallel in the *Categories*), he seems to suggest that Plato's test can be supplemented by filling in the sense of 'being' or 'existence' in saying that X can *be* without Y but Y cannot *be* without X. Different senses of being – notably, being-in-potentiality and being-in-actuality – would yield different versions of Plato's test and thus different senses of priority. Presumably being-in-actuality, rather than being-in-potentiality, will yield the κύριον sense of priority κατ' οὐσίαν. The strategy I go on to describe in the text can be seen as an elaboration of this idea, applying Aristotle's distinction between being καθ' αὐτό and being not καθ' αὐτό to yield different senses of priority, one more κύριον. But Δ 11, 1019^a 11 is too compressed for me to feel confident of Aristotle's meaning.

¹¹ Note the Platonist argument at B #7 998^b 17–21 that τὸ ὄν καὶ τὸ ἓν are the ἀρχαί, because they are the most universal things.

say that they do not exist *καθ' αὐτά*.¹² Aristotle explains what he means by this in *Posterior Analytics* I 4: that exists *καθ' αὐτό* which 'is not said of some other underlying thing [*ὃ μὴ καθ' ὑποκειμένου λέγεται ἄλλου τινός*]: for example, the walking [thing], being something else, is walking [*τὸ βαδίζον ἕτερόν τι ὃν βαδίζον ἐστὶ*], and likewise the white,¹³ but substance, and whatever signifies a this, are not, being something else, what they are [*οὐχ ἕτερόν τι ὄντα ἐστὶν ὅπερ ἐστίν*]. So the things that are not [said] of some underlying thing [*καθ' ὑποκειμένου*], I call *καθ' αὐτά*, and the things that are [said] of some underlying thing I call accidents' (73^b 5–10). Here Aristotle is using the same fixed phrase 'the X, *ἕτερόν τι ὄν*, is X' that we have seen him use about the white in the passage from *Metaphysics* N1. The best way I know to paraphrase this is to say that if the X, *ἕτερόν τι ὄν*, is X, then the thing which is X has some other underlying nature Y, of which X is predicated, so that the X exists only because the Y exists and is X; whereas if X exists *καθ' αὐτό*, then the X exists because there is something whose nature is just to be X.¹⁴ In the N 1 passage, Aristotle is arguing that if the X, *ἕτερόν τι ὄν*, is X, then X is posterior to the nature that underlies it, and so cannot be an *ἀρχή*; so if *τὸ ὄν καὶ τὸ ἔν* exist only in this way, parasitic on the particular natures that exist and are one, then they cannot be *ἀρχαί* despite their priority by Plato's test; and Aristotle can maintain this without having to say, as the 'crude explanation' does, that *τὸ ὄν καὶ τὸ ἔν* do not exist at all. So it seems that Aristotle must refine Plato's test to say that if X can exist without Y but not *vice versa* (or if neither can exist without the other but X is the cause of Y's existing), and X exists *καθ' αὐτό*, then X must be prior to Y in *οὐσία*, but that it need not be so otherwise.

This background helps to explain how the *aporiai* of B that are framed in terms of substance (#5, #8, #11–13) fit together with the *aporiai* framed in terms of *ἀρχαί*. If one of Aristotle's predecessors claims that X is an *ἀρχή*, Aristotle can attack this claim by arguing that X is not a substance and so does not exist *καθ' αὐτό*, and so cannot be an *ἀρχή*. Thus B #11 asks 'whether being

¹² In my view this is equivalent to saying that they do not exist *χωρίς*, or that such a thing is not *χωριστόν* or a this [*τόδε τι*]. Other scholars think that Aristotle is drawing finer conceptual distinctions here.

¹³ Ross emends *τὸ λευκόν* to *τὸ λευκὸν λευκόν*, but this can simply be understood: so, rightly, Barnes 1994.

¹⁴ This needs an amendment for cases like X = whiteness, since we probably want to say that whiteness does not exist *καθ' αὐτό*: here X exists, not because some Y exists and is X, but because some Y exists and is called *paronymously* from X (Y is white, rather than whiteness). In such cases we can say that X exists 'not *καθ' αὐτό* and abstractly', whereas the white exists 'not *καθ' αὐτό* and concretely'. This case is important because Aristotle seems to think that *matter* exists not *καθ' αὐτό* and abstractly (the bronze exists because the statue exists and is brazen): thus the matter is ontologically posterior to the composite rather than vice versa.

and the one are substances of things, and whether each of these is not, being something else, one or being, or whether we must ask what being and the one are, there being some other underlying nature [of which these are predicated]’ (1001^a5–8).¹⁵ Aristotle presents this as a dispute between Plato and the Pythagoreans, who think τὸ ὄν καὶ τὸ ἓν are substances, and the physicists, who think they are always predicates of something else (1001^a9–19).¹⁶ The negative arguments of #11 are trying, by arguing that being and unity exist not καθ’ αὐτά but parasitically on some other underlying nature, to refute Platonic and Pythagorean claims that being and one are ἀρχαί. The parallel *aporia* in *Metaphysics K* makes Aristotle’s intention explicit: ‘if someone posits the ἀρχαί that seem most of all to be unmoved, [namely] being and the one, then, first, if these do not signify a this and a substance, how will they be separate and καθ’ αὐτάς? But we expect the first and eternal ἀρχαί to be of this kind [sc. separate and καθ’ αὐτάς]’ (1060^a36–b³).¹⁷ And these considerations about the ontological status of the thing put forward as an ἀρχή will also be crucial in resolving *B* #13 and #14.

Aristotle’s answers to both *aporiai* are emphatic. He insists, against most of the physicists and (Aristotle implies) against the Platonists as well, that ἐνέργεια is prior to δύναμις in general, and that the first ἀρχή is pure ἐνέργεια (δυνάμεις are ἀρχαί in a broader sense, but posterior to ἐνέργεια); and he sides with the physicists against the Platonists in saying that ‘[the ἀρχαί] are not universals’ (*A* 5 1071^a19–20).¹⁸ I will deal in the next section with *B* #14, and in the third section with *B* #13, going through the arguments that Aristotle raises in *B* on each side of each question and dealing with issues of construal and interpretation (and two textual questions in #14), and then looking to how Aristotle answers the questions and resolves the difficulties, #13 in *Θ* and *Λ*, #14 in *Μ* and *Λ* (drawing on the argument in *Ζ* that no universal is a substance). I will not try to go through all the steps of Aristotle’s answers, but I want to say enough to show *where* Aristotle answers the *aporiai*, and thus how this section of *B*

¹⁵ In an expression like ‘τὸ *X*, οὐχ ἑτερόν τι ὄν, *X* ἔστω’, by a fixed if odd-looking Greek construction, the οὐχ negates the *conjunction* of the participial clause and the following main clause (thus at Antiphon *First Tetralogy* a2, ‘οὐ τὸν αἵτιον ἀφέντες τὸν ἀναίτιον διώκομεν’, if οὐ negated only the participial clause, the speaker would be saying that he is prosecuting an innocent person!). Aristotle in *B* #11 seems freely to interchange ‘*X* is an οὐσία’, ‘*X* is the οὐσία of something’, ‘the οὐσία of *X* is to be *X*’, ‘*X* is not predicated of some other underlying nature’, ‘*X* is κεχωρισμένον’, ‘there is an αὐτό *X*’, and, in not, *Metaphysics K* parallel, also “‘*X*’ signifies τὸδε τι καὶ οὐσίαν’ and ‘*X* exists χωριστὸν καὶ καθ’ αὐτό’ (1060^a 37 b²).

¹⁶ This refers back to the discussion in *A* 5 6 of the Pythagorean and Platonic claim that unity and its contrary are ἀρχαί: ‘[Plato] said, similarly to the Pythagoreans, that the one is a substance, and that it is not, being something else, called one’ (987^b22 4; for the Pythagoreans see 987^a14 19).

¹⁷ Likewise *B* #7 tries to undermine the claim of the (higher) genera to be ἀρχαί by arguing that they do not exist separately from the things that fall under them; most explicitly at 999^a17 19.

¹⁸ For this text (which has sometimes been construed differently) see discussion below.

(alongside the rest of *B*) helps to structure the overall programme of the *Metaphysics*.

II. *Aporia* #14

II.1

B #14 says:

ταύτας τε οὖν τὰς ἀπορίας ἀναγκαῖον ἀπορήσαι περὶ τῶν ἀρχῶν, καὶ πότερον καθόλου εἰσὶν ἢ ὡς λέγομεν τὰ καθ' ἕκαστα. εἰ μὲν γὰρ καθόλου, οὐκ ἔσονται οὐσίαι· οὐθὲν γὰρ τῶν κοινῶν τόδε τι σημαίνει ἀλλὰ τοιόνδε, ἢ δ' οὐσία τόδε τι· εἰ δ' ἔσται¹⁹ τόδε τι καὶ ἐκθῆσθαι²⁰ τὸ κοινὴ κατηγορούμενον, πολλὰ ἔσται ζῶα²¹ ὁ Σωκράτης, αὐτός τε καὶ ὁ ἄνθρωπος καὶ τὸ ζῶον, εἴπερ οἰμαίνει ἕκαστον τόδε τι καὶ ἔν. εἰ μὲν οὖν καθόλου αἱ ἀρχαί, ταῦτα συμβαίνει· εἰ δὲ μὴ καθόλου ἀλλ' ὡς τὰ καθ' ἕκαστα, οὐκ ἔσονται ἐπιστηταί²² καθόλου γὰρ αἱ ἐπιστήμαι²³ πάντων ὥστ' ἔσονται ἀρχαί ἔτεραι πρότεραι τῶν ἀρχῶν αἰ²⁴ καθόλου κατηγορούμεναι, ἄνπερ μέλλῃ ἔσεσθαι αὐτῶν ἐπιστήμη.²⁵ (1003^a 5–17)

I provisionally translate:

We must raise both these [foregoing] *aporiai* about the *ἀρχαί*, and also whether the *ἀρχαί* are universal, or as we speak of individuals.²⁶ {First half: argument against universal *ἀρχαί*.} For if they are universal, they will not be substances; for no universal [term] signifies a this, but rather such, whereas a substance is a this; if what is universally predicated were a this and could be 'set out', then Socrates would be many animals, himself and Man and Animal, if each of these signifies a single this. {Second half: argument against individual *ἀρχαί*.} So if the *ἀρχαί* are universal, these consequences

¹⁹ According to Bonitz, codex T (Vaticanus 256) has ἔστι, as does a manuscript of Syrianus; Ross and Jaeger, who usually report only EJA^b (and the commentators, and completely uncritically a Latin translation), do not note any disagreement.

²⁰ So the manuscripts; I will discuss some proposed emendations below.

²¹ Jaeger wrongly brackets ζῶα, following a suggestion of Christ.

²² A^b has οὐκ ἔσονται ἐπιστήμαι, taking ἔσονται as existential rather than predicative.

²³ αἱ ἐπιστήμαι EJ Bonitz; ἡ ἐπιστήμη A^b Ross Jaeger. The difference in meaning is not much, unless (as I suspect) A^b is taking πάντων conjunctively ('there is a single universal science of everything'), which is certainly wrong.

²⁴ αἱ A^b Bonitz Ross Jaeger, omittunt EJ.

²⁵ Ross says that J has ἐπιστήμη here; Jaeger is silent, implying that J has ἐπιστήμη; Gudrun Vuillemin-Diem in her very valuable list of corrections and supplements to Ross's readings of J (in *Aristoteles Latinus*, v. 25, part 3, fascicle 2 (Leiden, 1995), 323–6) is also silent, implying that Ross is right (which he usually is not when his manuscript-reports disagree with Jaeger's, but sometimes Jaeger fails to report something).

²⁶ Not 'whether the *ἀρχαί* are universal, or, as we say, individual' but simply 'or what we call individuals', or 'or exist as we say individuals do', given the parallel *M* 10, 1086^b 16–19, 'if someone does not posit that substances are separate, καὶ τὸν τρόπον τοῦτον ὡς λέγεται τὰ καθ' ἕκαστα τῶν ὄντων, he will take away what we mean by substance', discussed below.

will follow; if they are not universal but [exist] as individuals, they will not be [scientifically] knowable: for the sciences/knowledges of all things are universal [i.e. in each case of scientific knowledge, the object of the knowledge is universal], so that there will be other ἀρχαί prior to the ἀρχαί, [namely] what is universally predicated of them, if indeed there is going to be [scientific] knowledge of [the alleged ἀρχαί].

The first half of the *aporia* raises a difficulty against positing universals as ἀρχαί and thus as ontologically prior, while the second half raises a difficulty against positing individuals as ἀρχαί and thus as epistemologically prior: in order for these arguments to produce a real conflict, Aristotle must be assuming, together with the physicists and the Platonists, that the things that are first in οὐσία will also be first in the order of scientific knowledge. I will concentrate here on the argument of the first half (the argument that Aristotle himself thinks is correct), where there are more interpretive issues (and an important textual issue) in dispute, but I will also say something about the argument of the second half, and about how Aristotle resolves this argument in *Metaphysics M* 10.

The interpretation of the first half of the *aporia* is bound up with the problem of construing, or emending, the transmitted text εἰ δ' ἔσται τόδε τι καὶ ἐκθέσθαι τὸ κοινῇ κατηγορούμενον, accepted by Bekker and Bonitz but emended in different ways by Ross and Jaeger. Before setting out this problem and some possible solutions, let me say something about the overall structure of the argument, and about why it matters whether what is universally predicated is τόδε τι.

Here as elsewhere in *B* (as discussed above) Aristotle takes for granted that if *X* is to be an ἀρχή, *X* must be a substance, since if *X* were a non substance it would exist not καθ' αὐτό but rather dependent on some other underlying nature, which would therefore be prior to *X*. So if he can show that no universal is a substance, he will have shown that no universal is an ἀρχή. Aristotle gives other arguments elsewhere (notably in *Metaphysics Z* 13) that no universal is a substance. Here, however, he argues that no universal is a substance because no universal is τόδε τι and every substance is τόδε τι; and then he supplies a further argument to support the premiss that no universal is τόδε τι. He does not explicitly argue here for the premiss that every substance is τόδε τι. A bit disturbingly, Aristotle takes this premiss for granted everywhere except in the *Categories*, where he denies it:

every substance seems to signify a this [τόδε τι]. In the case of primary substances it is undisputed and true that they signify a this: for what is indicated is indivisible and numerically one. In the case of secondary substances they appear likewise, in accordance with the σχῆμα τῆς προσηγορίας, to signify a this, when someone says 'man' or 'animal'; but it is not true, rather they signify a such [ποῖόν τι]: for the

ὑποκείμενον is not one as primary substance is, rather man and animal are said of many. (*Categories*, 5, 3^b10–18)

But even in the *Categories*, Aristotle seems to think that the normal default assumption, rooted in the workings of the language, is that every substance term signifies a this, and that the burden of proof is on anyone who wants to argue against some particular case of this assumption. And we can see why this assumption would at least look as if it ought to be true, if we think about the meaning of ‘τόδε τι’ and the contexts in which the issue of τόδε τι arises.

Most generally, X is τόδε τι if X can, in some context, be referred to by a pronoun such as ‘τόδε’ or ‘τοῦτο’, used either deictically or anaphorically. (Why does Aristotle say ‘every substance[term] signifies τόδε τι’, rather than just ‘every substance[term] signifies τόδε’? Well, suppose that when he utters the latter sentence he happens to be pointing at a table. It is just false that every substance term signifies *this*, i.e. the table; it may be true that every substance term signifies *a* this, i.e. something that in some appropriate context could be referred to by ‘this.’ But sometimes Aristotle says just ‘τόδε’ instead of ‘τόδε τι.’) ‘This’ is usually contrasted with ‘such’ (here ποιόν τι, elsewhere τοιόνδε or τοιούτον), sometimes also with ‘so much,’ and similar terms for other categories: ‘man’, and every universal, signifies not a this but a such or so much or in relation to something [τοιόνδε τι ἢ πρὸς τι] or the like’ (*On Sophistical Refutations* 22, 178^b37–9). The question of what things can legitimately be called τόδε or τοῦτο, as opposed to τοιούτον or something weaker, occurs already in Plato, most fully in the *Timaeus*.²⁷ For, according to the *Timaeus*, what now appears to us as water will later appear to us (having undergone some transformation) as air or earth or fire: so

since each of these never appears the same, of which of them would one not be ashamed to maintain firmly that it is this and not something else [τοῦτο καὶ οὐκ ἄλλο]? Of none; rather, by far the safest when we discuss these things is to speak in this way: as for what we see always coming to be at different times in different places, like fire, on each occasion we should call fire not ‘this’ [τοῦτο] but ‘such’ [τὸ τοιούτον], nor should we call water ‘this’ but always ‘such’, nor [should we speak] of anything else as having stability, of all the things we point to and use the words ‘τόδε’ and ‘τοῦτο’, thinking we are signifying something: for they do not wait around for ‘τόδε’ and ‘τοῦτο’ or any other expression that would indicate that they are stable. (49c7–e4)²⁸

²⁷ Also in the *Theaetetus*, according to the doctrine of those philosophers (‘all the wise except Parmenides’, 152e2) who think that all things are always in motion and that ‘nothing is any one thing αὐτὸ καθ’ αὐτό’ (152d2 3 etc.), ‘we must not admit “τι” . . . or “τόδε” or “ἐκείνο” or any other name that would bring things to a stop’ (157^b3 5; the text in the bit I have ellipsed is disputed).

²⁸ This passage and its context (including the ‘gold passage’ cited below) have been the subject of a great deal of controversy, the central document being Harold Cherniss 1954. However, I think much of

Plato's starting point here is close to the rhetorical question of *Republic* V, whether 'each of the many [F's] *is*, more than *not* being, this thing that one would say it is [$\tau\omicron\upsilon\tau\omicron\tau\omicron \delta' \acute{\alpha}\nu \tau\iota\varsigma \phi\eta\iota \alpha\upsilon\tau\omicron \epsilon\iota\lambda\upsilon\alpha\iota$, i.e. F]' (479b9–10). Both *Republic* and *Timaeus* say that it is wrong to describe a sensible F as $\tau\omicron\upsilon\tau\omicron\tau\omicron$, when the pronoun ' $\tau\omicron\upsilon\tau\omicron\tau\omicron$ ' stands in for the noun 'F'; but the *Timaeus*, unlike the *Republic*, proceeds to the broader conclusion that we should *never* describe a sensible thing as ' $\tau\omicron\upsilon\tau\omicron\tau\omicron$ ' or ' $\tau\acute{o}\delta\epsilon$ ', and that these pronouns really refer not to a sensible F but to something else which does 'wait around'.²⁹ Presumably, when I use the pronoun anaphorically to stand in for the noun 'F', then what it refers to is the form of F, and when I use it deictically, as Plato says 'pointing and using the words " $\tau\acute{o}\delta\epsilon$ " and " $\tau\omicron\upsilon\tau\omicron\tau\omicron$ "', then what it refers to is the receptacle.³⁰ Aristotle will reject Plato's claims that the ultimate material $\acute{\alpha}\rho\chi\eta$ (for Plato, the receptacle) and the significatum of a universal like 'man' (for Plato, a separate Form) are thises and that sensible things are not thises; but he inherits from Plato the concepts of 'this' and 'such' and the problem of determining which of them applies in a given case.

The *Timaeus* passage (with its context) also helps to bring out the connection between $\tau\acute{o}\delta\epsilon \tau\iota$ and $\omicron\upsilon\sigma\iota\alpha$. An $\omicron\upsilon\sigma\iota\alpha$, for Plato and following him for Aristotle, is always the answer to a $\tau\acute{\iota} \acute{\epsilon}\sigma\tau\iota$ question: the $\omicron\upsilon\sigma\iota\alpha$ of X is the object that answers ' $\tau\acute{\iota} \acute{\epsilon}\sigma\tau\iota$ X?', as the $\pi\omicron\iota\omicron\tau\eta\varsigma$ of X answers ' $\pi\omicron\iota\omicron\acute{\nu} \acute{\epsilon}\sigma\tau\iota$ X?'.³¹ And the $\omicron\upsilon\sigma\iota\alpha$ of something, the answer to ' $\tau\acute{\iota} \acute{\epsilon}\sigma\tau\iota$?', should take the form ' $\tau\acute{o}\delta\epsilon$ ', while

the controversy is beside the point. Even if Cherniss is grammatically right that 49d5–6 means not 'we should call fire not "this" but "such"' but rather 'we should not call *this*, but rather what is *like* this, fire' (and I do not believe this is right), the impact will not be much. Cherniss agrees that what is ordinarily called fire should not be called 'this', and contrariwise that the Receptacle *may* be called 'this'; and I agree that what is ordinarily called fire is properly called not 'fire' (fire being a this) but 'fiery' (fiery being a such), and that only the Form of fire is properly called 'fire'. I am also not impressed by Cherniss's denial that the Receptacle is the subject of which 'fiery' is predicated. What is fiery (or more properly 'inflamed' undergoing an action, not possessing a persisting quality), and therefore appears to *be* fire, must really *be* something in the $\tau\acute{\iota} \acute{\epsilon}\sigma\tau\iota$, and there is no plausible candidate except (a portion of) the Receptacle (the triangles are not yet on the scene); and it is uncontroversial (because Plato clearly says so, 51b4–6) that there are inflamed parts of the Receptacle that appear to be fire – if Cherniss wants to say that phenomenal fire is not the inflamed parts of the Receptacle but the images of the Form of fire *in* these parts of the Receptacle, he can use the language as he chooses. Of recent literature, I am generally in sympathy with Donald Zeyl 1975, who gives a detailed criticism of Cherniss; cp., more recently, Mary Louise Gill 1987, and Allan Silverman 1992, 87–113, and the references they cite. It seems to me from *On Generation and Corruption* II 1, 329^{13–24} that Aristotle took the passage much as I am taking it.

²⁹ The *Republic* also does not develop a systematic contrast between $\tau\omicron\upsilon\tau\omicron\tau\omicron$ and $\tau\omicron\upsilon\omicron\upsilon\tau\omicron\tau\omicron$.

³⁰ 'That in which they [fire etc.] each appear when they come to be, and out of which again they perish [namely the Receptacle] – only this [should be] referred to using the words " $\tau\omicron\upsilon\tau\omicron\tau\omicron$ " and " $\tau\acute{o}\delta\epsilon$ "' (49e7–50a2).

³¹ Thus for instance at *Euthyphro* 11a6–b1, the $\omicron\upsilon\sigma\iota\alpha$ of the pious is the answer to $\tau\acute{\iota} \acute{\epsilon}\sigma\tau\iota$, as opposed to its $\pi\acute{\alpha}\theta\omicron\varsigma$, the answer to $\tau\acute{\iota} \pi\acute{\epsilon}\pi\omicron\upsilon\theta\epsilon$ (Plato uses ' $\pi\omicron\iota\omicron\tau\eta\varsigma$ ' only in the *Theaetetus*, but frequently distinguishes $\tau\acute{\iota} \acute{\epsilon}\sigma\tau\iota$ and $\pi\omicron\iota\omicron\acute{\nu} \acute{\epsilon}\sigma\tau\iota$ questions). It is sometimes thought that for Aristotle only the form is the $\omicron\upsilon\sigma\iota\alpha$ of something, and that the matter and the composite are simply $\omicron\upsilon\sigma\iota\alpha\iota$, but the distinction

an answer to ‘*ποιόν ἐστι*?’ takes the form ‘*τοιόνδε*’.³² For instance, if I ask ‘who is the man in the corner?’, the answer ‘Socrates’ has the form ‘*τόδε*’ (or ‘*ὅδε*’), whereas if I ask ‘what is the man in the corner like?’, the answer ‘white’ or ‘snub nosed’ has the form ‘*τοιόνδε*’ (or ‘*τοιόσδε*’). Thus if ‘*τίς ἐστι* the man in the corner?’ and ‘*τίς ἐστι* the wisest of mortals?’ have the same answer, then *ὅδε*, *this* person who is in the corner, is the wisest of mortals; if ‘*ποιός ἐστι* the man in the corner?’ and ‘*ποιός ἐστι* the wisest of mortals?’ have the same answer, then it is only *τοιόσδε*, someone *like* the person in the corner, who is the wisest of mortals. The grammarians make the same point in reverse, when they say that pronouns ‘signify *οὐσία* without *ποιότης*’: the pronoun ‘*τόδε*’ applies to *this* thing, and continues to apply to *this* thing despite any qualitative changes it may undergo, because it signifies only *what the thing is*, its *οὐσία*, without regard to its *ποιότης*, *what it is like*, which may change while the thing remains.³³ For Plato the answer to ‘what is fire?’ might be the Form of fire, as

cannot be maintained. Aristotle himself does not think that matter is (without some qualification) *οὐσία*, and the same people who think that it is *οὐσία* think that it is the *οὐσία* of the things that are made out of it. Thus *Physics* II,1 attributes to physicists including Antiphon the view that *ἡ φύσις καὶ ἡ οὐσία τῶν φύσει ὄντων* is their material substratum, so that e.g. the bronze is the *οὐσία* of the statue (193^b9–28): that is, what the statue is [*τί ἐστι*] is bronze, whereas its shape is just what it has suffered [*τί πέπονθε*], as in the gold comparison of *Timaeus* 50a5–b5. And just as the matter can be the *οὐσία*-as-*ὑποκείμενον* of the composite, so the composite can be the *οὐσία*-as-*ὑποκείμενον* of its accidents, as ‘Socrates’ is the answer to the *τί ἐστι* (or *τίς ἐστι*) question ‘who is the man in the corner?’ or ‘who is the wisest of mortals?’. Even in the *Categories*, which is often thought not to use a two-place notion of *οὐσία* (although that depends on deleting *τῆς οὐσίας* in the phrase *λόγος τῆς οὐσίας* four times in Chapter 1, with Waitz and now Richard Bodéüs, 2001), it seems clear that secondary *οὐσῆαι* are called *οὐσῆαι* because they are answers to *τί ἐστι* questions asked of primary *οὐσῆαι* (2^b7–28). Aristotle also says that primary and secondary *οὐσῆαι* are called *οὐσῆαι* because they are *ὑποκείμενα* of individual or universal accidents (2^b37–3^a6): presumably this is because this implies that they can be given in answer to a *τί ἐστι* question asked of those accidents.

³² The point cannot be evaded by distinguishing between ‘an *οὐσία*’ and ‘the *οὐσία* of something’: Aristotle insists that the *οὐσία* of something must signify *τόδε τι*: ‘affections and motions [and so on]... do not seem to signify the *οὐσία* of anything, for they are all said of some *ὑποκείμενον*, and none of them is *τόδε τι*’ (*B* #12 1001^b29–32). We can indeed ask *τί ἐστι* of a quality (say, a virtue) rather than of a substance, but even here the answer will be an abstract accidental term (like ‘justice’) rather than a concrete accidental term (like ‘just’), and abstract accidental terms in a sense signify *τόδε τι* (see *Topics* III,1 116^a23–8, where justice, by contrast with the just [sc. man], is *ὅπερ τόδε τι*).

³³ I don’t know a fully satisfying exposition in the Greek grammarians of the theory of pronouns (either deictic or anaphoric, signifying *οὐσία* without *ποιότης*) and nouns (signifying *οὐσία* with *ποιότης*), but see Apollonius Dyscolus *De Pronomine* [*Grammatici Graeci* II,1] 9,7–10 and 25,7–22 and *De Constructione* [*Grammatici Graeci* II,2] 29,1–32,8, 100,13–102,5, and 113,5–14. The grammarians’ account of pronouns seems to be developing a Stoic account (although the Stoics lump pronouns together with ‘articles’, i.e. with what we would call the definite article and the relative pronoun, Apollonius *De Pronomine* 5,13–9,6; all have similar anaphoric functions). The grammarians sometimes, but not always, accept the Stoic assumptions that *οὐσία* is matter (so that the thing’s identity comes from its having the same matter) and that Socrates is not a this but a such; Aristotle could accept their analysis of pronouns and *οὐσία*, while rejecting these Stoic theses.

giving the essence, *what fire is*, but it might also be the receptacle, as giving the *ὑποκείμενον*, *what it is that is fire*:

if someone had shaped all figures out of gold and did not cease to reshape each of them into all the others, and if someone pointed to one of them and asked what it is, by far the safest in respect of truth would be to say that it is gold, and as for the triangle and all the other figures that arise in it, never to say ‘these things are’ [λέγειν ταῦτα ὡς ὄντα]—things that slip away in the middle of our assertion—but rather to be content if they will accept [the designation] ‘such’ [τὸ τοιοῦτον] with some stability. Now this same account holds for the nature that receives all bodies [i.e. that is related to earth, water, air and fire as the gold is related to the golden figures]. (*Timaeus* 50a5–b6)

That is: if someone points to what we ordinarily call a triangle, shaped out of the gold, and asks ‘τί ἐστι?’, the correct answer is not ‘triangle’, since it is not triangle (where triangle is a this) but only something *triangular* (where triangular is a such); *what it is* that is triangular is gold, and so ‘gold’ is the correct answer to the ‘τί ἐστι’ question. Likewise, if someone points to what we ordinarily call fire and asks ‘τί ἐστι?’, the correct answer is not ‘fire’ (since it is not fire, where fire is a this, but only fiery, where fiery is a such): what it is that is fiery is (a piece of) the receptacle, and so the receptacle is the οὐσία of the thing, the correct answer to the ‘τί ἐστι’ question. And if I point and ask ‘τί ἐστι τόδε?’, the right answer will also be the real referent of ‘τόδε’: thus when I point at what we ordinarily call fire—that is, a fiery piece of receptacle—and say ‘τόδε’, what I have signified is receptacle, just as, when I point at a triangular piece of gold and say ‘τόδε’, what I have signified is gold.

This Platonic background helps to explain Aristotle’s assumptions about ‘this’ and ‘such’, and in particular his assumption that if X is a such, there must be a this prior to it (namely *what X is*); both Plato and Aristotle use this assumption to argue that, if X is not a this but a such, X cannot be an ἀρχή. However, while Plato argues in this way to undermine the claims of things like fire, Aristotle has various arguments (some probably already current in oral discussion, invented either by Academics or by extramural critics of Plato such as the Megarians) to show that *universals* are not thises.³⁴ The particular argument that he gives here may or may not (depending on whether and how we emend the text) involve the notion of ἐκθεσις, which is also involved in arguments elsewhere about the status of universals, as well as about other issues. I will first comment

³⁴ And Aristotle does not accept Plato’s argument that if what we now call X can cease to be X, the τόδε or τί ἐστι is not X but the substratum which persists when X changes into not-X. Aristotle follows the *Timaeus* in arguing that all change requires a persisting substratum, but tries to show that it is possible for the substratum to signify a such and for the form to signify a this, so that there will be genuine substantial change (the *Timaeus* apparently concludes that there is no substantial change).

on the textual problem, then say something to clarify the notion of *ἐκθεσις* in general, and then say something about what the argument here would be, whether it turns on *ἐκθεσις* or not.

Ross says that the transmitted text, *εἰ δ' ἔσται τόδε τι καὶ ἐκθέσθαι τὸ κοινῇ κατηγορούμενον*, 'would require the rendering "if the common predicate *is to be* a this and *it is to be possible* to set it out apart from the particulars" ... an intolerable zeugma' (1970 (1924) I, 250). There are actually two different reasons why someone might find this grammatically intolerable. The first objection is that the single word *ἔσται* is being used simultaneously both as a copula (*ἔσται τόδε τι ... τὸ κοινῇ κατηγορούμενον*) and in its potential sense (*ἔσται ... ἐκθέσθαι τὸ κοινῇ κατηγορούμενον*). The second objection, which is more serious if it cannot be answered, is that if the potential construction of *εἶναι* is impersonal, as it usually is (*ἔστι V* infinitive' = 'it is possible to V'), then the single phrase *τὸ κοινῇ κατηγορούμενον* will have to be taken both in the nominative, as the subject of *ἔσται τόδε τι*, and in the accusative, as the object of the middle infinitive *ἐκθέσθαι*.³⁵ Jaeger's emendation, *εἰ δ' ἔσται τόδε τι καὶ <δεῖ> ἐκθέσθαι τὸ κοινῇ κατηγορούμενον*, escapes the first fault but falls into the second, and so seems to me to be ill advised.³⁶ More tempting is the emendation adopted by Ross,³⁷ changing a *κ* to a *ν* and reading *εἰ δ' ἔσται τόδε τι καὶ ἐν θέσθαι τὸ κοινῇ κατηγορούμενον*, 'if it were possible to posit that what is universally predicated is a this and one [or 'a single this']', particularly because, two lines further down, Aristotle closes the argument with *ἐπερ σημαίνει ἕκαστον τόδε τι καὶ ἔν*. I think Ross might be right, but I am also fairly strongly inclined to keep the transmitted text, not just because I like keeping transmitted texts in general,³⁸ but because the reference to *ἐκθεσις* is entirely *à propos*, and I find it hard to believe that it is simply due to a copyist's error;³⁹ and I think the grammar is defensible as long as we take the potential construction of *ἔσται* here to be personal, 'S *ἔστι V* infinitive' = 'it is possible to V S', 'S is available for V ing', German 'S ist zu V en', which is unusual but certainly possible.⁴⁰

³⁵ Not as the *subject* of the infinitive, which must be a person: *ἐκθέσθαι* is unambiguously middle, not passive, and the action of 'setting out' is almost always expressed by the middle, not the active, of *ἐκτίθηναι*; the only exception I know in Aristotle is at *Metaphysics M* 9, 1086^b10.

³⁶ The same objection holds against *εἰ δ' ἔσται τόδε τι καὶ ἐκθέσθαι <ἐξέσται> τὸ κοινῇ κατηγορούμενον*, suggested by Ross in his notes to the passage.

³⁷ Following Richards 1915 18.

³⁸ Here transmitted not just by the manuscripts but by Alexander.

³⁹ Also, on Ross's reading there is no particular reason for the awkward potential construction *εἰ δ' ἔσται τόδε τι καὶ ἐν θέσθαι τὸ κοινῇ κατηγορούμενον* (modality has nothing to do with it why not just say *εἰ δ' ἔσται τόδε τι καὶ ἐν τὸ κοινῇ κατηγορούμενον*?), whereas, as we will see, on the transmitted text Aristotle has a good reason for saying *ἔσται ... ἐκθέσθαι*.

⁴⁰ Thus notably at Parmenides Fr. 2 line 2, and, on the usual interpretation, in Fr. 3 (and in Parmenides Fr. 6 line 1 *ἔστι γὰρ εἶναι* and Anaxagoras Fr. 3 *τὸ γὰρ ἔδον οὐκ ἔστι τὸ μὴ [τομῇ?] οὐκ*

In what follows I will suspend judgement and examine what the text would mean, either with the transmitted reading or with Ross's emendation.

What, then, would it mean to say that a universal predicate can be 'set out', and how would this assumption function in the argument? Jaeger in his apparatus, defending his emendation which keeps 'ἐκθέσθαι', says 'ἐκθέσθαι idem est quod *χωρίζειν τὰς ἰδέας*', which is not entirely wrong but is too crude and does not take into account the full range of relevant meanings. Ross elsewhere in his commentary (1970 (1924), I, 208–9, on *A* 9, 992^b10) gives a helpful selection of Aristotle's uses of ἐκτίθεσθαι and ἔκθεσις, but he misses a very basic meaning and does not see how the different uses fit together. Lying behind many of Aristotle's uses is a technical use of 'ἔκθεσις' and 'ἐκτίθεσθαι' in describing geometrical arguments. In a Euclidean proposition, the statement of the proposition (e.g. 'if in a triangle two angles be equal to one another, the sides which subtend the equal angles will also be equal to one another,' *Elements* I,6) is followed first by the ἔκθεσις ('let ABC be a triangle having the angle ABC equal to the angle ACB'), and then by the διορισμός ('I say that the side AB is also equal to the side AC'), and then by the construction, proof, and conclusion. Here the geometer's ἔκθεσις of the proposition is his 'setting out' of an arbitrary individual instance, temporarily assigning names (or letters of the alphabet) to the different objects referred to in the proposition, and also (by *drawing* the points A, B and C and the lines connecting them) 'setting them out' to the pupil's sight; the geometer will then proceed as if what he had to show were simply the διορισμός, the particular instance of the proposition applied to the case of the ἐκτεθέντα. This is not simply a late ancient systematization: Euclid does not use the noun ἔκθεσις, but he often uses the verb ἐκτίθεσθαι, usually in its suppletive passive ἐκκεῖσθαι.⁴¹ Aristotle unmistakably uses ἐκτίθεσθαι in this technical geometrical sense at *Prior Analytics* I 41, 49^b33–50^a4 (and 'ἐκκεῖσθω' in the geometrical passage on the rainbow in

εἶναι 'Σ ἔστι εἶναι' means something like 'S is capable of being'); also Aeschylus *Persians* 419 and Eupolis Fr. 148 Kassel Austin line 2. Bonitz's *Index Aristotelicus* (Berlin, 1870) gives some illustrative examples of ἔστι potential in Aristotle (s.v. εἶναι, 220^b6–9), among which the construction might well be personal at *Meteorology* I 14, 353^a7–9, but it might not be; it is also most easily taken as personal at *Metaphysics* *A* 5 1071^a17–18, discussed below, but again it might not be. The personal construction is more common when supplemented by a dative ('S is for T to V' 'T can V S') or a locative phrase ('S is at hand to V') or with a prepositional compound of εἶναι: Charles Kahn 2003 [1973], 178–9 discusses some Homeric examples. (Kahn also discusses the potential construction at pp. 292–6, but his examples there are all impersonal.)

⁴¹ Euclid uses the aorist middle infinitive ἐκθέσθαι at XIII,18, an aorist passive subjunctive ἐκθεθῶσιν at IX 36, and, many times, forms of the suppletive passive ἐκκεῖσθαι, especially in Book X (also I 22, IV 10, IV 11, etc.).

Meteorology III 5, 376^a10), and he also applies the geometrical term metaphorically in syllogistic, both for setting out a particular instance falling under a universal term, and for ‘setting out’ the terms themselves with names or letters (‘τοὺς ὄρους ὀνόματι ἐκτίθεσθαι’, *Prior Analytics* I 35, 48^a29).⁴²

By another apparent extension of the geometrical use, Aristotle uses the term ‘ἐκθεσις’ in his discussions of sophisms; and this sense is very closely bound up with the question whether something is *τόδε τι*. A crucial text is in *On Sophistical Refutations* 22, in Aristotle’s discussion of sophisms of *σχῆμα τῆς λέξεως*, that is, sophisms that arise because a term that signifies something of one logical type (e.g. in some one category) appears by its grammatical form to signify something of another logical type (e.g. of another category): this can happen, in particular, when a term that does not signify *τόδε τι* is treated as if it did signify *τόδε τι*. One example is a sophism that arises from asking ‘about Coriscus and musical Coriscus, whether they are the same or different. [The sophism arises because] the former signifies *τόδε τι*, and the latter signifies *τοιόνδε*, so that it is not possible to ἐκθέσθαι it [οὐκ ἔστιν αὐτὸ ἐκθέσθαι—the parallel with the transmitted text at *Metaphysics* B 6, 1003^a10, destroyed by Jaeger’s emendation as well as by Ross’s, is striking]’ (178^b39–179^a3). The sophism turns on treating ‘musical Coriscus’ as logically a proper name, and thus ‘setting it out’. To make the ἐκθεσις explicit, a new name might be assigned, as letters are assigned to points in a geometrical ἐκθεσις: ‘musical Coriscus is someone, let us call him Erastus; now then, are Erastus and Coriscus the same person or not?’, so that contradictions can be derived either way (if Erastus and Coriscus are two different people, there are obvious absurdities; if Erastus and Coriscus are the same person, this is also absurd, e.g. because Erastus came to be only when Coriscus came to be musical, not when Coriscus was born). Aristotle advises that, if we are confronted with such a sophism, we should solve it by pointing out that ‘musical Coriscus’ signifies not *τόδε τι* but *τοιόνδε*, and therefore that ‘musical Coriscus’ cannot be treated as (or replaced by) a proper name: so the question whether Coriscus and musical Coriscus are the same person or different people has a false presupposition, and has no right answer.⁴³

⁴² Also note the proof ‘τῷ ἐκθέσθαι’ of e.g. a syllogism in Darapti: ‘for if both [P and R] belong to every S, if some one of the S’s is taken, such as N, both P and R will belong to this, so that P will also belong to some R’ (*Prior Analytics* I 6, 28^a22–6). For the point that Aristotle is here using the geometrical notion of ἐκθεσις, and for argument that N here is an *individual* S rather than a subclass of S, see Smith 1982.

⁴³ This passage is misunderstood by Nicholas White 1971; followed by Louis-André Dorion 1995, 361). When Aristotle says ‘the former [sc. Coriscus] signifies *τόδε τι*, and the latter [sc. musical Coriscus] signifies *τοιόνδε*, so that it is not possible to ἐκθέσθαι it’, White thinks this is in the voice of ‘an (actual or

Aristotle analyses several other sophisms as sophisms of *σχῆμα τῆς λέξεως* to be solved in the same way, including an argument that ‘there is a third man beyond [man]himself and the individual [men]’ (178^b36–7). There is no way to tell which argument Aristotle is thinking of here (it was a common sport to construct arguments to this conclusion that the Platonists would find it hard to get out of), but they all seem to turn on ‘setting man out’ as if man were *τόδε τι*, and they can all be solved by denying that man is *τόδε τι*—as Aristotle puts it here, “‘man”, and every universal [*κοινόν*], signifies not a this but a such or so much or in relation to something [*τοιόνδε τι ἢ ποσὸν ἢ πρὸς τι*] or the like’ (178^b37–9). (Sophisms of this class are a challenge to the Platonists just because any way of solving the sophism by denying that man is *τόδε τι* would threaten the theory of Forms or the arguments used to establish it.)⁴⁴ Aristotle then adds that the root error that gives rise to the third man is not

imaginary) interlocutor . . . who is claiming that *ἐκθεσις* either produces talk of entities which are subject to the Third Man regress or else does not yield entities of any kind or category at all’ (p. 166). But the argument about Coriscus and musical Coriscus is not introduced as in any way subordinate to the third man argument; it is simply another sophism of *σχῆμα τῆς λέξεως* like the third man argument, and to be solved, like the third man argument, by pointing out that some item (musical Coriscus, or man) is not *τόδε τι* and so cannot be legitimately ‘set out’ or referred to by a proper name or a demonstrative pronoun. There is no reason at all to think, as White does, that Aristotle is *defending* the *ἐκθεσις* of musical Coriscus, and White says nothing about how he would then solve the sophism indeed, White says nothing about the Coriscus argument at all. The sophism is not a regress argument of any kind (White may be influenced by Ross’s suggestion, 1970 (1924), I, 359, that the argument is ‘if Coriscus is the same as musical Coriscus, then he is the same as musical musical Coriscus, and so *ad infinitum*’, assimilating the argument to the arguments about ‘double’ and ‘snub’, but these arguments turn on logical features that ‘double’ and ‘snub’ have and ‘musical’ does not; the context of the argument about Coriscus and musical Coriscus in *Metaphysics E 2*, 1026^b15–24 suggests that it turns instead on coming-to-be). White’s claim that Aristotle thinks that the *ἐκθεσις* of something that is not *τόδε τι* is legitimate collapses with his attempt to assign 179^a1–3 to a different voice.

So too the *ἐκθεσις* of a thing and its essence at *Metaphysics Z 6*, 1031^b21–2 either is, or would naturally be accompanied by, the assignment of names to them. For, if we skip over the parenthesis at 1031^b22–8, Aristotle immediately says that ‘the absurdity [of holding that the thing is not identical to its essence] would be manifest if someone gave a name to each of the essences’ (128–9). That is to say: if, as Plato says, the essence of horse (what-it-is-for-Bucephalus-to-be-a-horse) is not identical to Bucephalus, then I can *ἐκτίθεσθαι* the essence of horse, giving it a proper name; if the essence of horse is (a) horse, I can give it a horsey name, say ‘Pegasus’. But then I can ask again about the essence of horse (what-it-is-for-Pegasus-to-be-a-horse); and if ‘beyond the essence of horse there will be another essence of horse’ (130), a third horse, call it Ariel (keeping the transmitted text and rejecting the Bonitz–Ross–Jaeger deletion of the second *ἑππῶ* at 1031^b30, although the argument will be similar even with the deletion). This conclusion is absurd enough in itself; or, if we want to make the absurdity more manifest, we can argue in the same way to a whole infinite series of horse-essences. This does not actually refute the Platonist claim that what-it-is-for-Bucephalus-to-be-a-horse is something other than Bucephalus, but it shows that the argument the Platonist has given for this conclusion, since it would equally conclude that what-it-is-for-Pegasus-to-be-a-horse is something other than Pegasus, must be unsound. The assigning of names is not really needed for Aristotle’s argument, but it helps, as he says, to make the absurdity manifest.

⁴⁴ Besides (one or another variant of) the most familiar third man argument, there are two others noted by Alexander *In Metaphysica*, 84, one attributed to unnamed sophists, ‘if when we say “man walks”

ἐκθεις but granting that man is τὸδε τι (presumably because, once we have granted this, the ἐκθεις and its consequences follow automatically); he notes more parenthetically that the ἐκθεις, by producing a one over the many, would still be sufficient to produce the third man even if we do not say that man is τὸδε τι.⁴⁵

we are not saying either of the idea, man, that it walks (for it is unchanging), nor of some individual man that he walks (for how could we be saying this of someone we don't know? for we know that man walks, but we don't know which individual we are saying this of), then we are saying of some third man, besides these, that he walks: so there will be some third man of whom we predicate walking', and one attributed on the authority of the early Peripatetic Phanas to 'Polyxenus the sophist', 'if man exists by participation and presence of the idea man-himself, then there must be some man who has his existence in relation to the idea. But this is not man-himself (who is the idea), nor is it any particular man. So it remains that there is some third man who has his existence in relation to the idea.' (Harold Cherniss 1944 argued [pp. 500–1] that these two arguments are a later interpolation in the Alexander passage, but even if so there is no reason to doubt the historical testimony.) Both of these arguments clearly turn on 'setting out' man, and asking 'who is that man of whom you just predicated that he walks, or that he has his existence in relation to the idea?'; if that ἐκθεις is illegitimate, the arguments will be solved. Pseudo-Alexander *In Sophisticos Elenchos*, 158,20–6 says the argument Aristotle is referring to at *SE* 178^b36–179^a10 is the 'man walks' argument, but he is clearly copying the argument from Alexander *In Metaphysica*, and probably his only reason for preferring this argument is that Alexander describes it as sophistical (*In Metaphysica*, 84, 14). Modern scholars have generally preferred some version of the most familiar third man argument (e.g. Cherniss, 289–91 with n. 194; Owen, 1968, 111–12; Dorion, 1995, 359), but they have no better reasons than the pseudo-Alexander did. Modern scholars get very exercised about which of these arguments were sophisms and which were serious criticisms of the theory of Forms (especially since Aristotle speaks of the third man in both ways), but they are all sophisms, and they are all serious criticisms of the theory of Forms, precisely because the Platonists cannot solve the sophisms in the obvious ways without danger to their own doctrines or arguments. (Compare Alexinus' argument at Sextus *AM* IX,108 that the world is grammatical and poetical, which certainly never pretended to be anything more than a sophism, but which is supposed to be hard for the Stoics to dismantle without also dismantling Zeno's argument that the cosmos is rational. Alexinus' argument is not intended as a *refutation* of Zeno's claim that the cosmos is rational: he never even mentions this claim – and none of the third man arguments are intended as refutations of the theory of ideas.) Aristotle constructs a different argument at *B* #5 997^b12–24, again drawing the conclusion that there is some third man besides the individuals and man-himself (explicit in the parallel *K* 1, 1059^b3–9); this one is supposed to be hard for the Platonists to solve without damage to their theory of intermediate mathematical (rather than of Forms); the solution to this argument would not turn on questions of ἐκθεις or τὸδε τι.

⁴⁵ For the root of the third man as treating the universal [τὸ κοινὴ κατηγορούμενον] as a this rather than a such, see also *Metaphysics* Z 13, 1038^b34–1039^a3. White (1971) takes *SE* 179^a3–4 'it is not τὸ ἐκτίθεσθαι that produces the third man, but conceding that it is ὅπερ τὸδε τι' to be 'saying that τὸ ἐκτίθεσθαι is not objectionable, and in particular that it does not lead by itself to the Third Man regress' (p. 164), and he takes the passage to be endorsing an ἐκθεις of the one παρά the many which will not be τὸδε τι. This fundamentally conflicts with Aristotle's understanding of ἐκθεις, of which White offers no alternative account. When *SE* 179^a1–3 says that there is no ἐκθεις of what is not τὸδε τι, White takes this as being in the voice of an opponent (see note above); when *SE* 179^a5–8 says that 'even if someone says that the ἐκτιθέμενον is not ὅπερ τὸδε τι but ὅπερ ποῖον, it will make no difference: for what is παρά the many, like man, will be some one thing' (179^a5–8), White takes 'it will make no difference' to mean 'it will do no harm'. I mention all this only because, since Dorion in his commentary follows White, it is in danger of becoming the standard story.

With this background on *τόδε τι* and *ἑκθεσις*, it is straightforward to interpret the argument at *B* #14 1003^a9–12, assuming the transmitted text. If what is universally [*κοινῇ*] predicated were a *τόδε τι*, then we could ‘set it out’, giving it a name if we like. So ‘Socrates will be many animals, himself and man and animal’ (1003^a10–12). For let Socrates be *A*, let man be *B*, and let animal be *C*. *B* cannot be the same as *A*, since *B* is predicated of Coriscus and *A* is not, so *B* must be other than *A*, and likewise *C* must be other than *A* and *B*. *A*, *B*, and *C* are all (present in) Socrates, and animal is predicated of each of them, so Socrates is at least three animals.⁴⁶ The way the argument proceeds here recalls the case of Coriscus and musical Coriscus: in either case, if each item is *τόδε τι* and can be set out, we will be able to count them, and paradoxes will result no matter what the count is. And if musical Coriscus is *τόδε τι* and can be set out, he is certainly a human being, so that (if he is not the same as Coriscus) there will be two human beings sitting in that chair, just as, if Socrates and man and animal are thises and can be set out, they are certainly animals, so that if they are not the same there will be three animals present in Socrates. For this same style of *reductio ad absurdum*, we might compare an argument Seneca reports against the Stoic thesis that the virtues are animals: ‘therefore all the arts are also animals, and everything which we think and embrace with the mind; it follows that many thousands of animals reside within these narrows of the chest, and each of us is many animals or contains many animals’ (*Letter* 113,3); Plutarch, likewise, says that the Stoic thesis that the same thing is under different descriptions both a *ὑποκείμενον* and a *ποιόν* makes each of us ‘twin and two natured and double, not as the poets imagine the Molionidae, united in some parts but separated in others, but two bodies having the same colour, same shape, same weight and place’, so that Pentheus would be right in seeing a double sun and double Thebes (*On Common Notions against the Stoics* 1083c, e–f). And Aristotle himself says in *Metaphysics M* 7 that if Platonic ideas are composed out of units, then ‘all the units will be ideas and an idea will be composed out of ideas, so that clearly those things of which these are the ideas will also be composites, so that one would say that animals are composed out of animals, if there are ideas of these’ (1082^a35–^b1); and in *Topics* VI 6 ‘the genus

⁴⁶ Sarah Broadie, in an intervention at the Symposium, suggested a different construal, turning on a different punctuation from that adopted by Bonitz and Jaeger and Ross: instead of *πολλά ἔσται ζῶα ὁ Σωκράτης, αὐτός τε καὶ ὁ ἄνθρωπος καὶ τὸ ζῶον*, read *πολλά ἔσται ζῶα, ὁ Σωκράτης αὐτός τε καὶ ὁ ἄνθρωπος καὶ τὸ ζῶον*, and translate ‘there will be many animals, Socrates himself and man and animal’. This is ingenious and may well be right. To get the desired paradox, we want a conclusion identifying one thing with many, but we may be able to get there just by understanding ‘there will be many animals, Socrates himself and man and animal [within the one animal Socrates]’. I think the larger implications should not be much different from those on the construal I adopt.

seems to be predicated, not of the differentiae, but of the things of which the differentia is predicated, e.g. animal is predicated of man and ox and the other footed animals, but not of the differentia [sc. ‘footed’] which is said of the species: for if animal were predicated of each of the differentiae, many animals would be predicated of the species, since the differentiae are predicated of the species’ (144^a32–^b1). Given all this, there seems to be no reason to follow Jaeger in bracketing ‘animals’ at *B* #14 1003^a9–12. Aristotle does make a similar argument without the many animals at *Z* 13, 1039^a3–14, using the principle that a substance cannot be composed out of two or more substances actually existing in it (as would happen on the Platonist account, where man is composed of animal and biped): here the argument can be made abstractly, but in *B* #14, without the difficult and controversial metaphysical principle of *Z* 13, Aristotle depends on the colourful example of the many animals to reach an absurd conclusion.⁴⁷

The comparison with the case of musical Coriscus helps us to see what is right and wrong in Jaeger’s remark (defending his <δεῖ> ἐκθέσθαι, which preserves the word ἐκθέσθαι, against Ross’s ἐν θέσθαι) that ‘ἐκθέσθαι idem est quod χωρίζειν τὰς ἰδέας’. It is true that to ἐκθέσθαι a universal such as man amounts to separating an idea of man (so *Metaphysics* *M* 9, 1086^b7–11 and *N* 3, 1090^a16–19, of which more below), but ἐκθέσθαι in itself has no necessary connection with universals or Platonic forms: it can be done to musical Coriscus just as much as to man, and in both cases Aristotle thinks it is a mistake, since (he thinks) neither musical Coriscus nor man is τὸδε τι. The comparison shows that the fundamental issue of ἔκθεσις, or of τὸδε τι, is not of individuality versus universality, since a universal is what is predicated of many subjects, and musical Coriscus, being predicated either of one or of zero subjects depending on whether Coriscus is musical or not, is certainly not a universal.

Since the sense of the argument with ἐκθέσθαι, and the echoes with *Sophistical Refutations*, 22, seem too good to be the result of a scribe writing κ in place of ν, I incline to keep the transmitted text despite its grammatical awkwardness. But if we accept Ross’s ἐν θέσθαι, the overall sense would still have to be much the same: if predicates such as man and animal are thises, then Socrates and man and animal will have to be distinct thises, and distinct animals, and so Socrates will be three animals. The argument will still turn on an ἔκθεσις of the three terms, Socrates and man and animal, even if ἔκθεσις is not explicitly mentioned.⁴⁸

⁴⁷ For another abstract version of the argument, comparable to the *Z* 13 passage, see *Physics* I 3, 186^b14–187^a11.

⁴⁸ The phrase τὸδε τι καὶ ἐν at the end of the argument, 1003^a12, and also at 1003^a10 with Ross’s emendation, is a bit strange, since usually Aristotle says that a term in any category, universal or

Since Aristotle simply accepts the argument of *B* #14 1003^a7–12, there is nowhere later in the *Metaphysics* where he replies to it; rather, he supplements it with other arguments that universals cannot be substances (or cannot be thises, cannot exist separately or καθ' αὐτά), which support the conclusion that universals cannot be ἀρχαί. Two passages explicitly discuss the question whether universals are ἀρχαί, and say that they are not, *M* 10 (which I will discuss below) and *A* 5, 1071^a17–24. The latter passage seems to argue from the inferior ontological status of universals to the conclusion that they are not ἀρχαί; the passage is interesting in that it suggests that Aristotle is taking inspiration from the Megarians. The interpretation of this passage is controversial, but I would translate:

We must see that some [sc. causes?] can be formulated universally, and some cannot. For the first ἀρχαί of all things are what is originally this thing here [τοδί] in actuality, and another which [is this thing here] in potentiality. Now these are not the universals [ἐκεῖνα μὲν οὖν τὰ καθόλου οὐκ ἔστιν], for the individual is the ἀρχή of the individual: for man is the ἀρχή of man in general, but this is no one [οὐκ ἔστιν οὐδέ τις], rather Peleus is the [ἀρχή] of Achilles and your father of you, and this here β of this here βα, but β in general of βα as such.

Ross translates 'ἐκεῖνα μὲν οὖν τὰ καθόλου οὐκ ἔστιν' as 'these universals do not exist' rather than 'these [ἀρχαί which have just been mentioned] are not the universals', but this is very unlikely.⁴⁹ Aristotle thinks that universals are not substances and exist only derivatively from substances, but not that they do not exist, and the immediate antecedent for 'ἐκεῖνα' is 'what is this thing here' in actuality or potentiality, which are not universals (as Aristotle goes on to say, the ἀρχαί of this here βα are individual letters). Aristotle's point is that although some ἀρχαί can be formulated universally, this does not mean that the ἀρχαί are universals: man is the ἀρχή of man in general, but the man who is referred to by the first occurrence of 'man' in this sentence is no one, and so is not an ἀρχή. We cannot say either that the universal man is the ἀρχή of the universal man (for then he would be the ἀρχή of himself), or that the universal man is the ἀρχή of each individual man: each individual man has some man who is his ἀρχή, but there is no man who is the ἀρχή of them all, and neither is there one form or

otherwise, signifies ἐν τι even if it does not signify τόδε τι. The only real parallel I can find is in *Metaphysics* *A* 13, where a quantum is 'what is divisible into constituents [ἐνυπάρχοντα] each of such a nature as to be ἐν τι καὶ τόδε τι' (1020^b7–8). This suggests that in *B* #14 too, the point of ἐν is not so much that 'man' signifies one rather than many, but that man and animal are two units that can be counted within a quantum, whereas white Socrates is not a quantum composed of Socrates and white if Socrates is a this and white is a such that is predicated of him.

⁴⁹ No argument can be based on the accent of ἔστιν or ἐστίν, which is an editor's convention.

one matter which is the ἀρχή of them all.⁵⁰ In saying that the referent of the first word of ‘man is the ἀρχή of man in general’ is no one [οὐδείς]—rather than as we might expect, that it is not a this but a such—Aristotle is following what seems to have been the Megarian doctrine that man is οὗτις or οὐδείς. This doctrine is most famously attested for Chrysippus (Simplicius *In Categorias*, 105,7–21) but seems to be much older, since, on the most likely reconstruction of a corrupt passage at Diogenes Laertius II,119, Stilpo said that ‘he who says man says no one’.⁵¹ Presumably this doctrine emerges, for Megarians as for Stoics, as a solution to sophisms: most famously ‘if someone [τις] is in Megara, he is not in Athens; but man is in Megara; therefore man is not in Athens’ (Simplicius *ibid.*, also DL VII,187 and cp. VII,82), where to solve the sophism we must say that man is not τις, in other words that man is οὗτις. So the Megarians and Stoics are diagnosing this as a sophism of σχῆμα τῆς λέξεως, arising because the word ‘man’ looks grammatically as if it signified τις but in fact signifies οὗτις. Compare Aristotle, who says that the word ‘man’ looks from the σχῆμα τῆς προσγορίας as if it signified a this but in fact signifies a such [ποιόν τι] (*Categorias*, 3^b 13–16, cited above).⁵² The notion of ‘such’, used here in the *Categorias* and in *B* #14, seems like a refinement on a crude Megarian dichotomy of someone or no one; but in *A* 5 Aristotle is giving the crude version, and it makes no difference, since saying that a universal is οὐδείς or that it is οὐ τόδε τι will equally exclude it from being an ἀρχή. And the argument of *B* #14 1003^a7–12, whether invented by Aristotle or by other Academics or by Megarians, makes sense as part of the same strategy of arguing against Plato: we construct a sophism, ‘Socrates is three things [τρία τινά?], Socrates and man and animal; but Socrates is [an] animal, man is [an] animal, and animal is [an] animal, so Socrates is three animals’, which can be solved only by saying that animal is not τόδε τι, or not τι, and thus (the conclusion Aristotle wants) not an ἀρχή.

We come then to the epistemological argument of *B* #14 against positing individuals as ἀρχαί:

⁵⁰ As he goes on to say, ‘even [the ἀρχαί] of things which are in the same species are different, though not in species: [the ἀρχαί] of the individuals are different, your matter and form and mover and mine, but the same in universal λόγος’ (1071^a27–9).

⁵¹ For the range of things that have been tried here, see the apparatus at Gabriele Giannantoni 1990, 462, #27. Giannantoni there prints the transmitted but unintelligible ἔλεγε τὸν λέγοντα ἄνθρωπον εἶναι μηδένα, discussing the different possible solutions at iv, 105–6. The most likely solutions are ἔλεγε τὸν λέγοντα ἄνθρωπον λέγειν μηδένα (which Giannantoni himself favors) or ἔλεγε τὸν λέγοντα ἄνθρωπον εἶπειν μηδένα. Stilpo’s word μηδεῖς, closer to Aristotle’s οὐδείς than to Chrysippus’ οὗτις, makes it that much more likely that Aristotle is responding to a Megarian version of what later became the Stoic theory of οὐτίνα.

⁵² Why exactly does the grammatical form of ‘ἄνθρωπος’ make it appear to signify a this? Probably because ‘ἄνθρωπος’ is not inflected for gender and so never becomes paronymous, like proper nouns and unlike adjectives.

So if the ἀρχαί are universal, these consequences will follow; if they are not universal but [exist] as individuals, they will not be [scientifically] knowable: for the sciences/ knowledges of all things are universal [i.e. in each case of scientific knowledge, the object of the knowledge is universal], so that there will be other ἀρχαί prior to the ἀρχαί, [namely] what is universally predicated of them, if indeed there is going to be [scientific] knowledge of [the alleged ἀρχαί]. (1003^a12–17, cited above)

Here the thought seems to be: suppose the ἀρχαί are, say, individual token letters of the alphabet. The ἀρχαί are supposed to be the starting points for scientific knowledge (we know something scientifically when we have derived it from the ἀρχαί), and so they must be more knowable than anything else. But the object of scientific knowledge is always universal, so that I can know this alpha here only if I have a prior knowledge of alpha in general, which I then apply to the instance at hand. But if so, alpha in general will be prior to this alpha here in the order of knowledge, so that alpha in general will be an ἀρχή prior to the ἀρχαί, and this alpha here will not really be an ἀρχή. (Aristotle could have argued that since the object of scientific knowledge is always universal, I can *never* have ἐπιστήμη of this alpha here, but only, say, αἴσθησις. We would then interpret the last line of the argument not as ‘if indeed there is going to be [scientific] knowledge of [the alleged ἀρχαί, such as the token letters]’ but as ‘if indeed there is going to be [scientific] knowledge of [the real ἀρχαί—therefore the token letters, being unknowable, are not ἀρχαί].’ But then there seems to be no role for the conclusion ‘there will be other ἀρχαί prior to the ἀρχαί’—priority would have nothing to do with it. So I conclude that, although Aristotle *could* have given this argument, it is not the argument he in fact gives.)

Since Aristotle rejects the conclusion that the ἀρχαί are universals, he must solve this argument somehow. One possible solution would be to say that although ἀρχαί in the sense in which we are seeking them in the *Metaphysics* must be prior to everything else in οὐσία, they need not be prior in knowledge; after all, Aristotle does admit that genera are prior to species in λόγος or definition (and presumably universals are prior to individuals in λόγος, or they would be if individuals had λόγοι). But Aristotle seems to have no interest in this solution, consistently describing the ἀρχαί that wisdom seeks as the most knowable of all things (so already *A* 2, 982^a30–^b4,⁵³ where wisdom is most knowledge because the ἀρχαί which are its objects are most knowable, since other things are known through these and not vice versa; famously and emphatically, *Z* 3, 1029^b3–12 says that the objects we are seeking are most knowable by nature although not most knowable to us). Another possible

⁵³ Echoing *Protrepticus* B32 7 Düring.

solution would be to say that ἀρχαί in the strict sense, the ἀρχαί sought in first philosophy (as opposed to ‘ἀρχαί’ treated by physics, like matter and form) are individuals, but eternal non sensible individuals, perhaps just the first God, or God and the other movers of the heavens: perhaps these individuals do not have the bar to scientific knowability that material things do (or perhaps we should say that they are grasped not by ἐπιστήμη but by νοῦς); and since each of these individuals is unique in its species (A 8, 1074^a31–6), it cannot be argued that the knowledge of the species would be prior to the knowledge of the individual. Quite likely this is what Aristotle *should* have said, but in the only passage where he seems to be deliberately addressing this argument of B #14, he takes a bolder line, arguing without restriction that individuals are prior to universals in knowledge.

II.2

This passage comes in M 10, and its interpretation is complicated by the fact that Aristotle is addressing *aporiai* #9 and #14 simultaneously (with rather more attention to #9) as well as by the problematic relation of the final section of *Metaphysics M* (from M 9, 1086^a21 to the end of M 10; I will say ‘M 9b–10’) to the rest of books *M* and *N*.⁵⁴ Near the beginning of this section Aristotle says that he will investigate the claims of those who say that ‘the ideas and the numbers are such [sc. other substances beyond the sensibles], and that the elements of these are elements and ἀρχαί of [all] beings’ (M 9 1086^a26–8; presumably the thought would be that the immaterial substances are ἀρχαί of sensible substances, so that the ἀρχαί of immaterial substances would be the ultimate ἀρχαί of all beings). He seems here to be taking up the third branch of the investigation promised in M 1: we must first investigate mathematics in themselves, not asking whether they are ideas or not or whether they are ἀρχαί and οὐσίαι of beings, then secondly the ideas, then thirdly pursue the longest investigation ‘whether the substances and ἀρχαί of beings are ideas and numbers’ (M 1, 1076^a22–31). The first investigation is surely M 2–3; the second seems to be M 4–9a, and the third seems to be M 9b–N, so that it is not surprising that (as Syrianus tells us) some ancient manuscripts grouped M 9b–10 with *N* as a single book.⁵⁵ The section M 9b–10 serves as an introduction to this

⁵⁴ Ross’s note at M 10, 1086^b15 correctly refers back both to B #9 and to B #14, and at *Aristotle: Metaphysics I*, xxiv, in listing where the different *aporiai* of *B* are answered, he says that both #9 and #14 (‘Problem 12’ on Ross’s count) are answered in M 10 (and the latter also in Z 13–15). But, misleadingly, he says there of #14 (and only of it) that ‘M 10, 1086^b15 refers explicitly to it.’

⁵⁵ Syrianus understood M 1, 1076^a22–31 in this way, as dividing the discussion into M 2–3, M 4–9a, and M 9b–N (in *Metaphysica*, 83, 36–9 and, on where *N* begins, 160, 6–11; defended now by Julia Annas

whole investigation of the alleged ἀρχαί of immaterial substances and whether they are ἀρχαί of all beings. *M* 9b–10 is concerned especially with ἀρχαί of Platonic forms (without any connection with numbers), whereas much of *N* is concerned with ἀρχαί of numbers (and of mathematical numbers at least as much as form numbers).

The point of *M* 9b–10, as a critique of the ἀρχαί of Platonic Forms, is missed by those who, like Annas, break the connection between *M* 9b and *M* 10, and say that *M* 9b is simply a criticism of the Forms (with no reference to ἀρχαί) and that *M* 10 is simply a general problem about ἀρχαί (with no special relevance to the Forms). *M* 9b begins by reviewing those who have spoken ‘about the first ἀρχαί and the first causes and elements’ (1086^a21–2), and in pursuit of this inquiry it recalls those who say that ‘the ideas and the numbers are [other substances beyond the sensibles], and that the elements of these are elements and ἀρχαί of [all] beings’; so it would be strange if what it said about the ideas were not focussed on the *elements* of the ideas, and the claim that these elements are ἀρχαί of all beings. Admittedly, if we do not look ahead to *M* 10, the rest of *M* 9 does not seem to say anything more about ἀρχαί: it gives a diagnosis of why the Platonists were led to posit the ideas (or, equivalently, why they ‘ἐξέθεσαν the universals’ (1086^b10) and thus treated them as further individuals beyond their individual instances), and it says that it is impossible to make the same things both universal and individual in this way: ‘ταῦτα δ’ ὅτι οὐκ ἐνδέχεται διηπόρηται πρότερον’ (1086^b34–5). But it is a mistake to regard this as a self contained argument against the ideas. Just to say ‘ταῦτα οὐκ ἐνδέχεται’ is not an argument, and Aristotle does not think the theory of ideas is so silly that one need only state it to make its absurdity manifest without argument. Presumably ‘διηπόρηται πρότερον’ is referring back to texts from *B*, so that the argument could be filled out from there, but the highly compressed arguments

1976, 78–88). However, Bonitz and Ross in their commentaries, and Jaeger 1934, 176–83, say rather that the second and third branches promised in *M* 1 are respectively *M* 4–5 and *M* 6–9a, and that *M* 9b–*N* is not part of the framework announced in *M* 1, but a separate investigation, which Jaeger and Ross take to be an earlier parallel to *M* 1–9a (Bonitz’s commentary on 1086^a21 winds up close to Syrianus on the subject of *M* 9b–*N*). It seems to me impossible to take *M* 6–9a as the promised ‘third investigation’, since while *M* 6 says we will raise difficulties for ‘those who say that [numbers] are separate οὐσίαι and first causes of the things that are’ (1080^a12–14), in fact all the objections of *M* 6–9a are against numbers as separate οὐσίαι, and have nothing to do with whether numbers are also causes of other things; this is also reflected in the formal summary of results at the end of *M* 9a, 1085^b34–1086^a21. However, it is possible that the ‘third investigation’ is all of *M* 6–*N*; *M* 9b–10 would still be part of it. On another structural question: it has been noted since Bonitz that the end of *M* 9a fits onto the beginning of *N* somewhat more smoothly than the end of *M* 10 does; so it is possible that *M* 9b–10 is a later insertion. But all the transitions especially in *N* are a bit rough, giving the impression of a series of sketches with the transitions meant to be worked over later. *M* 9b–10 has more references to *B* than the rest of *MN* does, so Aristotle might have written this section in order to tie *M* and *N* to *B* (or to a part of the *Metaphysics* including *B*) as well as to each other.

of *B* are intended only as preliminary difficulties for the theory of ideas and not as resolutions of the issues it raises. *M* 9b's 'argument' against the ideas is only a programmatic announcement, and is made good only in *M* 10, which spells out (expanding on difficulties from *B*) *why* the theory of ideas, or the treatment of universals as if they were individuals, is impossible. Indeed, the beginning of *M* 10 makes it clear that it will deliver on the promise made in *M* 9b: 'let us now say what contains some difficulty both for those who maintain the ideas and for those who do not, which was mentioned before in the beginning, in the [collection of] problems [ἐν τοῖς διαπορήμασιν ἐλέχθη πρότερον]' (*M* 10, 1086^b 14–16): ἐν τοῖς διαπορήμασιν ἐλέχθη πρότερον clearly echoes *M* 9b's διηπόρηται πρότερον, and *M* 10 will now explain in detail what the difficulty is. And the difficulty that *M* 10 explains is a difficulty about the ἀρχαί or elements of the ideas, whether they too are individual or not; and so the impossibility that *M* 9b is referring to is an impossibility about the ἀρχαί of the ideas, not simply an impossibility in the ideas as such. We might compare *Z* 14, where the most serious difficulties for the theory of ideas are those which 'arise for those who say that the ideas are separate substances and at the same time make the form/species out of the genus and the differentiae' (*Z* 14, 1039^a 24–6). Indeed, as far as I can see, Aristotle does not think that the theory of ideas would be impossible, if it were not for the difficulties arising from the relations of genus to species ideas and the composition of genera and differentiae as 'elements' within the species ideas (although we would still have no good reason to posit the ideas, and no way to explain how they could be causes of sensible things).

Of course, the beginning of *M* 10 does say (lending support to Annas' separation of *M* 10 from *M* 9b) that the chapter will describe a 'difficulty both for those who maintain the ideas and for those who do not', and this corresponds to the 'even handed' way in which Aristotle had set out the difficulties in *B*. But, as the body of *M* 10 will make clear, it is a difficulty that those who do not posit ideas can *solve*, and those who do posit ideas cannot; so *M* 10 as a whole constitutes an argument against the theory of the ideas and their elements.

The argument goes as follows:

If someone does not posit that substances are separate, and [exist] in the way that individual beings are said [to be],⁵⁶ he will take away what we mean by substance; but

⁵⁶ Ross and Annas translate 'in the way in which individual [Annas adds "existing"] things are said to be separate' (my emphasis); but the question here whether the substances are separate, καὶ τὸν τρόπον τοῦτον ὡς λέγεται τὰ καθ' ἑκάστα τῶν ὄντων, is very close to *B* #14's question about the ἀρχαί, πρότερον καθόλου εἰσὶν ἢ ὡς λέγομεν τὰ καθ' ἑκάστα (1003^a 7).

if he posits that the substances are separate, how will he posit their elements and ἀρχαί [to be]?

{Arguments against the view that the ἀρχαί are individual:} If they are individual and not universal, the things that are will be [only] as many as the elements, and the elements will not be knowable [ἐπιστητά]. For let the syllables in speech be substances, and let their elements/letters be elements of substances. 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 [= Platonists] do posit that each essence [αὐτὸ ὃ ἔστιν] is one. But if the syllables [are each numerically one], then so too are the things out of which they are [composed]: so there will not be more than one alpha, nor any of the other elements/letters, for the same reason that no one same syllable is several different [syllable tokens].⁵⁷ But if so, there will not exist other beings beside [παρά] the elements/letters, but the elements/letters alone. Again, the elements/letters will not be knowable, for they are not universal, and [scientific] knowledge is of the universal, as is clear from demonstrations and definitions. For there is no syllogism that *this* triangle [has angles equal] to two right angles, unless *every* triangle [has angles equal] to two right angles, nor that *this* man is an animal, unless *every* man is an animal.

{Argument against the view that the ἀρχαί are universal:} But if the ἀρχαί are universal, either the substances that are [composed/derived] out of them will also be universals [sc. and thus not substances], or else non substance will be prior to substance.⁵⁸ For the universal is not a substance, but the element and ἀρχή is [on the hypothesis we are now considering] a universal, and the element and ἀρχή is prior to that of which it is an ἀρχή and element.

{Diagnosis of the false assumptions that generate the difficulty, statement of Aristotle's own view, and response to difficulties for it:} Now all these things will naturally follow, when they both make the ideas out of elements and also suppose that there is some one separate thing beside the substances (and ideas) that have the same form.⁵⁹ But if nothing prevents there from being many alphas and many betas, as with the elements/letters 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. The [claim that] all knowledge is universal, so that the ἀρχαί of beings must also be universal and not separate substances, involves the greatest difficulty of the things that have been said; but the claim is true in

⁵⁷ Deleting ἄλλων in τῶν ἄλλων συλλαβῶν, with Ross (and Annas), as an unthinking repetition from τῶν ἄλλων στοιχείων in the previous line.

⁵⁸ Accepting (with Annas) Ross's insertion of ἡ after καθόλου in 1087^a 1, and rejecting Jaeger's more radical deletion of the entire preceding phrase ἡ καὶ αἱ ἐκ τούτων οὐσίαι καθόλου.

⁵⁹ παρὰ τὰς τὸ αὐτὸ εἶδος ἐχούσας οὐσίας καὶ ἰδέας ἐν τι ἀξιώσιν εἶναι κεχωρισμένον, keeping, with hesitation, καὶ ἰδέας (kept by Ross, deleted by Jaeger and Annas). I do not think that Ross's 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.

one way and not true in another way. For knowledge, like to know, is twofold, in potentiality and in actuality. The potentiality, like matter, being universal and indeterminate,⁶⁰ is [knowledge] of what is universal and indeterminate, but the actuality is determinate and of what is determinate, a this and of a this: [only] *per accidens* does sight see the universal colour, because *this* colour which it sees is [a] colour, and [the literate person perceives the universal alpha *per accidens*, because] what the literate person discerns [*θεωρεῖ*], this alpha, is [an] alpha. For if the *ἀρχαί* had to be universal, what is [composed/derived] out of them would also have to be universal, as in demonstrations: and if this were so, nothing would be separate or a substance. But it is clear that knowledge is in one sense universal, and in another sense not. (*M* 10, 1086^b16–1087^a25)

There are two main difficulties in interpreting this text. The first is that, although Aristotle is taking up ‘what was mentioned before in the beginning, in the [collection of] problems [*ἐν τοῖς διαπορήμασιν ἐλέχθη πρότερον*]’ (beginning of the chapter, 1086^b15–16), he is not addressing one single *aporia* from *B*, but both *B* #9 and *B* #14 together, and we need to sort out which of them he is answering where. The second difficulty is in sorting out what Aristotle means by asking whether the *ἀρχαί* are ‘universal’ or ‘individual’ (or ‘numerically one’, synonymous with ‘individual’ according to *B* #9 999^b34–1000^a1): these terms seem to shift their meanings within *M* 10, and this is in part because they are used in different ways in *B* #9 and in *B* #14.

For most of this text Aristotle seems to be responding to *B* #9 rather than to *B* #14.⁶¹ In particular, he takes from *B* #9 the description of the *ἀρχαί* as *στοιχεῖα* (and thus as *constituents* of what they are *ἀρχαί* of), the analogy that these *στοιχεῖα* are to the existing things as the letters or phonemes in speech are to the syllables, and the argument that if there is only numerically one token *στοιχείον* of each type, nothing else will exist *παρὰ τὰ στοιχεῖα*. I have argued elsewhere that Aristotle’s target in *B* #9 is a Platonic or Platonist view that the *ἀρχαί*/*στοιχεῖα* of species ideas are the genus and differentia ideas,⁶² and certainly *M* 10 makes clear that the people who maintain that the *ἀρχαί*

⁶⁰ Deleting *τοῦ* before *καθόλου* (with Bonitz, Jaeger, Ross, and Annas).

⁶¹ For ease of comparison, here is *B* #9: ‘One might also raise this difficulty about the *ἀρχαί*. If they are [each] one [only] in species, nothing will be numerically one, not even the one-itself or being[-itself]; and how will [scientific] knowing be possible, if there is not some one over [*ἐπὶ*] all? But if each of the *ἀρχαί* is numerically one, and they are not, as in the case of the sensibles, different for different things (as this syllable, the same in species, has *ἀρχαί* which are also the same in species: for they are the same, but numerically distinct) if it’s not like this, but rather the *ἀρχαί* of beings are [each] one in number, then there will not be anything beside [*παρὰ*] the *στοιχεῖα*. For saying “numerically one” is no different than saying “individual”: for this is what we call individual, what is numerically one, and the universal is what is over [*ἐπὶ*] these. So [it would be] as if the elements/letters of speech were numerically limited: necessarily all texts/utterances [*γράμματα*] would be only as many as the elements/letters, since there would not be two or more of the same [type]’ (999^b24–1000^a4).

⁶² Menn 2001, 104–6.

come in just one token per type are Platonists. If we add to *M* 10 (with, for instance, *Z* 14, 1039^a24–6, cited above, also *B* #6) the assumption that the Platonists think the elements of the ideas are their genera and differentiae, then the argument would go something like this: if we think that there is only one ‘syllable’ man himself (composed of animal, biped, etc.) and only one horse itself (composed of animal, quadruped, etc.), then for the same reason there is only one element/letter animal itself. But numerically the same letter cannot be part of two syllables at the same time: that is, numerically the same idea of animal cannot both be combined with biped in man himself, and at the same time be combined with quadruped in horse itself, presumably because if so the same animal would have to be both a biped and a quadruped (for so goes the argument in *Z* 14).⁶³ None of this has any parallel in *B* #14. Also *M* 10’s argument against the view that the ἀρχαί are universal is partly taken from an argument from the other side of *B* #9, (‘if [the ἀρχαί] are [each] one [only] in species, nothing will be numerically one’), again without parallel in *B* #14. *M* 10 fills out this argument using the claims, apparently taken from *B* #14, that no universal is a substance and that the ἀρχαί must be substances (or, almost equivalently, that non substance cannot be prior to substance); but *M* 10 makes no reference at all to *B* #14’s argument for the claim that universals are not substances.⁶⁴

On the other hand, there are also aspects of *M* 10 that fit very badly with *B* #9. In *B* #9 there is an argument that, unless the ἀρχαί are each numerically

⁶³ Whether the elements/letters here are genera and differentiae or not, the basic point of the argument is that, if there is only one alpha, it cannot be at the same time a part of *βα* and of *γα* – and why *βα* more than *γα*? – so that there will not be syllables, but only the letters. (However, unless we add that the letters are genera and differentiae, so that *βα* and *γα* are biped animal and quadruped animal, forming syllables when the differentia is predicated of the genus, it is not clear why numerically the same letter could not be part of two different syllables, as in a crossword puzzle.) In any case, the argument has nothing to do with Annas’ bizarre reconstruction (first full paragraph of her p. 189) about the unknowability of ‘bare particulars’. Annas also misunderstands the point of the sentence ‘and indeed, they [Platonists] do posit that each essence is one’, suggesting that it ‘probably refers to Forms, considered as principles of the things they are Forms of; Aristotle points out that the Platonists do actually say that the Form is unique in each case, and this confirms his *a priori* argument that the principle or element in each case must be unique’ (ibid.). Rather, the uniqueness of the essence (according to the Platonists) confirms that there is (on the Platonist view) only one syllable per type; Aristotle then uses this concession to argue that by parity of reasoning there can only be one letter per type, and then to show that this conclusion lands the Platonists in contradictions. The Forms are mentioned as things composed of principles/elements so explicitly at *M* 10, 1087^a5 – not as themselves principles/elements: *M* 10 never once speaks of a form (be it separate or immanent) as a principle/element of what is a form of (despite Annas’ reading a theory of immanent forms as principles into *M* 10, 1087^a7–10, last full paragraph of her p. 190). It is not that there is anything illegitimate in describing forms as principles or elements (Aristotle does this elsewhere), but the task of *M* 9b–N is to examine, not forms, but the alleged principles and elements of Forms and numbers.

⁶⁴ *B* #14’s argument here turns on the relationship between Socrates and man and animal as constituents of Socrates, in other words on the relationship between the many στοιχεῖα within a single syllable; *M* 10 says nothing about this problem, and is interested rather in the relationship between the στοιχεῖα of a single type in many different syllables (the alpha in *βα* and the alpha in *γα*, or the animal in man and the animal in horse).

one or individual, there can be no knowledge (since there will be no one over the many); this disappears in *M* 10, and is replaced with an argument that if the ἀρχαί are individual, there can be no knowledge; and the way *M* 10 formulates this argument ('if [the elements and ἀρχαί] are individual and not universal . . . the elements will not be knowable [ἐπιστητά] . . . for they are not universal, and science/knowledge is of the universal') echoes *B* #14 ('if [the ἀρχαί] are not universal but [exist] as individuals, they will not be knowable [ἐπιστητά]: for the sciences/knowledges of all things are universal'),⁶⁵ although *M* 10 fills out the argument by talking about definitions and demonstrations.

Since both *B* #9 and *B* #14 raise difficulties against saying either that the ἀρχαί are individual or that they are universal, it is reasonable for Aristotle to answer both of them together in *M* 10. His main concern is with #9, because his main concern throughout *M* 9b–*N* is to argue against any theory of elements or constituent ἀρχαί of ideas or numbers;⁶⁶ but #14 is useful because it gives a stronger statement of the difficulties for the anti Platonist, and Aristotle wants to show that he can solve the difficulties and that his opponents cannot. What is strange, and needs discussion, is the apparent reversal in the meanings of 'individual' and 'universal' between #9 and #14, and the combination of the apparently incompatible meanings in *M* 10. In #9 the Platonist view is that the ἀρχαί are each individual or numerically one, and the Platonists argue that knowledge is impossible if the ἀρχαί are only specifically one; in #14 the Platonist view is that the ἀρχαί are universals, and the Platonists argue that knowledge is impossible if the ἀρχαί are individuals. In *M* 10 the argument is consistently that knowledge is impossible if the ἀρχαί are individuals (and Aristotle responds to this argument at the end, in defending his claim that the ἀρχαί are individuals), but at the beginning (1086^b20–2 and ^b32–7) this is an argument against the Platonist view that there is only a numerically single token ἀρχή per type, and at the end (1087^a10–25) it is an argument against the anti Platonist view that there are many numerically distinct token ἀρχαί per type. What is going on here?

In fact I think Aristotle's terminology is consistent, at least in *M* 10. He is considering not just two but three views about the ἀρχαί: (1) that they are individuals, and there is only one token ἀρχή per type;⁶⁷ (2) that they are universals; (3) that they are individuals, and there are many token ἀρχαί per type. Being individual or universal is an issue about a thing's logical or

⁶⁵ Both passages are presumably alluding also to *Theaetetus* 201d1–3, where the στοιχεῖα (as they are about to be called at 201e2), because there is no λόγος of them, are not ἐπιστητά.

⁶⁶ Note that Aristotle says that one of the causes of the Academics' difficulties is that 'they make every ἀρχή an element' (*N* 4, 1092^a6–7).

⁶⁷ But note that on this view, as held by the Platonists, although the ἀρχαί will be individual beings (Forms, or some special type of Forms), they will not be individual causes, in the sense discussed in section I above.

ontological status, not about whether there are also other things of the same type as it. Both the standard Platonist view, (1), and the view Aristotle himself defends, (3), maintain that the ἀρχαί are individuals. *M* 10 has only one epistemological argument against the claim that the ἀρχαί are individuals, and it applies equally against views (1) and (3). But the way the discussion develops in *M* 10 can mislead us, because until Aristotle introduces his solution to the *aporia* at 1087^a7 ff., we might not guess that option (3) existed, and might easily assume that there are only two views, (1) and (2), each offering difficulties against the other. But nothing Aristotle says actually commits him to this.

If the Platonists hold (1) and Aristotle holds (3), does anyone hold (2)? Aristotle does not seem to take this view very seriously. He takes it as too obvious to need arguing here that universals are not substances (to say that something other than an individual is a substance is to ‘take away what we mean by substance’), and he takes it as equally obvious that non substances cannot be prior to substances, with the immediate consequence that the ἀρχαί cannot be non substances. Perhaps view (2) is just a position in logical space that no one actually occupies, but that Aristotle sets out and refutes for the sake of completeness. Or perhaps he thinks that, though no one would willingly take this position, a Platonist might be led to take it when he is shown the difficulties of view (1). But it seems to me more likely that some people did commit themselves to view (2) at least by implication. One possibility would be Speusippus, who rejects the Platonist thesis that there is a single token one over many, but who nonetheless refers to his ἀρχαί by names like τὸ εἶν (not τὰ εἶνα). The status of this ἀρχή is unclear, and Aristotle claims that Speusippus is unable to give a consistent account of it.⁶⁸ Another possible target would be those Platonists who think that the material ἀρχή is not the large and the small or the many and the few but ‘what is more universal over these, the exceeding and the exceeded’ (*N* 1, 1087^b17–18): Aristotle argues, against these Platonists, that such a universal ἀρχή will generate, not a particular being such as the two, but a universal such as ‘number’ (so *N* 1, 1087^b21–6; there is no idea of number, or any other particular number, other than a two or a three etc.: *B* #7 999^a6–12, *Nicomachean Ethics* I 6, 1096^a17–19).

⁶⁸ ‘There are those who do not think that ideas exist, either ἀπλῶς or as being a kind of number, but think that mathematical exist and that the numbers are the first of beings and that the ἀρχή of them is αὐτὸ τὸ εἶν. But it is absurd that there should be a one which is first among ones, but not a two among twos or a three among threes, for they are all related in the same way. So if it is this way with numbers and one posits that there are only mathematical [numbers; as opposed to Form-numbers], the one is not the ἀρχή (for this kind of one must differ from the other units; and if so, [there should also be] a first two [different] from the other twos, and likewise for the other numbers that come after); but if the one is an ἀρχή, it must be with numbers as Plato said, and there must be a first two and [a first] three . . .’ (*M* 8, 1083^a21–34).

As these examples show, some Academics, even some Academics who believe in Forms, seem constrained to posit a higher universal $\alpha\rho\chi\eta$. But whatever the ontological status of each $\alpha\rho\chi\eta$ may be, there seems to be a broad Academic consensus that there are only finitely many of them, and not an unlimited multiplicity of $\alpha\rho\chi\alpha\iota$ of each type: perhaps the underlying reason is that an unlimited multiplicity will not be knowable unless it can be traced back to a limited number of starting points. Aristotle thinks that the *aporia* about whether the $\alpha\rho\chi\alpha\iota$ are individual or universal can be resolved only by rejecting this consensus, that is, by introducing view (3), that the $\alpha\rho\chi\alpha\iota$ are individuals and that there are (unlimitedly) many token $\alpha\rho\chi\alpha\iota$ per type: ‘if nothing prevents there from being many alphas and many betas, as with the elements/letters 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.’ Since the $\alpha\rho\chi\alpha\iota$ are individuals, we avoid the arguments against the claim that they are universals, and since there are many per type we avoid one of the two arguments against the claim that they are individuals, namely that if each of the elements/letters is numerically one, $\beta\alpha$ and $\gamma\alpha$ cannot both exist at the same time. One of the arguments against the claim that the $\alpha\rho\chi\alpha\iota$ are individuals remains, namely that because scientific knowledge (knowledge through definition and demonstration) is of universals, the $\alpha\rho\chi\alpha\iota$, which must be objects of scientific knowledge, must be universal; or, as *B* #14 puts it, that if these $\alpha\rho\chi\alpha\iota$ are to be scientifically known, ‘there will be other $\alpha\rho\chi\alpha\iota$ prior to the $\alpha\rho\chi\alpha\iota$, [namely] what is universally predicated of them.’

Aristotle’s solution is problematic, but I will do the best I can with it. Aristotle turns against the opponent the objection from the theory of demonstration. The objector says that ‘there is no syllogism that *this* triangle [has angles equal] to two right angles, unless *every* triangle [has angles equal] to two right angles’, so that if I am going to have scientific knowledge about *this* triangle, it will have to be derived from prior scientific knowledge about triangles universally; this supports the claim of *B* #14 just cited, that if individual $\alpha\rho\chi\alpha\iota$ are to be scientifically known, ‘there will be other $\alpha\rho\chi\alpha\iota$ prior to the $\alpha\rho\chi\alpha\iota$, [namely] what is universally predicated of them.’ Aristotle points out that, although there is no syllogism without a universal premiss, if there are *only* universal premisses there will be no inference to an individual conclusion. Aristotle and the objector seem to agree that we can know scientifically that *this* triangle has angles equal to two right angles; the issue is about what kinds of $\alpha\rho\chi\alpha\iota$ are needed to account for this knowledge.

It is of course widely said, notably by Aristotle himself elsewhere, that all $\epsilon\pi\iota\sigma\tau\eta\mu\eta$ is of a universal. Aristotle agrees here that $\epsilon\pi\iota\sigma\tau\eta\mu\eta$ in the sense of the $\epsilon\tilde{\xi}\iota\varsigma$ or (he says equivalently) $\delta\acute{\upsilon}\nu\alpha\mu\iota\varsigma$ is of a universal, and this is what he almost

always means by *ἐπιστήμη*. But the verb *ἐπίστασθαι* can be said both in the *δύναμις* and in the *ἐνέργεια* sense, and here Aristotle insists, unusually, that the noun *ἐπιστήμη* can be used in both cases. To know in the *ἐνέργεια* sense is to exercise (*ἐνεργεῖν*, *χρησθαι*) the *ἐξίς* of knowledge; certainly one way we can exercise a *ἐξίς* of knowledge of some universal type is to apply it to an individual token of that type which is presented to us, and Aristotle refers to this kind of exercise of knowledge elsewhere (as in the example of *γραμματική* at *De Anima* II 5, 417^a21–^b2). Usually he would call such an act *θεωρία* or *τὸ θεωρεῖν*, but here he insists that it can be called *ἐπιστήμη*. If the *ἐξίς* is the literate person's ability to recognize an alpha when he sees or hears one, it would be exercised in recognizing *this* alpha as an alpha; if the *ἐξίς* is the literate person's knowledge that alpha is a vowel, it would be exercised in recognizing that *this* alpha is (an alpha and therefore) a vowel. Probably the *only* exercise of the ability to recognize an alpha is in actually recognizing individual alphas; certainly this is the *τέλος* of the ability, and what it must be defined as an ability *for*. Presumably (despite what our text would suggest) the *ἐξίς* knowledge that alpha is a vowel also has other exercises, such as actually thinking to oneself 'alpha is a vowel'. But *γραμματική* must be defined as an ability to read and write, and its *τέλος* is in acts directed toward token utterances and inscriptions; the ability to enunciate universal truths such as 'alpha is a vowel' is a by-product. And Aristotle insists that in order to draw the conclusion 'this alpha is a vowel' when we are presented with an alpha, we do not need to deduce it from a prior *ἐνέργεια* knowledge of the universal truth 'alpha is a vowel'. It is enough to have a prior *ἐξίς* knowledge that alpha is a vowel; then recognizing some individual as an alpha will actualize that *ἐξίς* to yield the *ἐνέργεια* knowledge 'alpha is a vowel' only simultaneously with the *ἐνέργεια* knowledge 'this alpha is a vowel'. Thus in order for an individual *ἀρχή* such as this alpha to be scientifically known, we do not need 'other *ἀρχαί* prior to the *ἀρχαί*, [namely] what is universally predicated of them', as things which are 'more known' and prior in the order of knowledge. As Aristotle insists elsewhere in the *Metaphysics*, knowledge in the *ἐνέργεια* sense is more knowing than knowledge in the *δύναμις* sense, so that objects of *ἐνέργεια* knowledge would be more known;⁶⁹ and 'knowing [*εἰδέναι*]' and knowing [*ἐπίστασθαι*]⁷⁰ for their own sakes belong most of all to the knowledge of what is most known/knowable [*τῇ τοῦ μάλιστα ἐπιστήτου ἐπιστήμῃ*], and the first things and the

⁶⁹ 'If there are some such natures or substances as the dialecticians say the ideas are, something would be much more knowing than knowledge-itself, and more moved than motion[-itself]: for [knowledge and motion] are more *ἐνέργεια*, and [the alleged Forms] are *δυνάμεις* of those' (*Θ* 8, 1050^b34–1051^a2).

⁷⁰ The knowledge-words in the rest of this passage are all from *ἐπίστασθαι*, except the one *γνωρίζεται* which I mark.

causes are most known/knowable, since through these things and from these things the others are known [*γνωρίζεται*], and not these through what is subordinate to them' (*A* 2, 982^a30–^b4).

The problem with all this is that not all sciences are like *γραμματική*. Surely there are some acts of knowing a truth about a universal type which are not parasitic on acts of knowing a truth about a token of that type, and some sciences whose *τέλος* activity does not consist in recognizing individuals. Indeed, *De Anima* II 5 contrasts 'the sciences which are about sensible things', of which *γραμματική* seems to be paradigmatic, with the apparently more usual kind of science, which is directed toward a universal even in its exercise, and which therefore does not need an external object supplied in order to *θεωρεῖν* (417^b19–27).⁷¹ Thus in geometry, the *ἐξῆς* knowledge of the Pythagorean theorem is the ability to prove the theorem, and I exercise this ability by actually proving the theorem in general, rather than by verifying that it holds of a particular right triangle which is presented to me. Here the application to an individual case seems to be extrinsic to the knowledge, and not to be what the knowledge is intrinsically *for*; and here I would begin the proof from knowledge of truths about all straight lines (and so on), rather than about any particular lines, so that the *ἀρχαί* would be universals like straight lines, as such. And it seems more plausible that the science of the first of all things would be more like geometry than like *γραμματική*.

I am not sure that Aristotle has a good answer here, but he would probably say that in proving the steps of the Pythagorean theorem, we have to *ἐκτίθεσθαι*, and this means that we are going through the proof for an individual diagram made up of individual lines and areas; so that the *ἀρχαί* involved in this demonstration will be individual lines (etc.) and truths about them, which we know by actualizing a *ἐξῆς* knowledge of lines in general; we can exercise our *ἐξῆς* knowledge of this theorem, or of any of the postulates, only by thinking about an individual instance given either in sensation or in imagination. Plato seems to recognize this fact about geometry (*Republic* VI, 510d5–511a8), but as a special defect of geometry. Dialectic does not depend on sensible 'images'; so in reasoning (say) that because man is an animal and every animal is a living thing, therefore man is a living thing, we do not need to apply this argument to some individual man. On the other hand, Plato would presumably agree that in going through this argument too we are focusing our thoughts on some individual—it is just that in this case it is the separate form Man. Aristotle might reply that each form is correlative with its appropriate

⁷¹ See the discussion in my 'Aristotle's Definition of Soul and the Programme of the *De Anima*' (Menn 2002, 131–3).

matter, so that it is impossible to think scientifically about the form without thinking its matter too, and that we can think its matter only through an individual sensory representation (either by sensation or by imagination), so that in every case of scientifically thinking and proving a universal truth, we are also proving an individual instance, and proving that instance from individual *ἀρχαί*.⁷² I am not sure how convincing a case can be made here, but it is hard to shake the Platonic feeling that our thoughts of such instances are by products, and do not reveal the real *ἀρχαί* of the thing known.

III. *Aporia* #13

III.1

As I said in the first section, Aristotle's *aporia* about whether the *ἀρχαί* are in *δύναμις* or in *ἐνέργεια* presents a fundamental challenge to the 'narrative' conception of the *ἀρχαί* going back to pre Socratic physics; the *aporia* will be particularly important in *A*, in justifying Aristotle's conception of the first *ἀρχή* as essentially *ἐνέργεια*, and of eternal *ἀρχαί* eternally producing or sustaining an eternal world. As with #14, I will start by presenting and translating the text. While there are no real textual issues here as there were in #14, there are several points where the interpretation of the text depends on how we construe a form of *εἶναι*, and there is also a difference in formulation between the short version in *B* 1 and the long version in *B* 6. After discussing these issues, I will discuss where Aristotle solves the *aporia*, and try to say at least something about *how* he solves it.

In *B* 1, Aristotle lists the question as 'whether the *ἀρχαί* are . . . *δυνάμει* or *ἐνεργείᾳ*, and then whether in some other way or with regard to *κίνησις*' (996^a9–11):⁷³ it is not immediately clear how to interpret 'are', nor whether

⁷² See *Physics* II 2 for the argument that form and matter are correlative, so that the form cannot be known without the matter (supported, as in *Metaphysics* *H*1, by the comparison of natural forms to snubness, which cannot be defined without nose). This is presumably why, according to *De Anima* III 8, the contemplation of forms (of things inseparable from matter) is always accompanied by contemplating a *φάντασμα*. *Metaphysics* *Θ* 9, 1051^a21–33 seems to argue that even a mathematical truth becomes known to us through some object being actualized: the theorem is universal and eternally true, and is in some sense about eternal objects, so the actualization will be of some *other* object which we contemplate together with the theorem. In Aristotle's examples, we draw a physical diagram that illustrates the statement of the theorem, and then make further constructions on the diagram that illustrate the proof of the theorem; presumably we could instead (in simple cases) perform analogous operations on a *φάντασμα*.

⁷³ I have omitted the intervening mention of #14. The whole text is: *πότερον αἱ ἀρχαί καθόλου εἰσὶν ἢ ὥς τὰ καθ' ἑκάστα τῶν πραγμάτων, καὶ δυνάμει ἢ ἐνεργείᾳ; ἔτι πότερον ἄλλως ἢ κατὰ κίνησιν; καὶ γὰρ ταῦτα ἀπορίαν ἂν παράσχοι πολλήν* (996^a9–12). *A*^b leaves out *δυνάμει ἢ ἐνεργείᾳ* by mistake.

the issue about *κίνησις* arises only if the *ἀρχαί* are *ἐνεργεία*, or also if they are *δυνάμει*.

In the main body of *B*, the text is:

σύνεγγυς δὲ τούτων ἐστὶ τὸ διαπορῆσαι πότερον δυνάμει ἔστι τὰ στοιχεῖα ἢ τιν' ἕτερον τρόπον. εἰ μὲν γὰρ ἄλλως πως,⁷⁴ πρότερόν τι ἔσται τῶν ἀρχῶν ἄλλο (πρότερον γὰρ ἢ δύναμις ἐκείνης τῆς αἰτίας, τὸ δὲ δυνατόν οὐκ ἀναγκαῖον ἐκείνως πᾶν ἔχειν)· εἰ δ' ἔστι δυνάμει τὰ στοιχεῖα, ἐνδέχεται μὴθὲν εἶναι τῶν ὄντων· δυνατόν γὰρ εἶναι καὶ τὸ μήπω ὄν· γίγνεται μὲν γὰρ τὸ μὴ ὄν, οὐθὲν δὲ γίγνεται τῶν εἶναι ἀδυνάτων. (*B* 6, 1002^b₃₂–1003^a₅)

I provisionally translate:

Closely connected with these⁷⁵ is the question whether the *στοιχεῖα* are *δυνάμει* or in some other manner: for if in some other way, there will be something else prior to the *ἀρχαί* (for the *δύναμις* is prior to *that* cause, and it is not necessary for everything that is *δυνατόν*, to be in *that* way);⁷⁶ but if the *στοιχεῖα* are *δυνάμει*, it is possible for none of the things that are to be. For even what is not yet is *δυνατόν* to be, since what is not comes to be, and nothing that is *ἀδύνατον* to be comes to be.

The most striking difference from the summary in *B* 1 is that here Aristotle never speaks of *ἐνέργεια*, but four times awkwardly paraphrases the opposite of *δύναμις* (τιν' ἕτερον τρόπον, ἄλλως πως, ἐκείνης τῆς αἰτίας, ἐκείνως ἔχειν). Presumably this is for the same reason that *Metaphysics* Θ begins with an extended account of *δύναμις*, Θ 1–5, turning to an account of *ἐνέργεια* only in Θ 6—and there *ἐνέργεια* must be introduced as τὸ ὑπάρχειν τὸ πρᾶγμα μὴ οὕτως ὥσπερ λέγομεν δυνάμει (1048^b₃₁–2). That is, presumably the reason is that the notion of *δύναμις* is familiar at least in a rough way from ordinary language or from the work of earlier philosophers, while the notion of *ἐνέργεια* (a technical term which Aristotle is often wrongly said to have coined)⁷⁷ is not given at the outset and requires more conceptual work. In *B* 1, which is merely a shorthand list of the *aporiai*, Aristotle can refer to the *aporia* as being about *δύναμις* and *ἐνέργεια*, but he cannot actually develop arguments about the

⁷⁴ So J and Alexander (guaranteed); E and A^b have πῶς. We would then have to read πῶς πρότερόν τι ἔσται τῶν ἀρχῶν ἄλλο together as a rhetorical question, 'how will there be something else prior to the *ἀρχαί*?'. πῶς seems clearly preferable, and is printed even by Bonitz, without J.

⁷⁵ I confess that I do not know how *aporia* #13 is 'closely connected' with the preceding *aporiai*.

⁷⁶ In this last clause 'to be' is an artefact of my translation, reflecting ἔχειν rather than εἶναι. I apologize for the ungrammatical comma, which is intended to prevent the reader from reading 'δυνατόν to be' together: the phrase 'δυνατόν to be' does occur two lines further down, at 1003^a₄.

⁷⁷ Alcidas uses the word in *On the sophists* chapter 28 for what an animal or an extemporized speech have, that a statue or a written text do not. While we have no precise information on Alcidas' dates (he is said in various ancient sources to have been a student of Gorgias), it is not likely that he took the word from Aristotle.

notion of *ἐνέργεια* until he has done the conceptual work of Θ (begun already in Δ 2 and Δ 7). Again, presumably, the reason why he does not develop arguments about whether the *δυνάμεις* or *ἐνέργειαι* in question are said according to *κίνησις* or in some other way is that the notion of an *ἐνέργεια* that is not a *κίνησις*, or of a *δύναμις* that is not said in relation to a *κίνησις*, is not given at the outset and requires the conceptual work of Θ 6 (as seems to be implied at Θ 1, 1045^b 35–1046^a 4).

The most obvious problem in interpreting the *aporia* (as Aristotle gives it in *B* 6) is in deciding whether the various forms of *εἶναι* (and *γίγνεσθαι*) are existential or predicative; there are connected problems about interpreting *δυνατόν* and *ἀδύνατον*.

Ross takes the *ἔστι* of the initial question, *πότερον δυνάμει ἔστι τὰ στοιχεῖα ἢ τιν' ἕτερον τρόπον*, to be existential, ‘whether the elements exist potentially or in some other manner’ (similarly Madigan); and this is grammatically natural, since *δυνάμει ἔστι* has no obvious predicate complement. But I think it is very unlikely that this is what Aristotle means. As I noted in the first section, this *aporia* is closely connected with the distinction drawn in *Physics* II 3 and *Metaphysics* Δ 2 between *δυνάμενα* and *ἐνεργούντα* causes. The first argument Aristotle gives in the first half of the *aporia*, i.e. the first argument against supposing that the *στοιχεῖα/ἀρχαί* are ‘in some other way’ than *δυνάμει* (namely *ἐνεργεία*), is that ‘the *δύναμις* is prior to *that* cause’, so that something would be prior to the *ἀρχαί* if the *ἀρχαί* were *ἐνεργεία*. For this to be an argument, Aristotle must be assuming that for the *ἀρχαί* to be *ἐνεργεία* is for them to be *ἐνεργούντα* causes (like housebuilder housebuilding), while for the *ἀρχαί* to be *δυνάμει* is for them to be *δυνάμενα* causes (like housebuilder) or the *δυνάμεις* which are present in these *δυνάμενα* causes (like the art of house building). The housebuilder actually exists; he *is* *δυνάμει*, not because he *exists* *δυνάμει*, but because he is only *δυνάμει* exercising his causality. And if this is what Aristotle means, he has put his finger on a fundamental issue: as I noted in the first section, many Greek philosophers did posit as their *ἀρχαί* things which are properly described as *δυνάμεις* or *δυνάμενα* causes, even if they themselves did not use those terms (and some texts, notably the Hippocratic *On Ancient Medicine*, do explicitly posit *δυνάμεις* as causes of the phenomena), and Aristotle will argue against them, with radical consequences, that the first *ἀρχαί* must be causes which are eternally and essentially *ἐνεργούντα*. By contrast, it would be hard to locate a dispute between some philosophers who think that the *ἀρχαί* are only potentially existing objects and others who think that they actually exist.⁷⁸ (*Why*, according to the argument of the first half of the *aporia*, the

⁷⁸ I suppose that in some sense Aristotle himself thinks that some *ἀρχαί* exist only potentially, since he might say that prime matter only potentially exists, since it is always actually bound up with some

δύναμις would have to be ‘prior to *that* cause’, and what role is played by the following clause ‘it is not necessary for everything that is δυνατόν, to be in *that* way’, are issues that I will come back to a bit further down.)

So I think that πότερον δυνάμει ἔστι τὰ στοιχεῖα should mean something like ‘whether the στοιχεῖα are [only] δυνάμει causes’, i.e. ‘whether the στοιχεῖα are [only] δυνάμει exercising their causality’. On the other hand, it does seem that several uses of εἶναι (and γίνεσθαι) in the second half of the *aporia*—i.e. in the argument, which Aristotle himself endorses, that the ἀρχαί are or include ἐνεργούντα causes—are existential.

The argument of the second half of the *aporia* runs: ‘if the στοιχεῖα are δυνάμει, it is possible for none of the things that are to be. For even what is not yet is δυνατόν to be, since what is not comes to be, and nothing that is ἀδύνατον to be comes to be.’ This is evidently supposed to be a *reductio ad absurdum* of the hypothesis that the ἀρχαί are merely δυνάμει causes. The modal conclusion ‘it is possible for none of the things that are to be’ is not obviously absurd, but I take the point to be that the being of the things that are (most easily taken existentially: the actual existence of the manifest things, whether substances or not) is a fact in need of explanation, and—Aristotle claims—positing ἀρχαί which are merely δυνάμει causes will not be sufficient to explain it. But what is his argument that, if the ἀρχαί are merely δυνάμει causes, it is possible for none of the things that are to be? Some pieces of the argument are clearer than others. To begin with, ‘even what is not yet is δυνατόν to be, since what is not comes to be, and nothing that is ἀδύνατον to be comes to be.’ Here the argument is ‘some things come to be; whatever comes to be is not (or is not yet); but nothing that is impossible to be comes to be, so whatever comes to be is possible to be; so there are some things which are not (or are not yet), and yet are possible to be.’ (In all of this, it is easiest to take ‘be’ to mean ‘exist’ and ‘come to be’ to mean ‘come to exist,’ so that things that are not are not yet existing objects; they could also be not yet obtaining states of affairs, but it would be strange to conclude that it is possible for *no* state of affairs to obtain.) Then, since some things that are δυνατά are not, it is possible (ἐνδέχεται) for the things that are δυνατά not to be. However, there is still a gap in the argument, since the conclusion we need is not that it is possible for *the things that are δυνατά* not to be, but that, if the ἀρχαί are δυνάμει, it is possible for *all of the things that are* not to be. Presumably the missing premiss is that if the ἀρχαί are δυνάμει, all of the things that are are (merely) δυνατά. But what is supposed to justify this premiss—in particular, what connects the notion of

contrariety (and we might say similar things about infinity or the void, which are perhaps ἀρχαί in a very loose sense). But nobody before (or after) Aristotle had such an idea, and the arguments that he gives here in *B* #13, and then later on when he addresses the *aporia* in *Θ* 8 and *Λ* 6, do not bear on it.

being *δυνάμει*, in the antecedent, with the notion of being *δυνατόν*, in the consequent? I see two possibilities. Alexander, followed by Bonitz and by Madigan, thinks the argument is roughly ‘if the *ἀρχαί* are *δυνάμει*, then they are merely capable of being (and thus are also capable of not being); but if the *ἀρχαί* are merely capable of being, then *a fortiori* the other things that are, being derivative from the *ἀρχαί*, are merely capable of being (and thus are also capable of not being).’ This is possible, but it is a bit surprising that Aristotle would not make the *a fortiori* argument explicit if he had it in mind; and (a more serious objection) this really only makes sense if ‘if the *ἀρχαί* are *δυνάμει*’ means ‘if the *ἀρχαί* are [only] potentially *existing*’, which would be an unlikely issue for Aristotle to be worrying about. So I suggest that Aristotle’s argument is not ‘if the *ἀρχαί* are *δυνάμει*, then the *ἀρχαί* are merely *δυναταί*, and *a fortiori* everything else is merely *δυνατόν*’, but rather ‘if the *ἀρχαί* are *δυνάμει*, i.e. are merely *δυνάμενα* causes, then the things of which they are causes are merely *δυνατά*’—precisely the conclusion we have seen from *Physics* II 3, that ‘*δυνάμεις* [should be given as causes] of *δυνατά*, and *ἐνεργούντα* of *ἐνεργούμενα*’ (195^b27–8). Thus if the *ἀρχαί* are, say, an Anaxagorean *νοῦς* which is only potentially moving, and Anaxagorean homoeomerous materials which are only potentially being moved and formed into things, then the animals and so on which *νοῦς* makes out of these materials, and (more immediately) the motions which *νοῦς* produces in these materials, will be only *δυνατά*, and it will be possible for none of these things to exist. It seems to me that this interpretation is very strongly confirmed by the way that Aristotle restates the argument when he takes up the *aporia* in *A* 6, a text I will discuss below. On this interpretation we will have to concede that ‘it is possible for none of the things that are to be’ is an exaggeration, when Aristotle should strictly have said ‘it is possible for none of the things that are, *beyond the ἀρχαί themselves*, to be’, but I am not embarrassed to concede this.

There is still one more gap to fill. In the first half of the *aporia*, Aristotle argued that if the *ἀρχαί* were *ἐνεργούντα* causes, then, absurdly, ‘there will be something else prior to the *ἀρχαί* (for the *δύναμις* is prior to *that* cause, and it is not necessary for everything that is *δυνατόν*, to be in *that* way).’ Why would the *δύναμις* or *δυνάμενον* cause (the housebuilder or his art of housebuilding) be prior to the *ἐνεργούν* cause (the housebuilder housebuilding)? Apparently because ‘it is not necessary for everything that is *δυνατόν*, to be in *that* way [*ἐκείνως ἔχειν*].’ This might mean ‘it is not necessary for everything that is capable of acting to actually act’, so that the *δυνάμενον* cause is prior to the *ἐνεργούν* cause; or it might mean ‘it is not necessary for everything that is possible to actually exist’, so that the *δυνατόν* object is prior to the *ἐνεργούμενον* object, with the further inference that the *δυνάμενον* cause, as the cause of the

δυνατόν object, is prior to the ἐνεργούν cause, as the cause of the ἐνεργούμενον object. On either interpretation, Aristotle is applying what in the first section I called ‘Plato’s test’ for priority, namely that X is prior to Y if X can exist without Y existing but Y cannot exist without X existing: the δυνάμενον cause, or δυνατόν object, can exist without the ἐνεργούν cause or ἐνεργούμενον object, because ‘it is not necessary for everything that is δυνατόν, to be in *that way*’, whereas the ἐνεργούν or ἐνεργούμενον cannot exist without the δυνάμενον or δυνατόν. But of these two interpretations, the second seems to involve supplying too much that is not in the text, and the first interpretation is supported by the text of *A* 6 to be discussed below. A drawback of the first interpretation is that we will have to concede that δυνατόν is used here at 1003^a2 to mean ‘capable (of acting)’, said of a cause, whereas δυνατόν at 1003^a4 and ἀδύνατον at 1003^a5 mean ‘(im)possible’, said of an effect. However, at 1003^a4–5 Aristotle says not merely δυνατόν/ἀδύνατον but δυνατόν/ἀδύνατον εἶναι. If we like, throughout this passage we can translate δυνατόν as ‘capable’: δυνατόν εἶναι means ‘capable of being’, that is, possible, but with the understanding that something is capable of being only if something else is capable of causing it. Again, I find this acceptable.

III.2

Where, if anywhere, does Aristotle answer the *aporia*? Ross says, ‘Problem 13 is not expressly answered, but Aristotle’s answer may be inferred from his doctrine that actuality is prior to potentiality (*Θ* 8)’ (Ross 1970 (1924), I, xxiv). Ross is wrong.

As Ross’s phrase ‘expressly answered’ suggests, there are stronger and weaker senses in which a passage later in the *Metaphysics* might be said to ‘answer’ an *aporia* of *B*. As I noted in the first section, questions about the ἀρχαί are easily converted into questions about priority: since the ἀρχαί are by definition the first of all things, to say that ἐνέργειαι are prior to δυνάμεις has the immediate implication that the ἀρχαί are ἐνέργειαι (or bearers of ἐνέργειαι) rather than δυνάμεις (or bearers of δυνάμεις).⁷⁹ So there is a perfectly acceptable sense in which *Θ* 8, in arguing that ἐνέργεια is prior to δύναμις (in various senses including the most important, priority κατ’ οὐσίαν), is answering *B* #13. It might be said more broadly that all of *Θ* is answering *B* #13, or at least that it is motivated by this *aporia* and is doing the conceptual work and gathering the premisses which will lead to its solution in *Θ* 8. But in a much stronger sense the *aporia* is ‘expressly answered’ in *A* 6, drawing on the prior work of *Θ* and

⁷⁹ If the ἀρχαί were δυνάμενα causes, i.e. bearers of δυνάμεις, so that bearers of δυνάμεις would be prior to ἐνεργούντα causes or bearers of ἐνέργειαι, then δύναμις would be prior to ἐνέργεια, since ‘affections of prior things are also said to be prior, as straightness [is said to be prior] to whiteness, since the former is a *per se* affection of line and the latter of surface’ (*Metaphysics* *A* 11, 1018^b 37–1019^a1).

especially of Θ 8. A 6 flags its reference to Θ 8 clearly enough, and to B #13 as clearly as one could possibly expect.

I will start by translating the whole of the relevant passage from A 6, though I will comment only on selected bits of it.

If there is something capable of moving or producing [κινητικόν, ποιητικόν], but not actually doing anything [ἐνεργοῦν τι], there will not be motion: for it is possible for what has a δύναμις not to act [ἐνδέχεται τὸ δυνάμιν ἔχον μὴ ἐνεργεῖν]. So is there no benefit even if we posit eternal οὐσίαι, like those who posit the Forms, if there is not in them some ἀρχή capable of causing change [δυναμένη μεταβάλλειν]; but then neither is this sufficient, nor another οὐσία beyond [παρά] the Forms: for if it does not act [εἰ μὴ ἐνεργήσῃ], there will not be motion. Further, neither [will it be sufficient] if it acts [ἐνεργήσῃ], but its οὐσία is δύναμις: for [in that case] motion will not be eternal, since it is possible for what is δυνάμει not to be [ἐνδέχεται τὸ δυνάμει ὄν μὴ εἶναι]. So there must be such an ἀρχή whose οὐσία is ἐνέργεια. Then, further, these οὐσίαι must be without matter, for they must be eternal, if anything else is to be eternal. So they are ἐνέργεια.⁸⁰ But there is an *aporia* [καίτοι ἀπορία]: it seems that everything that is acting is capable [of acting], but not everything that is capable [of acting] is acting [τὸ μὲν ενεργοῦν πάν δύνασθαι, τὸ δὲ δυνάμενον οὐ πάν ενεργεῖν], so that δύναμις would be prior. But if this is so, then none of the things that are will be: for it is possible [for something] to be able to be but not yet to be [ἐνδέχεται γὰρ δύνασθαι μὲν εἶναι μήπω δ' εἶναι]. But if it is as the theologians [= mythologists] say, who generate [all things] out of night, or the physicists who say that all things were together,⁸¹ the same impossibility [will arise]. For how will it be moved, if there is [sc. in the original pre cosmic state] no cause in ἐνέργεια? The wood [ὕλη] will not move itself, rather [the art of] carpentry moves it, nor will the *katamenia* or the earth move themselves, rather the [male or plant] seed moves them. This is why some people posit eternal ἐνέργεια, like Leucippus and Plato: for they say there is always motion. But they do not say *what* motion or on account of what, nor the cause of [its moving] in this way or that.⁸² For nothing is moved at random [ὡς ἔτυχε]; rather, there must always be some [sc. cause: δεῖ τι αἰεὶ ὑπάρχειν], just as now too

⁸⁰ There are minor textual issues between ἔστι and ἔσται at 1071^b12, ^b13, and ^b17, and a somewhat more serious issue between ἐνέργεια and ἐνεργεία at ^b22 (Ross and Jaeger agree, and I follow them, on all of these points, but cf. Bonitz). There is what looks like circular reasoning at ^b20–2, from pure actuality to eternity and immateriality and back to pure actuality. One solution would be to take ‘then, further, these οὐσίαι must be without matter, for they must be eternal, if anything else is to be eternal. So they are ἐνέργεια’ as a new supporting argument, independent of 1071^b12–20, for the conclusion that the eternal οὐσίαι presupposed by the eternity of time and motion are pure ἐνέργεια. Another possibility would be to take ‘then, further, these οὐσίαι must be without matter’ as a corollary of 1071^b12–20, but take ‘so these are ἐνέργεια’ as summing up not just 1071^b20–2 but the whole of ^b12–22, to make the transition to the *aporia* that is raised against this conclusion.

⁸¹ Reading καίτοι εἰ ὡς λέγουσιν οἱ θεολόγοι οἱ ἐκ νυκτὸς γεννῶντες, ἣ οἱ φυσικοὶ οἱ ὁμοῦ πάντα χρήματά φασι: the οἱ after φυσικοὶ drops out by *saut du même au même*, leaving the original text of E], and the subsequent insertions of ὡς before οἱ φυσικοὶ and/or of ἣν before ὁμοῦ, in A^b and by later hands in E and J, are attempts to restore the grammar.

⁸² I think (with Ross and Jaeger) that the Plato reference here is to the disorderly motion of the *Timaeus*: the criticism that Plato does not explain the manner or cause of this motion is on target, whereas

[something is moved] in one way by nature, in another by violence or by *νοῦς* or by something else. So which of these is first?—it makes an enormous difference. But it is also not possible for Plato to name [as the *ἀρχή* of motion] what he sometimes takes as the *ἀρχή*, what moves itself [i.e. soul]: for the soul is posterior, and simultaneous with the heaven, as he says.⁸³ But as for taking *δύναμις* to be prior to *ἐνέργεια*, this is right in one way but not in another (we have said how [εἴρηται δὲ πῶς]). And that *ἐνέργεια* is prior is witnessed by Anaxagoras (for *νοῦς* is *ἐνέργεια*)⁸⁴ and Empedocles [in positing as *ἀρχαί*] love and strife, and by those who say that there is always motion, like Leucippus: so that there was not for an infinite time chaos or night, but the same things always [have existed or happened], either cyclically or in some other way, if *ἐνέργεια* is prior to *δύναμις*. And if the same thing always [exists or happens] cyclically, then there must be something that always remains [δεῖ τι ἀεὶ μένειν: a cause, as above] always acting in the same way. (A 6, 1071^b12–1072^a10)

To recall the context: in the previous paragraph, the first of A 6, Aristotle has set out to argue that there is an eternal unmoved substance by arguing that the circular movement of the heavens is eternal, and that it depends on an eternal substance to move it. He now tries to determine further what this eternal substance must be like. Platonic Forms are not enough, since they cannot be efficient causes or causes of motion (a standard Aristotelian point, *Metaphysics* A 7, 988^a34–^b6, A 9, 991^a8–11, ^b3–5, 992^a24–6, and at length GC II, 9); but even if Forms were capable of causing motion, or even if the Platonists add another *ἀρχή* beyond the Forms which is *δυναμένη μεταβάλλειν*, Aristotle argues that this too will not be enough unless this *ἀρχή* is not merely *δυναμένη* but *ἐνεργοῦσα*, indeed unless its *οὐσία* is not *δύναμις* but *ἐνέργεια*. In speaking of this further *ἀρχή* beyond the Forms, Aristotle is of course thinking of *νοῦς* as the ultimate moving and ordering cause, and cause of matter's participating in the Forms (though pseudo Alexander and Bonitz and Ross rather bizarrely suggest that the reference is to numbers or mathematical, which would have nothing to do with motion). And indeed this seems like a perfectly correct criticism of the Platonic as of the Anaxagorean *νοῦς*, which have not been moving and ordering the world from eternity but are originally inactive: such *δυνάμενα* causes certainly will not explain why the circular movement of the heavens has

it would be all wrong as a criticism of the *Laws* X theory of eternal psychic motion. By contrast, with the reference a few lines down to what Plato 'sometimes' takes as the *ἀρχή* is indeed to *Laws* X. At 1071^b34 I read, without much confidence, Jaeger's οὐδὲ < τοῦ > ὥδι < ἧ > ὥδι τὴν αἰτίαν; see Jaeger's apparatus for the other equally plausible things that have been tried, all of which mean roughly the same thing.

⁸³ Not in *Laws* X itself, which is internally consistent, but in the *Timaeus*: 'posterior' sc. to the disorderly motion, which exists before the heaven (whether this means the heaven proper, or the ordered cosmos).

⁸⁴ I take this to be a view Aristotle thinks is true, not one he attributes to Anaxagoras. The critique at A 6, 1071^b12–19 is directed against, among others, Anaxagoras' *νοῦς* and the demiurge of the *Timaeus*, which were inactive for infinite time and then began to act in producing the ordered world.

existed from eternity (as Aristotle has just argued that it has), and indeed they give no sufficient reason why it should start at all.

Already from this first bit of the text it is clear that Aristotle is addressing the issue from *B* #13, whether the *ἀρχαί* are *δυνάμεις* or *ἐνέργειαι*, or *δυνάμενα* or *ἐνεργούντα* causes. Now, however, he clearly flags the reference to *Metaphysics B* with the words ‘καίτοι ἀπορία’ (*A* 6, 1071^b22–3), and he proceeds to give close paraphrases of the arguments given in *B* #13 for both sides of the *aporia*: ‘δοκεῖ γὰρ τὸ μὲν ἐνεργούν πᾶν δύνασθαι, τὸ δὲ δυνάμενον οὐ πᾶν ἐνεργεῖν, ὥστε πρότερον εἶναι τὴν δύναμιν’ (*A* 6, 1071^b23–4) paraphrases ‘πρότερον γὰρ ἢ δύναμις ἐκείνης τῆς αἰτίας, τὸ δὲ δυνατόν οὐκ ἀναγκαῖον ἐκείνως πᾶν ἔχειν’ (*B* #13 1003^a1–2), and ‘ἀλλὰ μὲν εἰ τοῦτο [i.e. if *δύναμις* is prior to *ἐνέργεια*, and if therefore the *ἀρχή* is a *δύναμις* or a *δυνάμενον* cause], οὐθὲν ἔσται τῶν ὄντων’ ἐνδέχεται γὰρ δύνασθαι μὲν εἶναι μήπω δ’ εἶναι’ (*A* 6, 1071^b25–6) paraphrases ‘εἰ δ’ ἔστι δυνάμει τὰ στοιχεῖα, ἐνδέχεται μηθὲν εἶναι τῶν ὄντων’ δυνατόν γὰρ εἶναι καὶ τὸ μήπω ὄν’ (*B* #13 1003^a2–4). (Aristotle has also drawn on the same argument, *B* #13 1003^a2–4, a few lines further up in *A* 6, before flagging the reference to *B* with *καίτοι ἀπορία*: if the moving *ἀρχή* is merely a *δυνάμενον* cause, ‘οὐκ ἔσται κίνησις’, and even if it acts, but its *οὐσία* is *δύναμις*, motion will not be eternal, ‘ἐνδέχεται γὰρ τὸ δυνάμει ὄν μὴ εἶναι’ [*A* 6, 1071^b17, ^b19]). I find it rather astonishing that Bonitz and Ross manage to get through their commentaries on *A* 6 without mentioning any intertextual relation to *B* #13.⁸⁵ There are implications for the interpretation of *B* #13, for Aristotle’s final answer to the *aporia*, and, perhaps most interestingly, for the relations between *B*, *Θ*, and *A* within the *Metaphysics*. I have already noted above most of the main implications for the interpretation of *B* #13. *A* 6 strongly supports the construal of *B* #13 as being about whether the *ἀρχαί* are *δυνάμενα* or *ἐνεργούντα* causes, rather than about whether the *ἀρχαί* themselves exist actually or only potentially. Also, by paraphrasing ‘τὸ δὲ δυνατόν οὐκ ἀναγκαῖον ἐκείνως πᾶν ἔχειν’ (*B* #13 1003^a2) as ‘δοκεῖ γὰρ τὸ μὲν ἐνεργούν πᾶν δύνασθαι, τὸ δὲ δυνάμενον οὐ πᾶν ἐνεργεῖν’ (*A* 6, 1071^b23–4), *A* 6 supports the view that *δυνατόν* at *B* #13 1003^a2 means what is capable of acting and causing, not what is capable of existing or being caused, and that *ἐκείνως ἔχειν* in the same line means acting, not just actually existing (as far as I know, *ἐνεργεῖν* always means exercising an active or passive power, never just actually existing or actually having some predicate). Finally, *A* 6 also supports the interpretation of *ὄν* and *εἶναι* in ‘ἐνδέχεται μηθὲν εἶναι τῶν ὄντων’ *δυνατόν* γὰρ εἶναι καὶ τὸ μήπω ὄν’ (*B* #13 1003^a3–4) as existential, perhaps most clearly

⁸⁵ By contrast, Madigan (1999, 140–3) does discuss the connections, both between *B* #13 and *A* 6 and between *Θ* 8 and *A* 6.

in *A* 6, 1071^b17 οὐκ ἔσται κίνησις (motion is of course not a substance, but the point still holds; and if motion does not exist, sublunar substances beyond the four elements will not exist either). As in *B* #13, it seems that Aristotle must be speaking loosely, so that ‘none of the things that are will be’ means ‘none of the things arising from the causality of the ἀρχαί will be, but only the ἀρχαί themselves.’

A 6 also makes clear Aristotle’s final attitude toward the *aporia*. He accepts as decisive the argument that if δύναμις is prior to ἐνέργεια, so that the ἀρχαί are merely δυνάμενα causes, then there will be no motion, or anything else beyond the ἀρχαί, and he applies this argument against the ‘theologians’ and Anaxagoras, whose ἀρχαί are originally quiescent and then begin to generate, or to move and be moved, after a (presumably) infinite time. And it is not sufficient to say, with the atomists and the *Timaeus*, that there has always been motion, in the sense that there has always been one violent motion prompted by another; there must be a first motion, existing from eternity, of which these violent motions are by products, and an eternal ἀρχή causing this first motion; and (although Aristotle does not fill in the argument here), this cause is not nature or soul but νοῦς. In any case, whatever the ἀρχή is in itself, the persistence either of a single absolutely constant motion or of a cyclical pattern of changes requires an ἀρχή that is not only eternally acting, but eternally acting in the same way, and has no δύναμις to stop acting or to act in any other way:⁸⁶ this ἀρχή is thus essentially ἐνέργεια, and ἐνέργεια is prior to δύναμις. Now it should be noted that Aristotle has drawn the main lines of this conclusion, just from the argument at the beginning of *A* 6 for an eternal continuous motion, before he flags the *aporia* at 1071^b22–3. The *aporia*, as first introduced, is a difficulty that can be raised against Aristotle’s conclusion, namely the argument from the first half of *B* #13 that, by Plato’s test, δύναμις is prior to ἐνέργεια and therefore that the ἀρχαί are not originally ἐνεργοῦσαι (or—if the Plato’s test argument does not show that δύναμις is temporally prior to ἐνέργεια, but only that there is a δύναμις prior κατ’ οὐσίαν underlying each ἐνέργεια—at least that the ἀρχαί are not essentially ἐνεργοῦσαι). Then, after stating this *aporia*, Aristotle gives what he takes to be the decisive counter argument, namely the argument from the second half of *B* #13, that the actual existence of things (i.e. of things beyond the ἀρχαί) requires that the ἀρχαί be (or include) not merely δυνάμενα but ἐνεργούντα causes. (This argument restates and generalizes what Aristotle had

⁸⁶ Or so Aristotle seems to conclude esp. at 1071^b17–19. Perhaps he should just say that it always *does* act in the same way, so that from its behavior we have no evidence of any other δύναμις. But he may think he has an argument to support the stronger conclusion: perhaps that any δύναμις would have to be exercised at some point in infinite time, or perhaps that there would be a regress to a higher cause to explain why its δύναμις for acting in one way is exercised and its δύναμις for acting in another way is not.

said before introducing the *aporia*, that the actual existence of motion requires that the moving ἀρχή be an [essentially] ἐνεργούν cause; the more general restatement reflects the general way in which the argument is stated in the second half of *B* #13, and responds in kind to the equally general argument on the other side.) So while in *B* #13 these two arguments together constitute the *aporia*, when *B* #13 is used in *A* 6 it is more properly the first argument that is the *aporia*, i.e. the difficulty for Aristotle's position.

This *aporia* does, however, need to be solved, and it is not solved simply by giving a stronger argument for Aristotle's position; we must also show where the argument for the other side goes wrong, either in arguing from Plato's test that δύναμις is prior to ἐνέργεια, or in concluding from this that the ἀρχαί are not originally (or not essentially) ἐνεργοῦσαι. In the present text, all Aristotle says about this is 'but as for taking δύναμις to be prior to ἐνέργεια, this is right in one way but not in another (we have said how εἴρηται δὲ πῶς)' (1072^a3–4).

What does this εἴρηται refer back to? Fairly obviously, one might think, to *Θ* 8, where Aristotle distinguishes three ways in which δύναμις or ἐνέργεια might be said to be prior—in λόγος, in time, and in οὐσία—and concludes that 'ἐνέργεια is prior to every such [δύναμις in the broadest sense] both in λόγος and in οὐσία: in time, in a way it is and in a way it is not' (*Θ* 8, 1049^b10–12; Aristotle also says baldly that 'ἐνέργεια is prior to δύναμις', *Θ* 8, 1049^b5). But Bonitz and Ross deny the reference, and say that εἴρηται δὲ πῶς at *A* 6, 1072^a4 is instead referring back to an earlier passage in the same chapter, 1071^b22–6.⁸⁷

⁸⁷ Bonitz gives three arguments that εἴρηται δὲ πῶς at *A* 6, 1072^a4 is not referring to *Θ* 8: (i) *A* does not elsewhere give references to other books of the *Metaphysics*, even at places where we might well expect it; (ii) if he wanted to refer here in *A* 6 to the fuller and clearer discussion in *Θ* 8, there is no reason why he should repeat the discussion less clearly here; (iii) if Aristotle were going to refer back to an earlier book, he should say εἴρηται πρότερον or ἐν ἄλλοις, as he does elsewhere in the *Metaphysics*. In reply to (i), it depends what you count as a reference: there are what seem to be allusions to a number of the *aporiai* of *B*, including *A* 6's very close repetition of *B* #13, but it is hard to be sure what is an allusion and what is merely a parallel. I would argue that a number of these cases must be allusions (i.e. intended to recall an earlier discussion to the mind of a reader or hearer), but this would need to be argued at length. What is distinctive about the present passage, and requires an explicit εἴρηται, is that Aristotle, rather than building further on something he has done before, or recalling a promise made before in order to redeem it now, is referring to something he has done elsewhere in order to defuse an objection, so that he does not have to make the argument now. So, in answer to (ii), he is not repeating from *Θ* 8, but explicitly addressing *B* #13, about the ἀρχαί of the cosmos, as *Θ* 8 had not done. *Θ* 8 had made a contribution to *B* #13 by distinguishing the senses of priority, applying then to δύναμις and ἐνέργεια, and thus implicitly allowing us to resolve *B* #13's Plato's test argument for the priority of potential causes, but *Θ* 8 had not explicitly resolved the mistaken argument of *B* #13, nor drawn the positive consequences from the correct argument, as *A* 6 now does. Bonitz's point (iii) is interesting, but (as noted by Ross, 1970 (1924) II, 371), the evidence is not quite so univocal. Aristotle's back-references to what 'has been said' are usually accompanied by 'ἐν τοῖς περὶ X' or 'ἐν ἄλλοις' or 'πρότερον', but not at *H* 1, 1042^a4, *Θ* 1, 1045^b28, *Θ* 8 1049^b4, *M*1, 1076^a7, or *N*2, 1090^a15. References to 'ἐν τοῖς περὶ X' are not necessarily to 'another work' (pace Werner Jaeger 1912, 118 19, now taken up by Myles Burnyeat 2001, 12), but to an

I think it is important to bring out just how bizarre this claim of Bonitz and Ross really is. *A* 6, 1071^b22–6 is a passage I have discussed at some length: ‘but there is an *aporia*: it seems that everything that is acting is capable [of acting], but not everything that is capable [of acting] is acting, so that *δύναμις* would be prior. But if this is so, then none of the things that are will be: for it is possible [for something] to be able to be but not yet to be.’ This was *A* 6’s restatement of both sides of the *aporia* from *B* #13. Aristotle takes the argument from the second half of *B* #13 to be decisive, and this leads him into his critical evaluation of pre Socratic and Platonic theories of the *ἀρχαί*. But he still needs to solve the *aporia*, that is, to show where the argument from the first half of *B* #13 goes wrong, and all he does in *A* to solve it is to say ‘but as for taking *δύναμις* to be prior to *ἐνέργεια*, this is right in one way but not in another (we have said how)’: in other words, he refers to somewhere else where he has drawn the necessary distinctions and resolved in what sense *A* 6, 1072^b22–4 was right in claiming that *δύναμις* is prior to *ἐνέργεια*. But Bonitz and Ross say that here he is referring back to the *aporia* itself, i.e. to *A* 6, 1072^b22–4’s argument from the first half of *B* #13 together with the immediately following counter argument from the second half of *B* #13. This would be no solution at all. *A* 6, 1071^b22–6 draws no such distinctions in senses of priority, and 1071^b24–6 does not give a ‘solution’ assessing the merits of the argument of 1071^b22–4, but simply gives an argument for the other side: so if Aristotle wants to endorse the second argument (and he does), he will have to ‘solve’ the first argument somewhere else.

The obvious truth, then, is that *εἴρηται δὲ πῶς* at *A* 6, 1072^a3–4 is referring back to *Θ* 8. Our only alternative would be to say that he is referring to a lost text parallel to *Θ* 8: there are no other possibilities in *A* itself or in earlier books of the *Metaphysics* (not, in particular, in *Δ* 11 on priority [1019^a6–11 is not enough], or *Δ* 12 on *δύναμις*).

III.3

This conclusion has some important implications for the interrelations between different parts of the *Metaphysics*. Recall that Ross says ‘Problem 13 is not expressly answered, but Aristotle’s answer may be inferred from his doctrine

earlier section of the grand series of lectures or texts representing an idealized educational programme, which can be divided into ‘works’ more finely or more coarsely according to convenience. While sometimes it helps to specify where we have discussed something earlier, sometimes this would be otiose: e.g. *Θ* 8, 1049^b4 says ‘ἐπεὶ δὲ τὸ πρότερον διώρισται ποσαχῶς λέγεται’ because it would be redundant to add ‘ἐν τοῖς περὶ ποσαχῶς’, and *A* 6, 1072^a3–4 says ‘τὸ μὲν δὴ δύναμιν οἶεσθαι ἐνεργείας πρότερον ἔστι μὲν καλῶς ἔστι δ’ ὥς οὐ (εἴρηται δὲ πῶς)’ because it would be redundant to add ‘ἐν τοῖς περὶ δυνάμεως καὶ ἐνεργείας’.

that actuality is prior to potentiality (Θ 8).’ The argument of Θ , culminating in Θ 8, certainly contributes to solving B #13, by clarifying the concepts of $\deltaύναμις$ and $ἐνέργεια$, and by distinguishing the senses of priority and determining in what senses of priority $\deltaύναμις$ or $ἐνέργεια$ is prior, but it is only A 6 that directly cites B #13 and, drawing on what Θ has to say about $\deltaύναμις$ and $ἐνέργεια$ and priority, answers the question about the $ἀρχαί$. And while A ’s uses of earlier books of the *Metaphysics* are not usually as explicit as its citations of B #13 and Θ 8 in this passage, A is everywhere making determinations about $ἀρχαί$, and in my view it quite frequently draws on results of earlier books of the *Metaphysics* in order to do so. Already A 1–5 (far more than $ZH\Theta$) are talking about $ἀρχαί$ in a broad sense, so that e.g. A 5 speaks of $ἐνέργεια$ and $\deltaύναμις$ as $ἀρχαί$ (1071^a3–5, 118–19), although $ἐνέργεια$ and $\deltaύναμις$ are not single separately existing things, but are one only by analogy; but A 6–10 are talking about $ἀρχαί$ in the strictest sense (so that a numerically single thing whose $οὐσία$ is $ἐνέργεια$ can be the $ἀρχή$ of all things), culminating in the attempt of A 10 to show that Aristotle can, and that his rivals cannot, resolve various problems about the $ἀρχαί$, and especially about how the good is an $ἀρχή$. In the process, Aristotle indicates his solutions to many of the *aporiai* of B (and in A 10, as I have argued elsewhere, he gives the *only* indication in the *Metaphysics* of his solution to B #1). A 10 also stands in a very close intertextual relationship to A , claiming to deliver on the promise in A 1–2 of wisdom as a science of $ἀρχαί$ and first causes and especially of the good, and claiming to avoid the criticisms that A 3–7 had made of how Anaxagoras, Empedocles, and Plato use the good as a cause (compare A 10, 1075^a34–^b11 especially with A 7, 988^a32–^b16, arguing that none of these earlier philosophers have used their good $ἀρχή$ as a cause *qua* good, because they have not used it as a final but only as an efficient or formal cause). Bonitz and Ross, in defence of their view that A is an independent treatise and not an intended part of the *Metaphysics*, are led to some rather extreme measures in denying connections between A and earlier books of the *Metaphysics*, especially between A and B . But given that A 6, 1072^a3–4 refers back to Θ 8 with a casual $εἴρηται$, the view that A is an independent treatise is untenable. And rejecting this view frees us up to see how A 6 answers B #13, and to see ways in which A is connected with other *aporiai* of B and with arguments in subsequent books.

Some further points can be made more specifically about Θ and how it functions in supporting the conclusions of A . It is often said that A 1–5 are either a recapitulation of, or a shorter parallel to, the account of sensible substance in $ZH\Theta$, and that A 6–10 are a sequel to $ZH\Theta$ (or an abridgment or parallel to a lost sequel to $ZH\Theta$), dealing with non sensible substance. But, while I would say myself that A 1–5 frequently make use of arguments from

ZHΘ (either just using the conclusions, or giving compressed versions of the arguments) in order to draw conclusions about the *ἀρχαί* of sensible substances, *Λ* 1–5 do not overall run parallel to *ZHΘ* (the only close extended parallels are *Λ* 3/*Z* 7–8 and perhaps *Λ* 1/*Z* 1–2), and the most explicit use of *Θ* is not in *Λ* 1–5 but in *Λ* 6 (although I would say that *Λ* 5, in speaking of *ἐνέργεια* and *δύναμις* as each one by analogy, is drawing on *Θ* 6). Further, while it is true that *Λ* is about substances, both sensible and non-sensible, it is more precise to say that *Λ* is about the *ἀρχαί* of sensible substances, where among these *ἀρχαί* are the non-sensible substances (*Λ* starts by saying ‘the investigation is about substance, for it is substances whose *ἀρχαί* and causes we are seeking’, *Λ* 1, 1069^a18–19). *Θ* is not part of Aristotle’s account of substance (*Θ* 1, 1045^b27–1046^a4 clearly distinguishes between the preceding account of substance and the following account of *δύναμις* and *ἐντελέχεια*; *Θ* 8, 1049^b27–8 refers back to what has been said ‘in the *λόγοι* about substance’ in a way that would make no sense if *Θ* were itself part of these *λόγοι*), and *Θ*’s main contribution to *Λ* is not to any argument about substance as such, but to the argument that *ἐνέργεια* is prior to *δύναμις* and thus that the first *ἀρχή* is *ἐνέργεια*.⁸⁸ Too narrow a concentration on wisdom as a science of substance, or even, more broadly, on wisdom as a science of being, leads to disappointment with *B* and *Θ* and *Λ*; indeed, the *Metaphysics* as such will be disappointing if we are looking for a theory of the modes of being of different kinds of substances. But we need a broader perspective. *Λ* 1–2 argues that ‘wisdom’ (a name for the most intrinsically valuable science, whatever it may turn out to be) is a science of *ἀρχαί* and first causes, and *B* develops the *aporiai* that a science of the *ἀρχαί* must solve, long before *Γ* 1 announces a general science of being. And Aristotle’s reason for announcing the science of being is that ‘since we are seeking the *ἀρχαί* and the highest causes, they must be [causes] of some nature *per se*’ (*Γ* 1, 1003^a26–8) and he proposes that the *ἀρχαί* will be found as causes of *being*, and of its *per se* attributes such as unity, presumably on the ground that the highest causes will be the causes of the most widely extended effects. This motivates the project in *EZHΘ* of investigating the causes of being in each of the senses of being, not just of being as substance, but notably, in *Θ*, of being as *δύναμις* and

⁸⁸ Another contribution of *Θ* to *Λ* is in *Θ* 9’s argument that a bad *ἐνέργεια* is posterior to the *δύναμις* (which is *per se* for the good *ἐνέργεια* and only *per accidens* for the bad *ἐνέργεια*), and therefore that ‘evil does not exist *παρὰ τὰ πράγματα*’ (*Θ* 9, 1051^a17–18: as would a Platonic form of evil as such or of a particular evil, or an evil contrary to a good *ἀρχή*, such as an Empedoclean Strife or a Platonist indefinite dyad). Aristotle draws on this in *Λ* 10, in defending the position according to which there is a good *ἀρχή* (which is *κεχωρισμένον τι καὶ αὐτὸ καθ’ αὐτό*, *Λ* 10, 1075^a12–13, and so presumably exists *παρὰ τὰ πράγματα*) but no contrary evil *ἀρχή*. Once again, the contribution of *Θ* to the subsequent argument is archaeological, not ontological or even especially ontological.

ἐντελέχεια.⁸⁹ *A* draws on this investigation, not out of an interest in being as substance or even in being in general (*A* barely mentions that being is said in many ways [*A* 1, 1069^a21–4, *A* 2, 1069^b15–20, and ^b26–8 on not being]), but in order to complete the task, set in *AB*, of a knowledge of the ἀρχαί.

Θ, on its own self description at *Θ* 1, 1045^b27–1046^a4, is not about substance, but it is about being, as δύναμις and ἐντελέχεια. But even on these terms it may seem disappointing. *Θ* is more obviously a contribution to archaeology than to ontology. *Θ* 1, 1046^a4 ff., calling on *A* 12, defines δύναμις as a certain kind of ἀρχή of change, not as a sense of being; the adverbial datives δυνάμει and ἐντελεχεία or ἐνεργεία, marking senses of being, do not resurface, except in *Θ* 3, until *Θ* 6 (though δυνατόν = ‘possible’ is in *Θ* 4); and *Θ* 8’s conclusion that ‘ἐνέργεια is prior to δύναμις’ (1049^b4–5) is not in the first instance about senses of being, but says that ἐνέργεια is prior to ‘every ἀρχή of motion or rest’, including natures as well as δυνάμεις in the strict sense (1049^b5–11). But Aristotle has not forgotten the connection between archaeology and ontology, and this connection is important for his answer to *B* #13. The connection is simply that a δύναμις or a δυνάμενον cause is a cause of εἶναι δυνάμει, and an ἐνέργεια or an ἐνεργοῦν cause is a cause of εἶναι ἐνεργεία. This connection resurfaces in *Θ* 3, where Aristotle defends the account of δύναμις he has been giving against the Megarians, who think that ‘[something] is capable [δύναται] only when it is acting [ἐνεργῇ], and when it is not acting it is not capable, e.g. that the person who is not housebuilding is not capable of housebuilding, but only the person who is housebuilding and when he is housebuilding’ (1046^b29–32). Since there is change and coming to be, he says, ‘it is possible for something to be capable of being and yet not to be [ἐνδέχεται δυνατόν μὲν τι εἶναι, μὴ εἶναι δέ]’ (1047^a20–1), or (equivalently) ‘some of the things that are not are δυνάμει’ (1047^b1); and Aristotle argues that there cannot be such beings δυνάμει unless there are δυνάμεις, like the art of housebuilding, which persist even when they are not being exercised. On the one hand, this supports the view, argued in the first half of *B* #13, that δύναμις or δύνασθαι is more widely extended than ἐνέργεια or ἐνεργεῖν, and is therefore prior by Plato’s test. On the other hand, Aristotle’s conclusions especially in the parts of *Θ* 3 I have just quoted echo closely with the *second* half of *B* #13 and its restatement in *A* 6 (compare *Θ* 3, 1047^a20–1, just cited, with *B* #13 1003^a4–5, which also makes the argument about coming to be, and with *A* 6, 1071^b25–6, and compare *Θ* 3, 1047^b1, just cited, with *A* 6, 1071^b19), and support the claim

⁸⁹ Not all causes of substances are causes, to those substances, of being-as-substance; substances, like beings in any other category, also have causes of being-as-δύναμις, causes of being-as-ἐντελέχεια, and so on.

that *δυνάμεις* are not sufficient to explain the actual being of what is (the actual existence of objects beyond the *ἀρχαί*, or the fact that substances have the accidents they do), since the effect of a *δύναμις* is only that something is *δυνάμει*. Indeed, it seems that one major goal of the first part of *Θ* is to bring out this causal insufficiency of *δυνάμεις*, and thus to support the argument of the second half of *B* #13, restated and endorsed in *A* 6, that there must be an *ἀρχή* which is *ἐνέργεια*. But how is Plato's test argument for the priority of *δύναμις* to be resolved?

Θ 8 of course argues for the priority of *ἐνέργεια*, but it does not make explicit how to dispose of the argument for the other side. But reflection on *Θ* 8 suggests how Aristotle seems to be thinking here.⁹⁰ Aristotle argues very quickly that an *ἐνέργεια* is prior in *λόγος* to the corresponding *δύναμις* (the definition of the artisan or of the art must refer to its *ἐνέργεια*, e.g. a housebuilder is so called because he is able to build houses),⁹¹ but he has more difficulty responding to the claims that *δύναμις* is prior in time and in *οὐσία*. Something can be potentially X without being actually X, but not vice versa, so that the potentially X (or the *δύναμις* it bears) is prior by Plato's test to the actually X (or its *ἐνέργεια*); the lifespan of the potentially X must thus always include the lifespan of the actually X, and in many cases we can see that it begins earlier. The physicists will use these arguments to show that the *ἀρχαί* must be something like the potentially X (or the *δύναμις* it bears). And indeed, if the potentially X were a separately existing thing, these arguments would be decisive that it is prior in *οὐσία*, and in many cases in time. But, for several reasons, it is often not true that the potentially X is a separately existing thing.

To begin with, the potentially X and the actually X will often be types rather than individuals, so that their existence will be parasitic on the existence of some token. There are two ways in which the potentially X is likely to be a type

⁹⁰ I will take up here some points about priority and 'Plato's test' from section I above.

⁹¹ This point may be more contentious and important than it might look. Aristotle says that if the same term is applied in a *δύναμις*-sense and in an *ἐνέργεια*-sense, it will be applied in a stronger, as well as a logically prior, sense, to what is *ἐνεργούν* (see *Protrepticus* B79–84 Düring). It is especially the Platonists who will justify their choice of *ἀρχαί* by saying that these things are prior in *λόγος*, and Aristotle argues against them at the end of *Θ* 8 that if there are Forms of knowledge and motion, 'something would be much more knowing than knowledge-itself, and more moved than motion[-itself]: for [knowledge and motion] are more *ἐνέργειαι*, and [the alleged Forms] are *δυνάμεις* of those' (1050^b36–1051^a2), since the Form of motion would be eternally unchanging and thus not actually in motion, and the Form of knowledge would not be knowing any one particular object. Aristotle himself will avoid these objections by positing an *ἀρχή* which is an activity, and specifically an activity of knowing, but not a motion. For the contrast between Aristotle and (at least some) Platonists, note also that at the end of *Republic* IV, just actions are those actions which tend to preserve justice as a condition of the soul, as healthy actions are those actions which tend to preserve health as a condition of the body – so justice is prior in definition to just actions, and just actions are desirable only because justice is antecedently desirable. Aristotle reverses both of these priorities.

covering different tokens. First, it will cover both things which are actually X and things which are potentially but not actually X (see *De Interpretatione* 13, 23^a6–26), and while the existence of an actually X implies the existence of a potentially X, it may not imply the existence of a potentially but not actually X; the existence of potentially X is parasitic on the existence of either actually X or potentially but not actually X, and it may be that neither potentially but not actually X nor the type potentially X is prior to actually X (thus neither potentially but not actually moving the heavens nor potentially moving the heavens is prior to actually moving the heavens). Secondly and more obviously, there may be many individuals which are actually X, and many individuals which are potentially but not actually X—many oaks and many acorns. And while it is true that each individual oak must have an acorn prior to it, it is also true that each acorn must have an oak prior to it, so these considerations do not decide whether oak as such or acorn as such is prior, and no individual oak or acorn that we reach in this way will have existed from the beginning (against e.g. Anaxagoras, who thinks there were ‘seeds’ in the pre cosmic mixture; and compare the Stoics on Zeus, existing before the diacosmesis, as *σπερματικὸς λόγος* of the cosmos). Furthermore, it is not just temporally that oak is before acorn as well as acorn before oak; as the type oak cannot exist without the type acorn, so the type acorn cannot exist without the type oak, and so Plato’s test does not decide which type is prior. In such a case, Aristotle prescribes as a tie breaking test for priority that if X is the cause of being to Y, X is prior to Y (*Categories* 12, 14^b9–23); and much of *Θ* 8, 1050^a7–^b3 can be seen as arguing that oaks are more properly regarded as the (final) cause of the existence of acorns than vice versa, so that oaks are prior and closer to the *ἀρχαί* by this test.

Finally, another sense in which the potentially but not actually X may be non separate is that matter, not being *τόδε τι*, exists not separately or *καθ’ αὐτό* but parasitically on the existence of some *τόδε*. *Θ* 7 seems to argue that, as for whiteness to exist is just for some *τόδε* to exist and be white, so for bronze to exist (if bronze is not a substance that underlies accidental change but a matter that underlies substantial change) is just for some *τόδε* to exist and to be brazen. Here *Θ* 7 is building on *Θ* 6’s analogical extension of *δύναμις* and *ἐνέργεια* beyond the category of motion to other categories including substance: as a motion is to its (active or passive) moving power, so a substance is to its appropriate matter. When *Θ* 7 compares the ‘indefiniteness’ of matter to that of accidents, this is ontology, but applied to the question of the *ἀρχαί*. The overall question of *Θ* 7 is when X is, and when it is not yet, *δυνάμει* Y; this question leads naturally to a discussion of the ultimate *δύναμις-ἀρχή*, and, building on *Θ* 6’s account of matter as *δύναμις* to substance, *Θ* 7 can conclude

that the ultimate *δύναμις-ἀρχή* is not a substance, thus not *τόδε τι*. *Θ* 8 seems to be building on this conclusion when it gives, as an argument that *ἐνέργεια* is prior to *δύναμις* in *οὐσία*, that ‘the things that are posterior in coming to be are prior in form and *οὐσία*, e.g. the man to the boy or the human to the seed: for the former already possesses the form, and the latter does not’ (1050^a4–7). If this is supposed to establish something more serious than a primacy of honour, it should mean that the *δύναμις* for a substance, the seed or the immature specimen of the species, is ontologically dependent on the fully developed substance, presumably because, as *Θ* 7 is supposed to have established, the *δύναμις* for a substance is not *τόδε τι* and so exists not *καθ’ αὐτό* but parasitically on the substance. I am not sure exactly how this is supposed to work when we move from bronze to seeds. Does an acorn exist only because something else exists and is acorny? At the time when an acorn exists, there doesn’t seem to be anything else which is acorny (even when bronze has not yet been shaped into anything with a purpose, there is still at least a lump which is brazen, but it is hard to imagine anything corresponding for acorns). But perhaps the idea is that the existence of the acorn depends on the existence of something *over time* (rather than something, underlying the acorn, existing at that instant) which is temporarily an acorn: an acorn is just an early stage of an oak, in some sense in which it would not be equally correct to say that an oak is just a late stage of an acorn. (Is this true even of an acorn that never manages to sprout?)

I am not sure how well Aristotle has worked these ideas out, and certainly his presentation in *Θ* 8 is sketchy. But it does seem that he intends some combination of these ontological ideas to defuse Plato’s test argument for the priority of *δύναμις* to *ἐνέργεια*, and thus to support *A* 6’s solution to *B* #13. But while Aristotle certainly needs something (and I think something like what I have sketched) to defuse the argument for the priority of *δύναμις*, his decisive argument for the priority of *ἐνέργεια* is simply the second half of *B* #13, restated in *A* 6; and this argument is ontological only to the extent that it depends on working out the concept of being *δυνάμει*, seeing that *δυνάμεις* are sufficient only to explain such being *δυνάμει*, and concluding that a further kind of *ἀρχή*, an *ἐνέργεια* from the beginning, is needed to account for the actual being of things.

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Index locorum

Aeschylus

Persians

419: 227 n. 40

Alcidamas

On the Sophists

28: 249 n. 77

Alexander of Aphrodisias

In Arist. An. Pr. (Wallies)

66, 29–67,1: 39 n. 43

129, 9: 39 n. 43

In Arist. Metaph. (Hayduck)

20, 32: 108 n. 7

54, 11–13: 39 n. 43

79, 3–83, 30: 127 n. 62

79, 11–80, 6: 94 n. 94

79, 19–80,7: 146 n. 25

84: 230 n. 44

84, 14: 230 n. 44

85, 18 ff.: 130 n. 75

136, 14–17: 29 n. 11

137, 5–9: 29 n. 11

171, 5 f.: 31 n. 19

171, 11–14: 32

172, 4–6: 179 n. 14

172, 5–7: 36 f.

172, 13 f.: 39

172, 23: 43 n. 56

172, 32 f.: 42 n. 54

174, 14–18: 36 n. 30

174, 22 f.: 29 n. 15

194, 28–195, 2: 78 n. 18

202, 8–10: 106 n. 5

202, 14–15: 110 n. 14

202, 26: 111 n. 20

203, 7–9: 112 n. 22

204, 1–6: 115 n. 29

204, 12–15: 117 n. 34

205, 15–28: 122 n. 42

205, 28–206, 12: 122 n. 43

206, 12–207, 4: 122 n. 44

207, 9–29: 126 n. 59

208, 10–14: 128 n. 68

209, 9–14: 129 n. 73

209, 34–210, 11: 130 n. 78

210, 20–1: 131 n. 83

217, 32: 158 n. 8

218, 17: 157 n. 7, 208

221, 15 ff.: 170 n. 30

224, 2–3: 180

225, 1–3: 182

225, 4–32: 182

225, 7–8: 180 n. 19

225, 29–32: 183 n. 31

226, 21: 184 n. 35

228, 5–10: 188

228, 24–6: 188

230, 11–13: 191 n. 2

232, 17–18: 202

233, 26: 208 n. 29

235, 6–7: 208

236, 26–29: 40 and n. 46

387, 2–5: 195 n. 10

In Arist. Top. (Wallies)

452, 2–11: 124 n. 50

In Arist. de princ. doct. (Badawi)

281–2: 127–8

Pseudo-Alexander

In Arist. Soph. El. (Wallies)

158, 20–6: 230 n. 44

Antiphon

First Tetralogy

a 2: 220 n. 15

Apollonius Dyscolus*De Constructione*

- 29, 1–32, 8: 225 n. 33
 100, 13–102, 5: 225 n. 33
 113, 5–14: 255 n. 33

De Pronomine

- 5, 13–9, 6: 225 n. 33
 9, 7–10: 225 n. 33
 25, 7–22: 225 n. 33

Aquinas, Thomas*In Metaph. Aristot.* (Cathala/Spiazzi)

- 424: 110 n. 12
 426: 117 n. 34
 427: 113 n. 23
 433: 123 n. 47
 442: 131 n. 85
 489: 180
 490: 182 n. 25
 492: 182–3

Aristotle*Categories*

In general: 16, 114, 129, 152

- 5, 2^b5–6^c: 218
 5, 2^b7–28: 224 n. 31
 5, 2^b37–3^a6: 224 n. 31
 5, 3^b10–18: 222–3
 5, 3^b13–16: 235
 10, 11^b38–12^a25: 8 n. 25
 12, 14^a29–35: 195 n. 10,
 217 n. 6
 12, 14^b3–8: 130
 12, 14^b9–23: 264
 13, 15^a4–7: 218

De Interpretatione

2. 16^a30–3: 9 n. 30
 3. 16^b11–15: 9 n. 30
 10: 8 n. 26
 10. 19^b8–12: 9 n. 30
 13. 23^a6–26: 264

Prior Analytics

- I. 6. 28^a22–6: 229 n. 42

- I. 35. 48^a29: 229
 I. 41. 49^b33–50^a4: 228

Posterior Analytics

- I. 1. 71^a24–30: 45 n. 64
 I. 1: 89
 I. 1. 71^a1–2: 88 n. 72
 I. 1. 71^a5–11: 88 n. 74
 I. 1. 71^a29–30: 88 n. 72
 I. 4. 73^a34–^b24: 101 n. 116
 I. 4. 73^b5–10: 177, 219
 I. 4. 73^b7–8: 177 n. 7
 I. 5. 74^a17–25: 93 n. 88
 I. 7: 92 n. 84
 I. 7. 75^a42–^b1: 46
 I. 7. 75^b7–8: 76 n. 10
 I. 9: 92 n. 84
 I. 9. 76^a1: 77 n. 13
 I. 9. 76^a9: 77 n. 13
 I. 9. 76^a12: 90 n. 80
 I. 9. 76^a16–25: 101
 I. 9. 76^a30: 77 n. 13
 I. 10–11: 101 n. 119
 I. 10. 76^a31–^b2: 79 n. 20
 I. 10. 76^b3–6: 78 n. 19
 I. 10. 76^b11–16: 78
 I. 13: 92 n. 84
 I. 13. 78^b32–79^a13: 96 n. 101
 I. 22. 83^a13–14: 177 n. 7
 I. 22. 83^a24–5: 182 n. 27
 I. 22. 83^a31–2: 177 n. 7
 I. 22. 83^b22–3: 177 n. 7
 I. 24. 86^a4–5: 140 n. 13
 I. 26: 72 n. 25
 I. 28: 76 n. 10
 I. 28. 87^b4: 77 n. 13
 I. 32. 88^b14–15: 102
 I. 32. 88^b23–4: 77 n. 13
 II. 3. 90^a35–8: 2 n. 5
 II. 3. 90^a36–91^a12: 46
 II. 4–8: 78 n. 19
 II. 7. 92^b14: 100 n. 113
 II. 11. 94^a36–^b8: 59 n. 15
 II. 13. 97^a25 ff.: 112 n. 22

- II. 19: 102 n. 120
 II. 19. 99^b20-2: 79 n. 20
 II. 19. 99^b26-7: 88 n. 73

Topics

- I. 2. 101^a34-6: 6
 I. 4. 101^b18: 112
 I. 11. 104^b3-5: 179 n. 14
 II. 2. 109^b14: 140 n. 13
 III. 1. 116^a23-8: 225 n. 32
 IV. 2. 122^b20-4: 123
 IV. 2. 123^a14-15: 195 n. 10
 IV. 6. 128^a24: 112 n. 22
 VI. 4. 141^a35-^b1: 117
 VI. 4. 141^b5-9: 195
 VI. 4. 141^b25-30: 114
 VI. 4. 141^b25-34: 195
 VI. 4. 141^b28-9: 195 n. 10
 VI. 5. 142^b28: 112 n. 22
 VI. 6. 144^a31-^b3: 123-4
 VI. 6. 144^a32-^b1: 232-3
 VI. 6. 144^a36-^b3: 100 n. 114
 VI. 6. 145^b1-2: 5
 VI. 6. 145^b18-20: 6, 12 n. 39,
 37 n. 39
 VIII. 3. 158^b35-6: 110 n. 13
 VIII. 9. 160^b14-16: 11
 VIII. 11. 162^a15-18: 6 n. 19
 VIII. 14. 163^a36-^b1: 11 n. 35

On Sophistical Refutations

11. 172^a13-15: 100 n. 113
 22: 233
 22. 178^b36-179^a10: 230 n. 44
 22. 178^b36-7: 230
 22. 178^b37-9: 223, 230
 22. 178^b39-179^a3: 229
 22. 179^a1-3: 229 n. 43, 231 n. 45
 22. 179^a3-4: 231 n. 45
 22. 179^a5-8: 231 n. 45

Physics

- I. 2. 185^a10-11: 186 n. 44
 I. 3. 186^b14-187^a11: 233 n. 47
 I. 4. 187^a27-8: 90 n. 80
 I. 4. 188^a7-9: 177 n. 7
 I. 5. 188^a19: 52 n. 4

- I. 6. 189^a30-2: 213 n. 3
 I. 7-8: 118
 I. 9: 52
 II. 1. 193^a9-28: 224 n. 31
 II. 1. 193^a12-17: 111
 II. 1. 193^b8-12: 111
 II. 2: 248 n. 72
 II. 2. 193^b22-35: 96 n. 101
 II. 2. 194^a7-12: 96 n. 101
 II. 3: 56, 85 n. 50, 250
 II. 3. 195^b4: 215
 II. 3. 195^b13-28: 214-15
 II. 3. 195^b27-8: 252
 II. 7: 48, 48 n. 2, 62 n. 19
 III. 4. 203^a33-^b2: 214 n. 4
 III. 6. 206^a12-14: 9 n. 28
 IV. 10. 217^b29-32: 2 n. 5
 VII. 7. 260^b17-19: 204
 VII. 7. 261^a14: 204
 VIII. 9. 265^a22-4: 205 n. 23

De Caelo

- In general: 8
 I. 10. 279^b4-7: 38, 38 n. 42
 I. 10. 279^b6-9: 6
 I. 10. 279^b7-12: 41, 41 n. 51
 III. 1-2: 165 n. 22
 III. 1. 298^b24-29: 168 n. 29
 III. 1. 300^a16-17: 206 n. 25
 III. 2. 301^a14-20: 170 n. 31
 III. 7-8: 165 n. 22
 III. 7. 306^a9-11: 148 n. 30

On Generation and Corruption

- I. 1-2: 165 n. 22
 I. 1. 315^a4-19: 170 n. 31
 I. 8: 165 n. 22
 I. 8. 325^a2-23: 55 n. 8
 II. 1-4: 193 n. 5
 II. 1. 329^a13-24: 223 n. 28
 II. 6. 334^a1-10: 170 n. 31
 II. 9: 255
 II. 9. 325^b9-24: 58 n. 14

Meteorology

- I. 14. 353^a7-9: 227 n. 40
 III. 5. 376^a10: 229

De Anima

- I. 1. 402^a4: 146 n. 25
 I. 1. 402^a21: 2-3
 I. 1. 402^a22-b16: 3 n. 7
 I. 1. 402^b5-8: 130 n. 76
 I. 1. 403^a20-4: 7
 I. 1. 403^a26 ff.: 48 n. 2
 I. 1. 403^b3-5: 3 n. 7
 I. 2. 403^b20-4: 37-8, 38 n. 40
 I. 2. 404^b12-15: 160 n. 15
 I. 2. 404^b16-27: 200 n. 15
 II. 3. 414^b19-33: 130 n. 76
 II. 4. 415^a26-b2: 144
 II. 5. 417^a21-b2: 246
 II. 5. 417^b19-27: 247
 III. 8.: 248 n. 72

Parts of Animals

- I. 1. 639^b14-20: 59
 I. 1. 641^b11-13: 53
 II. 8. 653^b28: 41 n. 49

Generation of Animals

- II. 1. 731^b34: 178 n. 10
 II. 6. 742^a20-2: 204

Metaphysics Book A

- I. 980^a1-981^a24: 81 n. 31
 I. 980^a24-981^b6: 81 n. 32
 I. 981^a7-12: 14 n. 43
 I. 981^a15-24: 98 n. 107
 I. 981^a24: 84 n. 48
 I. 981^a27-9: 84 n. 48
 I. 981^a27: 84 n. 48
 I. 981^a30: 84 n. 48
 I. 981^a31: 84 n. 48
 I. 981^b1: 84 n. 48
 I. 981^b2: 84 n. 48
 I. 981^b5: 84 n. 48
 I. 981^b6: 84 n. 48
 I. 981^b7-10: 82 n. 33
 I. 981^b7: 84 n. 48
 I. 981^b8: 84 n. 48
 I. 981^b9: 84 n. 48
 I. 981^b10: 84 n. 48

- I. 981^b10-13: 82 n. 34
 I. 981^b11: 84 n. 48
 I. 981^b13-20: 82 n. 35
 I. 981^b14: 84 n. 48
 I. 981^b16: 84 n. 48
 I. 981^b17: 84 n. 48
 I. 981^b18-19: 84 n. 48
 I. 981^b20: 84 n. 48
 I. 981^b22: 84 n. 48
 I. 981^b24: 84 n. 48
 I. 981^b27-9: 213 n. 3
 I. 981^b29-982^a1: 81 n. 32
 I. 981^b31: 84 n. 48
 I. 982^a1-3: 81 n. 27, 82 n. 36
 2. 982^a2 f.: 30, 84 n. 48
 2. 982^a4-6: 82 n. 37, 84 n. 48
 2. 982^a4: 81 n. 27
 2. 982^a6-21: 82 n. 38
 2. 982^a7-19: 84 n. 48
 2. 982^a7f.: 28 n. 9
 2. 982^a9: 84 n. 48
 2. 982^a10-1: 84 n. 48
 2. 982^a13: 82 n. 33
 2. 982^a14: 84 n. 48
 2. 982^a15: 84 n. 48
 2. 982^a21-5: 82 n. 39
 2. 982^a21-2: 84 n. 48
 2. 982^a23: 84 n. 48
 2. 982^a24: 84 n. 48
 2. 982^a25-8: 82 n. 40
 2. 982^a26: 30, 84 n. 48
 2. 982^a28-30: 82 n. 41
 2. 982^a28-b4: 58 n. 13
 2. 982^a29: 84 n. 48
 2. 982^a30-b4: 82 n. 42, 236, 246-7
 2. 982^a21-26: 69
 2. 982^a30-b4: 84 n. 48
 2. 982^a30: 84 n. 48
 2. 982^b3: 84 n. 48
 2. 982^b4-7: 58 n. 13, 82 n. 43
 2. 982^b5: 84 n. 48
 2. 982^b7-10: 83
 2. 982^b7-8: 81 n. 27

2. 982^b8: 84 n. 48
2. 982^b9-10: 30, 213 n. 3, 84 n. 48
2. 982^b11-28: 83 n. 45
2. 982^b11: 84 n. 48
2. 982^b12-19: 137 n. 4
2. 982^b13: 84 n. 48
2. 982^b15: 26 n. 2
2. 982^b17-20: 4
2. 982^b18: 84 n. 48
2. 982^b20: 84 n. 48
2. 982^b21: 84 n. 48
2. 982^b24: 84 n. 48
2. 982^b27: 84 n. 48
2. 982^b28-983^a11: 83 n. 46
2. 982^b32: 84 n. 48
2. 983^a7: 84 n. 48
2. 983^a11-21: 5, 83 n. 45, 137 n. 4
2. 983^a21-3: 81 n. 27, 84 n. 47
2. 983^a21: 30, 84 n. 48
3. 983^a24: 30
3. 983^a27-8: 86 n. 59
3. 983^a33-983^b1: 85 n. 50
3. 983^a33: 30 n. 18
3. 983^b1-6: 36 n. 31, 84 n. 48
3. 983^b4: 32 n. 25, 41 n. 49
3. 983^b4-6: 85 n. 51
3. 983^b5-6: 47
3. 983^b6-18: 193 n. 6
3. 983^b10: 86 n. 61
3. 983^b21: 84 n. 48
3. 984^a13-16: 95 n. 98
3. 984^b1: 178 n. 11
3. 984^b14 f.: 165 n. 23
4. 984^b23 ff.: 164 n. 20
4. 985^b10: 86 n. 61
5. 986^b6-7: 145 n. 22
5. 986^b8: 86 n. 62
5. 987^a2-28: 85
5. 987^a13-19: 176, 178
5. 987^a14-19: 220 n. 16
5. 987^a18: 86 n. 62
5. 987^a19: 86 n. 61
5. 987^a20-7: 181 n. 21
5. 987^a23: 86 n. 60
5. 987^a29-31: 84 n. 48
6. 987^a31: 178 n. 11
6. 987^b22-4: 220 n. 16
6. 987^b11-12: 178
6. 987^b ff.: 212
6. 987^b14-18: 76 n. 9, 95 n. 97
6. 987^b14-16: 77 n. 14
6. 987^b21: 86 n. 60
6. 987^b22-4: 176
6. 987^b22-3: 178
6. 987^b25: 86 n. 62
6. 987^b27: 178 n. 11
6. 987^b31-3: 107
6. 988^a7-11: 118, 165
6. 988^a9: 165 n. 24
6. 988^a14: 121
6. 988^a16: 84 n. 48
7. 988^a20-3: 85 n. 52
7. 988^a21-2: 47
7. 988^a32-^b16: 260
7. 988^a34-^b6: 255
7. 988^a34-5: 86 n. 59
7. 988^b6-7: 54
7. 988^b12-13: 86 n. 62
7. 988^b16-21: 85
7. 988^b20 f.: 28, 28 n. 7
7. 988^b28-9: 86 n. 60
8. 989^a15-16: 204
8. 989^b3: 86 n. 64
8. 989^b7: 86 n. 61
8. 989^b23: 86 n. 63
8. 990^a21-2: 206 n. 25
8. 990^a27-32: 95 n. 100
9. 990^b10: 139 n. 11
9. 990^b24-35: 86 n. 64
9. 990^b24-7: 85 n. 54, 86 n. 55
9. 990^b34-991^a8: 95 n. 97
9. 991^a8 ff.: 86 n. 65
9. 991^a8-^b9: 86 n. 57
9. 991^a8-11: 255
9. 991^a13: 86 n. 59
9. 991^b1-2: 86 n. 59

9. 991^b3-9: 146 n. 25
 9. 991^b3-5: 58 n. 14, 255
 9. 991^b9-27: 86 n. 56
 9. 991^b27-992^a2: 85 n. 54
 9. 992^a2-6: 214 n. 4
 9. 992^a8: 86 n. 60
 9. 992^a10: 86 n. 64
 9. 992^a24-992^b1: 87, 102 n. 122
 9. 992^a24-^b1: 17 n. 51, 86 n. 65
 9. 992^a24-7: 55
 9. 992^a24-6: 255
 9. 992^a24: 81 n. 27
 9. 992^a26-8: 86 n. 59
 9. 992^a33: 84 n. 48
 9. 992^b1-4: 86 n. 62
 9. 992^b9-10: 88 n. 69
 9. 992^b10: 228
 9. 992^b18-993^a2: 88
 9. 992^b22: 86 n. 64
 9. 992^b24-33: 68
 9. 992^b29: 89
 9. 993^a18: 86 n. 60
 10. 993^a11-24: 85 n. 52
 10. 993^a13-16: 85 n. 52
 10. 993^a16-19: 30 n. 17
 10. 993^a24-7: 7 n. 22
 10. 993^a24 f.: 30 n. 18
 10. 993^a25-7: 28, 28 n. 6, 81 n. 28
 10. 993^a25: 29, 30, 30 n. 17, 34
 10. 993^a26 f.: 29

Metaphysics Book α

1. 993^b23-31: 156 n. 5
 2. 994^b4-6: 143 n. 19
 2. 994^b6-9: 144 n. 20

Metaphysics Book Β

1. 994^a24-33: 45
 1. 995^a24 f.: 32
 1. 995^a24-995^b4: 25
 1. 995^a24-^b4: 137 n. 6
 1. 995^a24-5: 1 n. 3, 18 n. 54
 1. 995^a24: 31 n. 20, 33, 81 n. 25, 84 n. 49
 1. 995^a25-6: 18 n. 54, 179

1. 995^a25: 32 n. 22
 1. 995^a26-7: 22 n. 61, 179 n. 15
 1. 995^a26: 34
 1. 995^a27: 39
 1. 995^a28 f.: 3 n. 9, 33
 1. 995^a28-^b4: 50
 1. 995^a28: 32 n. 21
 1. 995^a29-33: 9
 1. 995^a29: 46
 1. 995^a32: 32 n. 22
 1. 995^a33: 26, 39
 1. 995^a34-6: 5 n. 16
 1. 995^a34: 33
 1. 995^b: 28
 1. 995^b1: 84 n. 49
 1. 995^b2-4: 9
 1. 995^b2: 33
 1. 995^b3-4: 8 n. 24
 1. 995^b3: 35
 1. 995^b4-27: 73
 1. 995^b4-10: 75 n. 6
 1. 995^b4-6: 47, 212
 1. 995^b4-5: 7 n. 23
 1. 995^b5: 26 n. 2, 36 n. 30,
 81 n. 26, 85
 1. 995^b6-10: 62
 1. 995^b6-7: 84 n. 49
 1. 995^b9-10: 65
 1. 995^b10-20: 75-6
 1. 995^b12-13: 84 n. 49
 1. 995^b13-18: 191
 1. 995^b14-15: 76
 1. 995^b15-16: 94 n. 91
 1. 995^b19: 84 n. 49
 1. 995^b20-7: 81 n. 30
 1. 995^b25-7: 76 n. 7
 1. 995^b25: 84 n. 49
 1. 995^b27-9: 106, 106 n. 5
 1. 995^b27-30: 18 n. 56
 1. 995^b29-31: 119
 1. 995^b31-6: 138-9
 1. 995^b31-2: 18 n. 55
 1. 995^b32-6: 11 n. 36

1. 995^b32-3: 21 n. 66
1. 995^b33: 39
1. 996^a1-2: 21, 153, 155 n. 3
1. 996^a1: 154
1. 996^a2-4: 76, 148, 162
1. 996^a4-5: 175 n. 3
1. 996^a6-13: 11 n. 37
1. 996^a7: 176
1. 996^a9-12: 248 n. 73
1. 996^a9-11: 211, 248
1. 996^a13-15: 191
1. 996^a15-17: 137 n. 6
1. 996^a15: 145 n. 22
1. 996^a16-18: 32
1. 996^a17: 3 n. 9, 33, 35

[Aporia 1]

2. 996^a18-^b26: 139
2. 996^a18-20: 47
2. 996^a19-20: 84 n. 49
2. 996^a20-1: 49
2. 996^a21-^b1: 53
2. 996^a32-4: 149 n. 32
2. 996^a33: 84 n. 49
2. 996^b1-26: 57, 60
2. 996^b2: 84 n. 49
2. 996^b3: 81 n. 25
2. 996^b3-5: 59
2. 996^b4: 57 n. 11
2. 996^b5-8: 149 n. 32
2. 996^b8-10: 212
2. 996^b8: 81 n. 26, 81 n. 29
2. 996^b9: 84 n. 49
2. 996^b10: 58
2. 996^b10-18: 58
2. 996^b10-12: 58
2. 996^b11-18: 60
2. 996^b11: 84 n. 49
2. 996^b12-22: 58
2. 996^b13: 58, 84 n. 49
2. 996^b14-22: 59
2. 996^b14-16: 59
2. 996^b15: 84 n. 49
2. 996^b16-18: 59
2. 996^b16: 84 n. 49

2. 996^b18-24: 58, 59, 60
2. 996^b18-22: 59
2. 996^b19-20: 84 n. 49
2. 996^b20-3: 138 n. 9
2. 996^b20: 58
2. 996^b22-4: 58
2. 996^b22-3: 54, 58
2. 996^b22: 58
2. 996^b23: 84 n. 49
2. 996^b24-5: 60
2. 996^b24: 59, 60
2. 996^b25: 84 n. 49

[Aporia 2]

2. 996^b26-33: 62
2. 996^b26-7: 48 n. 1, 63, 84 n. 4
2. 996^b28: 90 n. 80
2. 996^b29: 65
2. 996^b31-3: 81 n. 25
2. 996^b31-2: 63
2. 996^b31: 84 n. 49
2. 996^b32-997^a2: 67
2. 996^b33-997^a11: 64
2. 997^a1: 84 n. 49
2. 997^a2-11: 68, 76-7
2. 997^a2: 84 n. 49
2. 997^a3: 84 n. 49
2. 997^a4-5: 84 n. 49
2. 997^a5-6: 72
2. 997^a6: 90 n. 80
2. 997^a11-15: 64, 69, 70
2. 997^a14-15: 70

[Aporia 3]

2. 997^a15-998^a19: 73, 84 n. 49
2. 997^a15-25: 89
2. 997^a15: 84 n. 49
2. 997^a16-17: 84 n. 49
2. 997^a16: 76 n. 8
2. 997^a20-1: 89 n. 75
2. 997^a21-2: 90 n. 82
2. 997^a22: 84 n. 49, 89 n. 75
2. 997^a24: 84 n. 49, 90 n. 82

[Aporia 4]

2. 997^a25-34: 91-2

2. 997^a25: 89 n. 76

2. 997^a26: 84 n. 49

2. 997^a28: 84 n. 49

2. 997^a32: 84 n. 49

[*Aporia 5*]

2. 997^a34-998^a19: 136 n. 2

2. 997^a34-^b3: 94

2. 997^b2-3: 190

2. 997^b3: 84 n. 49

2. 997^b3-12: 94-5

2. 997^b3-5: 81 n. 29, 85, 212

2. 997^b3-4: 14 n. 45

2. 997^b11-12: 14 n. 45,
138 n. 7

2. 997^b12 ff.: 86 n. 56, 94

2. 997^b12-34: 85 n. 54, 198

2. 997^b12-24: 230 n. 44

2. 997^b12-20: 96

2. 997^b20-4: 96

2. 997^b25-32: 97

2. 997^b26: 84 n. 49

2. 997^b28-9: 84 n. 49

2. 997^b32-998^a6: 97-8

2. 998^a6-19: 98

2. 998^a11-13: 86 n. 58, 198

2. 998^a13-14: 198

2. 998^a14-15: 198

2. 998^a15-19: 86 n. 57

2. 998^a17-19: 198

[*Aporia 6*]

3. 998^a20-4: 145 n. 22

3. 998^a20-1: 13 n. 40, 20

3. 998^a21-3: 106, 146, n. 24

3. 998^a23-5: 108

3. 998^a25-6: 110

3. 998^a25: 111 n. 18

3. 998^a28-32

3. 998^b1-2: 111

3. 998^b3-4: 146 n. 24

3. 998^b4-6: 112

3. 998^b6-8: 113

3. 998^b9-11: 114

3. 998^b11-14: 116, 146 n. 24

[*Aporia 7*]

3. 998^b14-999^a23: 141

3. 998^b14-16: 119

3. 998^b14: 18 n. 56

3. 998^b17-21: 120, 218 n. 11

3. 998^b20-1: 184

3. 998^b21: 182

3. 998^b22-8: 121

3. 998^b22-7: 100

3. 998^b22: 120

3. 998^b28-30: 126

3. 998^b30-999^a1: 127

3. 999^a1-6: 128

3. 999^a1: 120

3. 996^a6-13: 129, 244

3. 998^b3-4: 108

3. 998^b11-14: 11

3. 999^a13-14: 130

3. 999^a14-23: 120

3. 999^a14-16: 130

3. 999^a14: 120

3. 999^a16-23: 131

3. 999^a17-19: 147, 220 n. 17

[*Aporia 8*]

4. 999^a24-^b24: 136, 146 n. 25, 152

4. 999^a24-5: 40 n. 48, 18 n. 55, 175 n. 3

4. 999^a24: 140

4. 999^a26-9: 141

4. 999^a29-32: 139 n. 10, 141

4. 999^a32-^b1: 142

4. 999^a32-3: 139

4. 999^a33: 141

4. 999^a34-^b1: 141

4. 999^b1-4: 141

4. 999^b1-2: 141

4. 999^b3: 145 n. 21

4. 999^b4-6: 142

4. 999^b4-5: 139 n. 10

4. 999^b5-8: 142

4. 999^b5-6: 142

4. 999^b6-8: 142

4. 999^b6: 140, 142

4. 999^b7: 142 n. 17

4. 999^b8: 143 n. 18
 4. 999^b8-16: 142
 4. 999^b8-12: 145
 4. 999^b12-16: 21 n. 60, 145
 4. 999^b12-13: 145 n. 21
 4. 999^b14-16: 145-6
 4. 999^b16: 139, 141, 145 n. 21
 4. 999^b17-20: 146-7
 4. 999^b17-18: 139 n. 10
 4. 999^b19-20: 147 n. 26
 4. 999^b20-3: 147, 152
 4. 999^b23-4: 147
 4. 999^b23: 147

[*Aporia 9*]

4. 999^b24-1000^a4: 151-2,
 241 n. 61
 4. 999^b24: 151-2
 4. 999^b25-7: 155
 4. 999^b25: 151
 4. 999^b27: 151 n. 1, 152, 157
 4. 999^b27-1000^a4: 208
 4. 999^b28: 151 n. 1
 4. 999^b30 f.: 156 n. 4
 4. 999^b31: 151 n. 1, 152, 157
 4. 999^b32 f.: 158
 4. 999^b34-1000^a1: 241
 4. 1001^a: 183
 4. 1000^a1: 152, 157
 4. 1000^a4: 155 n. 2

[*Aporia 10*]

4. 1000^a5-1001^a3: 159-61
 4. 1000^a5-7: 161
 4. 1000^a5: 36, 159
 4. 1000^a7 f.: 166
 4. 1000^a7-21: 162
 4. 1000^a7-9: 162
 4. 1000^a7-8: 166
 4. 1000^a7: 159, 171
 4. 1000^a15-18: 167
 4. 1000^a9-18: 159-60, 166
 4. 1000^a18-24: 168
 4. 1000^a18-20: 13 n. 42
 4. 1000^a18: 160, 168, 170

4. 1000^a19-24: 162
 4. 1000^a22 f.: 170
 4. 1000^a22-4: 166
 4. 1000^a24 f.: 169
 4. 1000^a24-^b21: 168
 4. 1000^a24: 160, 168
 4. 1000^a26-8: 171
 4. 1000^a26: 160 n. 11, 170
 4. 1000^a29: 160, 168-9
 4. 1000^b3-9: 163, 169
 4. 1000^b3: 160, 169
 4. 1000^b9-11: 171
 4. 1000^b9: 161, 169
 4. 1000^b11 f.: 171
 4. 1000^b12-17: 171
 4. 1000^b17-21: 162
 4. 1000^b17: 161, 163 n. 18, 169, 171
 4. 1000^b18-20: 170 n. 30
 4. 1000^b20 f.: 166
 4. 1000^b22-1001^a3: 172
 4. 1000^b22: 172
 4. 1000^b23: 161
 4. 1000^b24-9: 162
 4. 1000^b24-8: 216
 4. 1000^b24-6: 172
 4. 1000^b26 f.: 172
 4. 1000^b28: 161, 172, 173
 4. 1000^b29-32: 140 n. 14, 148 n. 30, 162
 4. 1000^b32-1^a3: 163 n. 17

[*Aporia 11*]

4. 1001^a4-^b25: 211
 4. 1001^a4-8: 17, 54
 4. 1001^a4-5: 18 n. 55
 4. 1001^a5-8: 220
 4. 1001^a6: 182 n. 28
 4. 1001^a8-19: 178-9
 4. 1001^a9-19: 181, 220
 4. 1001^a11-12: 184 n. 32
 4. 1001^a12: 175 n. 1, 187
 4. 1001^a20: 176 n. 64
 4. 1001^a21-2: 184
 4. 1001^a24-7: 185
 4. 1001^a27-9: 185 n. 38

- 4. 1001^a28: 182
- 4. 1001^a29—^b16: 184
- 4. 1001^a29—^b1: 185
- 4. 1001^a31: 182 n. 28
- 4. 1001^a33: 182 n. 28
- 4. 1001^b1—6: 185
- 4. 1001^b1—2: 183
- 4. 1001^b7: 184
- 4. 1001^b9: 182 n. 28
- 4. 1001^b17—25: 185, 187—8
- 4. 1001^b23: 188

[*Aporia 12*]

- 5. 1001^b26—1002^a4: 197
- 5. 1001^b26—9: 189
- 5. 1001^b29—1002^a4: 189, 192
- 5. 1002^a4—8: 189
- 5. 1002^a6—8: 194
- 5. 1002^a8—12: 189, 191
- 5. 1002^a11: 192
- 5. 1002^a12—^b11: 189
- 5. 1002^a12—14: 197 n. 13
- 5. 1002^a15—18: 189, 197
- 5. 1002^a18—20: 189, 199
- 5. 1002^a20—8: 190, 200
- 5. 1002^a21: 189 n. 1
- 5. 1002^a26—8: 201
- 5. 1002^a28—^b4: 190
- 5. 1002^a28: 178 n. 10
- 5. 1002^a30—4: 201
- 5. 1002^a34—^b4: 201—2
- 5. 1002^b4—5: 190
- 5. 1002^b5—11: 190
- 5. 1002^b7—8: 203 n. 19
- 5. 1002^b10: 200

[*Aporia 12bis*]

- 6. 1002^b12—32: 1 n. 2, 189, 207
- 6. 1002^b12—14: 207
- 6. 1002^b13—14: 14 n. 45
- 6. 1002^b14—30: 207
- 6. 1002^b23: 14 n. 45
- 6. 1002^b24: 208 n. 29
- 6. 1002^b27—30: 207

- 6. 1002^b30—2: 16 n. 48, 208
- 6. 1002^b30—1: 22

[*Aporia 13*]

- 6. 1002^b32—1003^a5: 249
- 6. 1002^b32—4: 211
- 6. 1002^b34—1003^a2: 216
- 6. 1003^a1—2: 217, 256
- 6. 1003^a2—4: 256
- 6. 1003^a2: 253, 256
- 6. 1003^a3—4: 256
- 6. 1003^a4—5: 253, 262
- 6. 1003^a4: 249 n. 76, 253

[*Aporia 14*]

- 6. 1003^a5—6: 105
- 6. 1003^a5: 253
- 6. 1003^a5—17: 211, 221—22
- 6. 1003^a5—7: 211
- 6. 1003^a7—12: 234, 235
- 6. 1003^a7: 239 n. 56
- 6. 1003^a9—12: 125 n. 57, 192 n. 4, 232, 233
- 6. 1003^a10—12: 232
- 6. 1003^a10: 229, 233 n. 48
- 6. 1003^a12—17: 236
- 6. 1003^a12: 233 n. 48

Metaphysics Book I

- 1. 1003^a26—8: 261
- 1. 1003^a26—7: 213 n. 3
- 2. 1003^b22—5: 213 n. 3
- 2. 1003^b33—6: 76 n. 7
- 2. 1004^{a—b}1: 81 n. 30
- 2. 1004^a2—9: 93
- 2. 1004^a2: 23
- 2. 1004^b1—8: 76 n. 7
- 2. 1004^b5—8: 23
- 2. 1004^b7—8: 76 n. 7
- 2. 1004^b17—28: 23
- 2. 1004^b27—1005^a6: 52 n.
- 2. 1004^b27—1005^a2: 116
- 2. 1004^b27—9: 115 n. 28
- 2. 1005^a11—18: 76 n. 7
- 3. 1005^a19—^b18: 81 n. 30

3. 1005^a19–21: 62
3. 1005^a33–^b1: 70
3. 1005^b1–5: 102
3. 1005^b5–8: 70
3. 1005^b7: 71
4. 1007^a20–^b18: 72
4. 1007^b17–18: 72

Metaphysics Book Δ

1. 1013^a7–10: 131 n. 80
2. 1013^b3–9: 56
2. 1013^b30: 56
3. 1014^a26–30: 109
3. 1014^a35–^b3: 110
3. 1014^b5: 113
3. 1014^b6–13: 106 n. 4
3. 1014^b9–14: 113
3. 1014^b9–11: 112
3. 1014^b14–15: 131 n. 81
6. 1016^b3–6: 186 n. 42
6. 1016^b32 f.: 153, 154
6. 1016^b35 f.: 155 n. 2
7. 1017^b6–8: 200 n. 16
8. 1017^b10–14: 193
8. 1017^b17–21: 194
10. 1018^a20–31: 8 n. 25
11. 1018^b34–7: 205 n. 22
11. 1018^b37–1019^a1: 253 n. 79
11. 1019^a1–14: 95 n. 98
11. 1019^a1–4: 217
11. 1019^a2–4: 195
11. 1019^a4–11: 218 n. 10
11. 1019^a6–11: 259
13. 1020^a7–8: 233 n. 48
17. 1022^b5–6: 204 n. 21
25. 1023^b18–19: 114
25. 1023^b23–5: 114
28. 1024^b4–6: 112

Metaphysics Book E

1. 1026^a14: 213 n. 2
1. 1026^a18–32: 76 n. 8
1. 1026^a23–32: 85, 93 n. 88
2. 1026^a24: 84 n. 48
2. 1026^b15–24: 229 n. 43

Metaphysics Book Z

1. 1028^a20–8: 177 n. 8
1. 1028^a35–6: 205
1. 1028^b4: 178 n. 10
2. 1028^b8–13: 193
2. 1028^b9–32: 136 n. 3
2. 1028^b16–18: 194
2. 1028^b18–27: 16 n. 47
2. 1028^b18–22: 194 n. 8
2. 1028^b19–21: 77 n. 14
3. 1029^b3–12: 236
6. 1031^b21–2: 229 n. 43
6. 1031^b22–8: 229 n. 43
6. 1031^b28–9: 229 n. 43
6. 1031^b30: 229 n. 43
10. 1034^b20–2: 113
11. 1037^a5–6: 132 n. 87
11. 1037^a28–9: 132 n. 87
12. 1038^a19–20: 132
13. 1038^b27–9: 205
13. 1038^b34–1039^a3: 231 n. 45
13. 1039^a3–14: 233
13. 1039^a12–13: 182 n. 26
14. 1039^a24–6: 239, 242
16. 1040^b6–8: 149 n. 31
16. 1040^b16–19: 185 n. 37
16. 1040^b33–4: 181 n. 23

Metaphysics Book H

1. 1042^a4: 258 n. 87
1. 1042^a27–8: 177 n. 7
2. 1042^b31–5: 119
3. 1043^b18–23: 146 n. 25

Metaphysics Book Θ

1. 1045^b27–1046^a4: 261, 262
1. 1045^b28: 258 n. 87
1. 1045^b35–1046^a4: 250
1. 1046^a4 ff.: 262
3. 1046^b29–32: 262
3. 1047^a20–1: 262
3. 1047^b1: 262
6. 1048^a32–3: 200 n. 16
6. 1048^b31–2: 249
8. 1049^b4: 258 n. 87, 262

- 8. 1049^b5-11: 262
- 8. 1049^b5: 258, 262
- 8. 1049^b10-12: 258
- 8. 1049^b27-8: 261
- 8. 1050^a4-7: 204, 265
- 8. 1050^a7-^b3: 264
- 8. 1050^b5-8: 95 n. 98
- 8. 1050^b34-1051^a2: 246 n. 69
- 8. 1050^b36-1051^a2: 263 n. 91
- 9. 1051^a17-18: 261 n. 88
- 9. 1051^a21-33: 248 n. 72
- 9. 1051^a21-30: 110 n. 12

Metaphysics Book I

- 1. 1052^b17: 186 n. 42
- 1. 1053^a30: 182 n. 26
- 2. 1053^b9-16: 178
- 2. 1053^b10-24: 23 n. 62
- 2. 1053^b12-13: 192
- 2. 1053^b27 ff.: 100 n. 113
- 4. 1055^b1-3: 8 n. 25
- 10. 1058^b36-1059^a14: 95 n. 97

Metaphysics Book K

- 1. 1059^a18-23: 53 n. 5
- 1. 1059^a18-21: 47
- 1. 1059^a20-3: 78 n. 15
- 1. 1059^a21-3: 48, 49
- 1. 1059^a23-4: 62
- 1. 1059^a23: 57
- 1. 1059^a24-5: 67, 69
- 1. 1059^a25-6: 57 n. 12
- 1. 1059^a26-9: 78
- 1. 1059^a29-34: 78
- 1. 1059^a34-8: 53 n. 5, 60 n. 17, 85 n. 51
- 1. 1059^a38-^b3: 213 n. 2
- 1. 1059^a39-^b1: 77 n. 14
- 1. 1059^b3-9: 230 n. 44
- 1. 1059^b9-10: 97 n. 104
- 1. 1059^b12-14: 213 n. 2
- 1. 1059^b14: 99
- 1. 1059^b21-6: 106
- 1. 1059^b27-34: 119
- 1. 1059^b38-^b14: 79
- 2. 1060^a13-16: 146 n. 25

- 2. 1060^a36-^b3: 220
- 2. 1060^a37-^b2: 220 n. 15
- 2. 1060^b6-12: 199
- 2. 1060^b13-17: 199-200
- 3. 1061^b4-6: 76 n. 7
- 4. 1061^b17-19: 63
- 7. 1063^b36-7: 97 n. 104
- 7. 1064^b8-9: 93 n. 88

Metaphysics Book A

- 1. 1069^a18-19: 261
- 1. 1069^a21-4: 262
- 1. 1069^a26-30: 214
- 1. 1069^a26-8: 107
- 1. 1069^a28-30: 107
- 1. 1069^a29-30: 109, 214
- 1. 1069^a30-^b2: 136 n. 3
- 1. 1069^a33-6: 16 n. 47
- 2. 1069^b15-20: 262
- 2. 1069^b26-8: 262
- 3. 1070^a13-19: 146 n. 25
- 4. 1070^a33-^b4: 100 n. 113
- 5. 1071^a3-5: 260
- 5. 1071^a17-24: 234
- 5. 1071^a17-18: 227 n. 40
- 5. 1071^a18-19: 260
- 5. 1071^a19-20: 220
- 5. 1071^a27-9: 235 n. 50
- 6. 1071^b12-1072^a10: 254-5
- 6. 1071^b12-22: 254 n. 80
- 6. 1071^b12-20: 254 n. 80
- 6. 1071^b12-19: 255 n. 84
- 6. 1071^b12: 254 n. 80
- 6. 1071^b13: 254 n. 80
- 6. 1071^b17-19: 257 n. 86
- 6. 1071^b17: 254 n. 80, 256, 257
- 6. 1071^b19: 256, 262
- 6. 1071^b20-2: 254 n. 80
- 6. 1071^b22: 254 n. 80
- 6. 1071^b22-3: 256, 257
- 6. 1071^b22-6: 258, 259
- 6. 1071^b22-4: 259
- 6. 1071^b23-4: 256
- 6. 1071^b24-6: 259

6. 1071^b25-6: 256, 262
6. 1071^b34: 254 n. 82
6. 1072^a2 f.: 165
6. 1072^a3-4: 258, 258 n. 87, 259, 260
6. 1072^a4: 258, 258 n. 87
7. 1072^a30-^b1: 61 n. 18
7. 1072^b2-11: 61
7. 1072^b22-4: 259
7. 1072^b30-1073^a3: 54 n. 6
8. 1074^a31-6: 237
8. 1074^b10-12: 149
10. 1075^a12-13: 261 n. 88
10. 1075^a15-1076^a4: 213
10. 1075^a34-^b11: 260
10. 1075^b37-1076^a4: 54 n. 6
10. 1075^b38-1076^a1: 55 n. 9

Metaphysics Book M

1. 1076^a7: 258 n. 87
1. 1076^a8-37: 98 n. 109
1. 1076^a16-22: 16 n. 47
1. 1076^a22-31: 237, 237 n. 55
2. 1076^a38-^b4: 81 n. 30, 190
2. 1076^a38-^b1: 23 n. 63
2. 1076^a38-9: 198
2. 1076^b1-3: 198
2. 1076^b1: 198
2. 1076^b5-8: 198
2. 1076^b39-1077^a9: 190
2. 1077^a1-20: 81 n. 30
2. 1077^a9-12: 93 n. 88
2. 1077^a24-^b17: 203
2. 1077^a26-9: 203
2. 1077^a31: 204
2. 1077^a36-^b4: 204-5
2. 1077^a37: 204
2. 1077^b12-14: 205
2. 1077^b17-22: 93 n. 88
3. 1077^b17-1078^a31: 96 n. 101
3. 1078^a9 ff.: 205
3. 1078^a31-^b6: 53
4. 1079^a6: 139 n. 11
4. 1079^a29-36: 208
4. 1079^a31-^b11: 95 n. 97

5. 1080^a2-5: 58 n. 14
6. 1080^a12-14: 237 n. 55
7. 1080^b16: 206 n. 25
7. 1082^a35-^b1: 232
8. 1083^a21-34: 244 n. 68
8. 1083^b12: 206 n. 25
8. 1084^b13-20: 117
8. 1084^b23-32: 118
9. 1085^b34-1086^a21: 237 n. 55
9. 1086^a21-2: 238
9. 1086^a21: 237
9. 1086^a26-8: 237
9. 1086^b7-11: 233
9. 1086^b10: 227 n. 35, 238
9. 1086^b34-5: 238
10. 1086^b14-16: 16 n. 49, 239
10. 1086^b15-16: 241
10. 1086^b15: 237 n. 54
10. 1086^b16-1087^a25: 239-41
10. 1086^b16-19: 221 n. 26
10. 1086^b19-32: 208 n. 30
10. 1086^b20-2: 243
10. 1086^b32-7: 243
10. 1087^a1: 240 n. 58
10. 1087^a5: 242 n. 63
10. 1087^a7-10: 242 n. 63
10. 1087^a10-25: 243

Metaphysics Book N

1. 1087^a29-31: 52 n. 4
1. 1087^a31-6: 177 n. 8, 213 n. 3, 217
1. 1087^b7-8: 188
1. 1087^b17-18: 244
1. 1087^b21-6: 244
1. 1088^a27-9: 177 n. 7
2. 1088^b35-1089^a6: 185 n. 38
2. 1090^a15: 258 n. 87
3. 1090^a16-19: 233
3. 1090^a21: 206 n. 25
3. 1090^b5-13: 205
3. 1090^b5-8: 205
3. 1090^b8-11: 205
3. 1090^b11-13: 205
3. 1090^b13-20: 54 n. 6

4. 1092^a6–7: 106, 243 n. 66

5. 1092^a9–17: 54 n. 6

Nicomachean Ethics

I. 6: 100 n. 112

I. 6. 1096^a17–19: 129, 244

I. 6. 1096^b3: 138 n. 7

VI. 1. 1138^b25–6: 146 n. 25

VII. 1. 1145^b2–7: 2 n. 5

VII. 4. 1146^b6–8: 46 n. 69

Eudemian Ethics

I. 5. 1215^a21: 3 n. 9

I. 8. 1217^b25 ff.: 100 n. 112, 100 n. 113

I. 8. 1218^a1–10: 129

Politics

III. 1. 1275^a33–^b3: 130 n. 76

VI. 8. 1321^b40–1: 175 n. 3

Rhetoric

I. 2. 1356^b30–3: 94 n. 94

I. 13. 1374^b20–2: 9 n. 29

II. 19. 1392^a20–3: 204

Poetics

21: 42

21.1457^b16: 42 n. 53

Fragments

De Ideis (Ross)

In general: 86, 138

fr. 3 (= Alex. *In Metaph.* 79, 3–83, 30):
127 n. 62

fr. 4 Ross (= Alex. *In Metaph.* 85, 18 ff.):
130 n. 75

See also Alexander *In Metaph.* 79, 11–80, 6
and 79.19–80.7

Protrepticus

fr. 5 Ross (Iambl. *Protr.* 37, 22 ff): 130 n.
79

B 32–7 Düring: 236 n.

B 33 Düring: 217 n. 6

B 79–84 Düring: 263 n. 91

Asclepius

In Arist. Metaph. (Hayduck)

139, 1: 43 n. 56

139, 2: 43 n. 56

147, 1 and 18: 155 n. 3

147, 19–25: 155 n. 3

174, 9–10: 110 n. 12

175, 5: 111 n. 20

176, 16–17: 115 n. 29

176, 24–5: 117 n. 34

177, 23–178, 17: 123 n. 46

181, 32–6: 128 n. 69

183, 10–16: 131 n. 84

201, 4–5: 177 n. 7

203, 20: 177 n. 7

203, 29: 177 n. 7

204, 6: 180

205, 4–10: 182

Averroes

In Arist. Metaph. B (Bauloye)

272: 180 n. 20

275: 182 n. 29

Diogenes Laertius

II, 119: 235

VII, 82: 235

VII, 187: 235

Empedocles (31 Diels Kranz)

B 23, 5–8: 160 n. 13

B 30: 161 n. 16

B 36: 160 n. 14

B 109: 160 n. 15

Euclid

Elements

I, 6: 228

I, 22: 228 n. 41

IV, 10: 228 n. 41

IV, 11: 228 n. 41

IX, 36: 228 n. 41

X: 228 n. 41

XIII, 18: 228 n. 41

Eudemus of Rhodes (Wehrli)

fr. 31: 110 n. 15

Eupolis (Kassel Austin)

fr.148, 2: 227 n. 40

Hesiod

Theogony

640: 167

642: 167

796–804: 167

Homer

Iliad

XIX, 38 f.: 167

Iamblichus

see Aristotle, *Protrepticus*

Plato

Euthyphro

11a6–b1: 224 n. 31

Gorgias

472d–473b: 5 n. 15

Laws

In general: 15, 254 n.82, 255 n. 83

891–9: 165 n. 24

894c–896e: 165 n. 25

903c: 165 n. 24

Meno

In general: 26

80a: 4

80d: 44

80e: 45 n. 62

Parmenides

130c: 5 n. 16

130c6–7: 146 n. 25

131a–134e: 5

132–3: 138

135a–c: 5, 5 n. 16

135b–c: 5 n. 16

135e: 5 n. 16

136d–e: 5 n. 16

142a: 121

155d: 121

Phaedo

96a ff.: 55 n. 7

Phaedrus

245c–246a: 165 n. 25

245c: 165 n. 24

245d: 165 n. 24

Philebus

11b–c: 5 n. 15

15c: 4 n. 10

16c5–18d2: 140 n. 13

16d7–e2: 140 n. 13

17a–18e: 109

20d: 165 n. 24

23c–d: 107

23d: 165 n. 24

26e–27b: 165 n. 24

53e: 165 n. 24

55–9: 96 n. 101

55c–59b: 100 n. 110

57b5–7: 96 n. 101

64c–65a: 56 n. 10

Republic

V. 479b9–10: 224

VI. 508a–511e: 100 n. 110

VI. 509b: 121

VI. 509b8–10: 212

VI. 510d5–511a8: 247

VI. 511b6–7: 212

VII. 521c–535a: 100 n. 110

VII. 529c–531c: 96 n. 101

Sophist

In general: 5, 14, 112

217a: 4 n.11

242b–250d: 55 n. 7

243a6–b1: 107 n. 27 bis

243c: 4 n. 11

246a–249b: 137 n. 5

246a4–5: 176

250e: 4 n.11

253d–255e: 107

255c: 116

256d–258a: 185
265b–d: 165 n. 24

Theaetetus

152c2: 223 n. 27
152d2–3: 223 n. 27
155c–d: 137 n. 4
157b3–5: 223 n. 27
168a: 4
201d1–3: 243 n. 65
201e–206b: 109
201e2: 243 n. 65

Timaues

In general: 15, 110, 142, 148, 150, 193,
214 n. 4, 215, 254 n. 82, 255 n. 83,
255 n. 84, 257
27e–29d: 55 n. 7
28c ff.: 165 n. 24
29d ff.: 165 n. 24
30a: 165
34c: 165, 165 n. 25
39e: 146 n. 25
49c7–e4: 223
49e7–50a2: 224 n. 30
50a5–b6: 226
50a5–b5: 224 n. 31

Plutarch

*On Common Notions against the
Stoics*
1083c, e–f: 232

Proclus

In Eucl. (Friedlein)
66. 7 ff: 110 n. 14
In Plat. Parm. (Stallbaum)
691: 127 n. 64

Seneca

Letter

113, 3: 232

Sextus Empiricus

Adv. Math.

IX, 108: 230 n. 44
X, 248–250: 109 n. 10
X, 269–75: 115–16

Simplicius

In Arist. Phys. (Diels)

7, 12 ff.: 110 n. 15
139–40: 186 n. 43
247, 30–248, 30: 116 n. 31
In Arist. Cat. (Kalbfleisch)
105, 7–21: 235

Syrianus

In Arist. Metaph. (Kroll)

I, 14–16: 41 n. 50
32, 15–40: 122 n. 45
34, 12–19: 128 n. 69
35, 27–9: 131 n. 84
46, 10–16: 183 n. 31
51, 12: 207
83, 36–9: 237 n. 55
160, 6–11: 237 n. 55

Theophrastus

Metaphysics

4^a2–3: 213 n. 3
4^a9–16: 19 n. 58
4^a13–16: 213 n. 3
4^a16–^b6: 19. 58
4^b6 ff: 213 n. 3
4^b6–18: 19 n. 58
4^b18–6^a14: 19 n. 58
6^a14–^b22: 19 n. 58
8^b15: 45 n. 63

Xenophanes (21 DK)

B 14–16: 95 n. 95
B 34, 3 f.: 44

Zeno (29 DK)

A 21: 186 n. 43
B 1: 186 n. 43
B 2: 186 n. 43

Index of Modern Names

- Annas, J. 117 n. 35, 185 n. 38, 199, 203,
237 n. 55, 238, 239, 240 n. 57, 240 n. 58,
240 n. 59, 241 n. 60, 242 n. 63
- Apostle, H. G. 95 n. 96, 97 n. 104,
180 n. 18, 181 n. 22, 183 n. 30, 183 n.
31, 187 n. 48
- Aubenque, P. 29 n. 10, 32 n. 22, 33,
37 n. 36, 37 n. 37, 37 n. 39, 38, 40, 42,
43 n. 57, 45–6, 48 n. 1, 57 n. 11, 73 n.
1, 75 n. 4
- Barnes, J. 39 n. 43, 71 n. 24, 76 n. 7,
89 n. 75, 89 n. 76, 92 n. 84, 95 n. 96,
97 n. 104, 102 n. 121, 160 n. 10, 180,
181 n. 22, 182 n. 25, 182 n. 28, 183 n.
31, 187 n. 45, 187 n. 46, 191 n. 2,
219 n. 13
- Bekker, I. 180, 181 n. 22, 182 n. 25,
184 n. 34, 187, 222
- Bell, I. 75 n. 5, 92 n. 86
- Berti, E. 10 n. 32, 11 n. 37, 21, 100 n.
112, 116 n. 32, 127 n. 63, 132 n. 87,
132 n. 89, 133 n. 90, 178 n. 10, 181 n.
22, 183 n. 31, 185 n. 37
- Bodéüs, R. 218 n. 8, 224 n. 31
- Bolton, R. 75 n. 5, 102 n. 120, 102 n.
123
- Bonelli, M. 31 n. 19, 93 n. 89
- Bonitz, H. 25 n. 1, 67, 106 n. 3, 110 n.
12, 111 n. 19, 112 n. 22, 118, 120, 123,
126 n. 60, 128 n. 68, 129, 131, 175,
178 n. 12, 180, 181, 182, 183, 184,
187 n. 45, 211, 214 n. 4, 221 n. 19,
221 n. 23, 221 n. 24, 222, 227 n. 40,
229 n. 43, 232 n. 46, 237 n. 55, 241 n.
60, 249 n. 74, 252, 254 n. 80, 255, 256,
258–9, 260
- Bostock, D. 132 n. 88
- Broadie, S. 148 n. 29, 150 n. 33, 232 n. 46
- Brunschwig, J. 6 n. 19
- Burkert, W. 109, 110
- Burnyeat, M. 17 n. 52, 150 n. 33, 258 n. 87
- Cardullo, R. L. 25 n. 1, 73 n. 2, 94 n. 90
- Cassin, B. 92 n. 86, 100 n. 110, 102 n. 123
- Catapano, G. 124 n. 55
- Cavini, W. 179 n. 14
- Charles, D. 195 n. 10
- Cherniss, H. F. 100 n. 111, 146 n. 25,
223 n. 28, 230 n. 44
- Christ, W. 111 n. 19, 145 n. 21, 178 n.
12, 180, 181 n. 22, 182 n. 25, 183 n. 31,
184 n. 34, 187
- Cleary, J. J. 94 n. 90, 95 n. 96, 97 n. 104,
185 n. 36, 185 n. 38, 187 n. 45, 188 n. 49
- Code, A. 75 n. 4, 87 n. 66
- Colle, G. 113 n. 24, 126 n. 61, 128 n. 68,
129, 131 n. 82, 179 n. 14, 180 n. 18,
180 n. 18, 181 n. 22, 182 n. 25, 183,
184 n. 33, 187 n. 45, 187 n. 47, 188 n. 50
- Cooper, J. 25, 34 n. 27, 35 n. 28
- Couloubaritsis, L. 175 n. 1, 178 n. 10
- Crubellier, M. 7 n. 23, 9 n. 31, 25, 29 n.
10, 37 n. 35, 37 n. 38, 42 n. 55, 44 n.
61, 75 n. 6, 90 n. 79, 101 n. 119, 205 n.
24
- De Haas, F. A. J. 101 n. 116, 138 n. 7
- Décarie, V. 73 n. 1
- Denniston, J. D. 39 n. 43, 43 n. 58
- Diels, H. 108, 109 n. 9
- Dooley, W. 106 n. 3, 177 n. 9, 184 n. 35,
191
- Dorion, L. A. 229 n. 43, 231 n. 45
- Eusebiotti, P. 146 n. 25

- Fait, P. 125 n. 56
 Fazzo, S. 25, 32 n. 22, 39 n. 43
 Fine, G. 86 n. 55, 94 n. 94, 100 n. 111
 Flannery, K. L. 94 n. 90
 Fraser, K. 75 n. 5, 101 n. 115
 Frede, M. 4 n. 12, 14, 20, 25, 28 n. 5,
 112 n. 22, 113 n. 25, 119 n. 37, 132 n.
 88, 182 n. 26, 196 n. 11, 196 n. 12
 Frisk, H. 167 n. 27
- Gaiser, K. 115
 Giannantoni G. 235 n. 51
 Gill, M. L. 132 n. 88, 223 n. 28
 Griffith, R. D. 167 n. 27
- Hacker, E. A. 185 n. 39
 Hadot, P. 42 n. 52
 Halper, E. 74
 Hankinson, R. J. 92 n. 84
 Heath, T. 110 n. 12
 Hecquet, M. 25
 Hoffmann, Ph. 39 n. 43
- Irwin, T. 73 n. 2, 74 n. 3, 75 n. 4
 Isnardi Parente, M. 127 n. 63, 127 n. 64,
 128, 129, 130
- Jaeger, W. 14 n. 45, 29, 42, 44, 111 n. 17,
 111 n. 19, 112 n. 21, 143 n. 18, 147, 153,
 155, 178 n. 12, 179 n. 13, 180, 181 n. 22,
 182, 183, 184 n. 33, 184 n. 34, 187,
 202 n. 18, 208 n. 29, 213 n. 2, 214 n. 4,
 221 n. 19, 221 n. 21, 221 n. 24, 221 n. 25,
 222, 227, 228, 229, 229 n. 43, 232 n. 46,
 233, 237 n. 55, 240 n. 59, 241 n. 60,
 254 n. 80, 254 n. 82, 258 n. 87
- Jaulin, A. 186 n. 44
 Joachim, H. H. 193 n. 5
 Jost, L. J. 100 n. 112
- Kahn, C. 227 n. 40
 Kelsey, S. 188 n. 51
 Kirwan, C. 75 n. 4, 92 n. 86
 Krämer, H. J. 109, 111, 113, 114, 115,
 116, 120, 128, 129, 133
- Laks, A. 3 n. 8, 7 n. 22, 19 n. 58
 Lambert, M. 25 n. 1
 Lear, J. 132 n. 88
 Leszl, W. 73 n. 2, 75 n. 4, 76 n. 7,
 100 n. 112
 Lewis 132 n. 88
 Lloyd, A. C. 132 n. 88
 Long, A. A. 170 n. 31
 Lorenz, H. 211
 Loux, M. J. 132 n. 88
- McKirahan, R. D. 75 n. 5, 76 n. 10,
 92 n. 84, 93 n. 88, 101 n. 115,
 101 n. 119, 102 n. 120,
 102 n. 121
- Madigan, A. 1 n. 4, 11 n. 37, 18 n. 53,
 42 n. 55, 44 n. 59, 64, 73 n. 1, 73 n. 2,
 75 n. 6, 76 n. 7, 78 n. 15, 78 n. 17, 78 n.
 18, 81 n. 28, 81 n. 29, 89 n. 75, 89 n.
 76, 90 n. 81, 92 n. 85, 95 n. 97, 95 n.
 99, 97 n. 104, 106 n. 3, 108 n. 7, 113,
 119 n. 38, 120 n. 41, 124 n. 53, 129,
 132, 136 n. 2, 145, 146 n. 24, 146 n. 25,
 147, 156, 157 n. 6, 158 n. 9, 160 n. 10,
 162, 163, 169 n. 29, 175 n. 2, 176 n. 5,
 177 n. 9, 180 n. 18, 182 n. 25, 182 n.
 28, 183, 184 n. 35, 185 n. 38, 187, 191,
 200, 201 n. 17, 203 n. 19, 203 n. 20,
 206, 207, 208, 211, 250, 252, 256 n. 85
- Mansion, S. 73 n. 2, 92 n. 85, 105 n. 2,
 141 n. 15
- Menn, S. 49, 50, 54, 60, 107, 111, 114,
 177 n. 7, 177 n. 8, 241 n. 62, 247 n. 71
- Mignucci, M. 132 n. 88
- Moerbeke, W. 25 n. 1, 112 n. 21,
 146 n. 25
- Moline, J. 45 n. 62
- Moorhouse, A. C. 177 n. 7
- Most, G. W. 19 n. 58
- Movia, G. 31 n. 19
- Mueller, I. 1 n. 2, 19 n. 57
- Nannini, S. 180 n. 16
- Narcy, M. 92 n. 86, 100 n. 110, 102 n. 123
- Netz, R. 110 n. 12

- O'Brien, D. 170 n. 31
- Owen, G. E. L. 75 n. 4, 100 n. 112,
230 n. 44
- Owens, J. 26 n. 3, 132 n. 88
- Palmer, J. 23
- Parry, W. T. 185 n. 39
- Patzig, G. 28 n. 5, 113 n. 25, 119 n. 37,
132 n. 88, 182 n. 26, 196 n. 11,
196 n. 12
- Pellegrin, P. 59 n. 15
- Pines, S. 114 n. 26, 120, 127, 128, 129 n.
72, 133
- Reale, G. 113 n. 24, 120 n. 41, 126 n.
60, 129, 131 n. 82, 180 n. 18, 181 n. 22,
184 n. 33, 187 n. 46
- Reeve, C. D. C. 211 n. 1
- Richard, M.D. 116 n. 33
- Richards, H. 227 n. 37
- Robin, L. 11 n. 37, 130 n. 74, 181 n. 22,
183, 184
- Rolfes, E. 146 n. 25
- Ross, W. D. 14 n. 45, 18 n. 53, 29, 42,
44, 48 n. 1, 50, 52, 60, 63, 73 n. 2, 76 n.
7, 78, 89 n. 76, 95 n. 97, 108, 110 n. 12,
111 n. 17, 111 n. 19, 112 n. 21, 118,
120, 123, 124 n. 51, 126 n. 60, 127 n.
62, 128 n. 68, 129, 136 n. 1, 141 n. 16,
142 n. 17, 144 n. 20, 145 n. 21, 147,
146 n. 24, 146 n. 25, 153, 155, 158,
165 n. 24, 178 n. 12, 180, 181 n. 22,
182 n. 25, 182 n. 27, 182 n. 28, 183,
187, 191 n. 2, 194 n. 7, 199 n. 14,
200 n. 15, 201 n. 17, 202 n. 18, 207,
208, 213 n. 2, 214 n. 4, 219 n. 13,
221 n. 19, 221 n. 23, 221 n. 24,
221 n. 25, 222, 227, 228, 229, 229 n.
43, 232 n. 46, 233, 234, 237 n. 54,
237 n. 55, 239 n. 56, 240 n. 57, 240 n.
58, 240 n. 59, 241 n. 60, 250, 253,
254 n. 80, 254 n. 82, 255, 256,
258–9, 260
- Rossitto, C. 117 n. 35
- Russo, A. R. 180 n. 18, 183 n. 31
- Scaltsas, T. 132 n. 88
- Schwegler, A. 67, 110 n. 12, 111 n. 19,
120, 123, 126 n. 60, 129, 180 n. 17,
187, 213 n. 2
- Sedley, D. 112 n. 22, 114 n. 27, 133 n. 91,
188 n. 51
- Shields, C. 125
- Silverman, A. 223 n. 28
- Spellman, L. 132 n. 88
- Steinfath, H. 132 n. 88
- Stevens, A. 211, 213 n. 3
- Striker, G. 209 n. 32
- Susemihl, F. 151
- Szlezák, Th. A. 29, 30, 180 n. 18, 181 n. 22
- Tarán, L. 194 n. 8, 206, 209 n. 31
- Theiler, W. 29
- Tredennick, H. 97 n. 104, 146 n. 25,
180 n. 18, 181 n. 22
- Tricot, J. 29 n. 11, 37 n. 37, 113 n. 24,
120 n. 41, 124 n. 51, 126 n. 61, 129,
146 n. 25, 180 n. 18, 181 n. 22, 183 n.
31, 187 n. 45
- Viano, C. A. 180 n. 18, 181 n. 22, 183 n.
30, 183 n. 31
- Vuillemin Diem, G. 221 n. 25
- Waitz, T. 124 n. 49, 124 n. 51, 224 n. 31
- Warrington, J. 146 n. 25
- White, N. 229 n. 43, 231 n. 45
- Wildberg, C. 36 n. 32
- Wilson, M. 124 n. 54
- Witt, C. 132 n. 88
- Wittgenstein, L. 1 n. 1
- Woods, M. 100 n. 112
- Zadro, A. 124 n. 52
- Zeller, E. 129, 130 n. 74
- Zeyl, D. 223 n. 28

General Index[★]

- Academy 14, 17, 20, 21, 22, 49 n. 3, 50, 77, 109, 117, 120, 126, 127, 129, 130, 133, 138, 188, 212
- aition, aitia* (cause) 1–2, 35, 105, 138–9, 213 n. 3, 214–16, 250–2
- definition of 56
- first 30, 35, 49
- types of 20, 47–9, 57
- four causes theory 15, 17 n. 50, 20, 30, 47–9, 51–2, 56, 57, 62 n. 19, 84–5, 105, 139
- see also* being; *arkhē*; explanation; knowledge
- Alexander 6 n. 19, 33, 60, 65, 93 n. 89, 94 n. 90, 123, 125 n. 58, 142 n. 17, 147, 156, 169, 177 n. 9, 187, 192, 195 n. 9, 200, 201 n. 17, 227 n. 38, 249 n. 74, 252
- Alexinus 230 n. 44
- Anaxagoras 86 n. 61, 215, 255, 257, 260, 264
- Antiphon 111, 177 n. 7, 224 n. 31
- aporia, aporein* (difficulty, puzzle) 1–2, 3–7, 13–17, 17–23, 26–7
- etymology of the word 25–6
- nature of 8–13, 26, 45
- definition of 5–6
- as refutational dilemma 6 n. 19, 10
- knot metaphor 9, 11, 12 n. 38, 22
- man in chains metaphor 12, 26, 43, 50
- lost traveller metaphor 12, 50
- judge metaphor 41
- vs. *diaporein* (development of *aporia*) 3, 4 n. 11, 6–8, 16, 17, 23, 26 n. 2, 28–9, 32–33, 36, 39–40, 41–2, 46, 47, 50–1, 55, 181–7
- vs. *euporia* 4, 23, 42, 46, 137
- in Plato 3–5
- order of (in *Book B*) 17–23
- see also* doxography; Meno's puzzle
- Aquinas, Thomas 175
- argument:
- balance of 3
- eristical 45
- see also* dialectic; third man regress
- arkhē* (principle) 2, 10, 15, 18, 49, 58, 62, 65, 74, 101–2, 105–7, 146 n. 24, 151–5
- first, primary 13, 30, 35, 49, 52
- as first causes 15, 49
- as elements 106–8, 109, 118–19, 131–2
- as genera 10, 108–14, 120, 126–30
- as individuals 2
- as species 10, 126–32
- as universals 2
- number of 2, 151–4, 155–6, 157–9, 208–9
- numerically determinate vs. numerically indeterminate 154–5; *see also* *arkhē*, 'number of'
- of change 164–6
- of perishable and imperishable entities 2, 22, 159–62, 166–9, 172–4
- of proof 77
- of substance 1, 75–6, 152–3
- archeology and ontology 262
- see also* *aition* (cause); demonstration, 'principles of'
- Aristippus 53
- artefact 111, 146–7, 148–50
- Asclepius 50, 60, 111 n. 17, 126 n. 60
- atomism 163 n. 19, 165, 166, 257
- attributes 77, 78, 89–92, 193

★ For proper names, *see also* the Index of Modern Names and the Index locorum

- attributes (*cont.*)
 essential 2, 10, 15, 71, 76, 89; *see also*
 essence
 see also substance; science
 Averroes 60, 181 n. 22,
 axioms 67–9, 78, 93
 see also demonstration, ‘principles of’

 being 2, 4, 18, 71, 93, 100, 135, 180–1,
 183, 186, 218 n. 10, 251–2, 261, 262
 science of 261; *see also* metaphysics
 cause of being test 217
 being and one 2, 18, 119, 120–3, 126,
 127, 132–3, 175–8, 179–81, 181–5,
 212, 218, 219–20
 bodies (perceptible) 189, 190, 197–8,
 207–9
 Boethius 25 n. 1

 change 15, 21, 53–4, 61–2, 140, 164–5,
 193, 201, 226 n. 34, 262
 Chrysippus 235
 coming to be, *see genesis*
 composite, *see sunholon*
 concepts 116; *see also* universals
 contradiction vs. contrariety 8–10
 contradictory propositions 50–1
 see also non contradiction, principle of
 corruption 15; *see also* substance,
 ‘perishable vs. imperishable (eternal)’

 definition 2 n. 5, 6, 15–16, 21, 112–14,
 116–18, 121–6, 146 n. 24, 181 n. 21,
 195–6
 demiurgic agency 148, 165
 Democritus 105, 163, 165, 192, 214 n. 4
 demonstration 15, 68–9, 72, 76–7, 245
 principles of 1–2, 62–5, 68, 71
 proof 110
 see also science, ‘demonstrative’
diagramma (figure, theorem) 109–10
 dialectic 3, 4, 5, 13, 15–16, 50, 99, 107,
 212, 213, 247

 dialecticians 214, 246 n. 69
diaporein, *see aporia*, *aporein*
 differentia, *see* definition
 difficulty, *see aporia*
 doxography 7, 11, 16–17, 21, 22, 37–8
dunamis (potentiality) vs. *energeia*
 (actuality) 2, 10, 16, 62, 199, 200 n.
 16, 211, 215–16, 218 n. 10, 241, 246,
 248–50, 251–3, 256–58, 263–4

ekthesis (‘setting out’) 226–9, 230–2, 238
 Eleatic philosophy 55
 element, *see stoikheion*; parts
 Empedocles 36, 105, 111, 163, 164,
 165 n. 22, 166, 168–72, 174, 179,
 255, 260
 cosmology 170–2
 Love and Strife 160–1, 164, 168–72,
 174, 255, 261 n. 88
endoxa (common opinions,
 propositions) 13, 65–6
epistēmē (science) 52, 66, 82, 84, 135, 140,
 141 *see also* science
 essence 72, 86, 145, 149, 178, 181 n. 21,
 194, 225–6
 what is it? question 225–6
 see also attributes, ‘essential’; form;
 substance; definition
 Euclid 110, 195, 229
 excluded middle, law of 51, 65, 77
 explanation 21, 22, 55, 56, 58
 causal 53, 56
 nature of good 15
 of unchanging objects 53, 55
 teleological 53
 types of 54–5
 universal 14
 see also aition (cause); *arkhē*; science; world

 focal meaning, theory of 93
 form 2, 62, 119, 136, 139, 142, 145,
 146 n. 24, 147, 150, 194, 198, 224 n.
 31, 247–8

- Forms, Ideas 2, 5, 10, 14 n. 45, 16 n. 49, 22, 58, 74, 76, 77, 79–80, 85, 86, 95–6, 100, 107, 112, 118, 127, 130, 138, 147–50, 178, 207–9, 212, 213, 216, 224, 230 n. 44, 237–42, 254–5
 Aristotle's criticisms of 86–7, 94–5, 99
- generation, *see genesis*
- genesis* (coming to be, generation) 135, 139–40, 142–4, 146–7, 149–50, 190, 201, 251, 262
 process of 144–5
- genos* (kind, genus) 2, 10, 15, 18, 21, 68–9, 106–8, 112, 113, 114, 115–16, 119, 120–1, 126–9, 135, 139 n. 10, 141, 146, 149, 215
 incommunicability of genera 51
 kind crossing, prohibition of 101, 102
see also stoikheion; parts; definition
- geometrical objects 189, 192, 196, 197–202, 204–5
- geometry 5, 67, 110, 247
- god(s) 83–4, 159–60, 166–9, 170, 173, 237
- Good, the 54, 57, 59, 83, 100, 121, 212
- Gorgias 249 n. 77
- Heraclitus 164 n. 21
- Hermodorus 116
- Hermotimus 110
- Hesiod 13, 159, 160 n. 10, 163, 164, 166–8, 171, 173, 179
- hexis* (disposition) 247
- Hippocrates of Chios 110
- hupokeimenon* (substratum) 16, 192–3, 226 n. 34
- hylomorphism 139–40, 145–6, 146 n. 24
- idealism 55
- Ideas, *see* Forms
- Indefinite Dyad 115, 116, 188, 261 n. 88
- individuals, *see* particulars
- indivisible vs. divisible 113, 117, 126, 186
- intermediate 2, 14 n. 45, 86, 94, 95–9, 136, 182, 190, 198, 207
- Kant 9 n. 27, 10 n. 32, 50
- kind, *see genos*
- knowledge 1, 59, 81–2, 246–7
 of causes 81
 of substance 66, 69
 of truth 175
 scientific 222, 236, 245–6
 stages of cognition 81–2
see also epistēmē; sophia; wisdom
- letters and syllables 108–9, 157–9, 207 n. 28, 234, 236, 240, 241–2, 245
- Leucippus 105, 254–5
- logic 66
- logical principles 67; *see also* demonstration, 'principles of'
- logos* 202, 204–5
- mathematical entities 18, 19 n. 58, 54, 77, 80, 95, 97–8, 190, 207–9
 as substances 189–92, 193–4, 196, 197, 202, 204, 205
see also geometrical objects; intermediate; Forms; numbers
- mathematics 53, 63 n., 65, 79, 92–3, 102, 213
 axioms of 62–3, 65; *see also* axioms
 teleological explanation of 53
see also geometry
- matter 2, 21, 62, 119, 136, 138–9, 142–4, 146 n. 24, 147, 150, 219 n. 14, 224 n. 31, 248, 264
- Megarians 226, 234, 235, 262
- Melissus 168 n.
- Meno's puzzle 45, 88 n. 72
- metaphysics 15, 74–5, 103–4
 Greek 175, 176, 179
- monism 183, 185
- motion 135, 254–7

- non contradiction, principle of 23, 65–6,
69, 70, 71–2, 102 n. 120
- numbers 2, 129, 181–2, 184–6, 187–8
ideal 130
Pythagorean 86
- One, the 107, 115, 129, 151, 160, 170,
176; *see also* being, ‘being and one’;
unity
- organisms 144, 148–50
- ousia*, *see* substance; being; essence
- paralogism 50, 61
- Parmenides 164 n. 20, 168, 184–5,
223 n. 27, 227 n. 40
- parts 108
part/whole distinction 127–8
see also *stokheion*; letters and syllables
- particulars 2, 106, 117, 128–30, 135–6,
139, 140, 141–2, 152, 157–8, 181,
214, 217–8, 221–2, 243–5
- philosophy 1, 4, 5, 6, 7, 87
first 15, 93, 107, 213
- physicists 107–8, 111, 112, 113, 120, 176,
212–3, 214–17, 220, 222, 224 n. 31,
263
- physics 15, 17, 63 n. 20, 107, 212, 213
Presocratic 215, 248
- Plato 14, 15, 16, 17, 20, 49 n. 3, 54, 83, 85,
99, 105, 108, 110, 113, 114, 115, 118,
119, 120, 122, 127, 128, 129, 130, 131,
133, 163, 178, 179–80, 188, 192, 194,
197, 199, 206, 216, 217, 218, 220, 225,
229 n. 43, 235, 244 n. 68, 254–5, 260
cosmology 165–6
- Platonic doctrine of first principles 52; *see
also* Indefinite Dyad; receptacle
- Platonists 95–6, 106–9, 111, 112, 117,
120, 214–17, 218, 220, 222, 230,
230 n. 44, 238, 241–4, 263 n. 91
- Polyxenus 230 n. 44
- potentiality vs. actuality, *see* *dunamis* vs.
energeia
- pragma* (meaning of) 42
- predicates 2, 16
determinate vs. indeterminate 9
- Presocratics 85, 192, 193, 196, 212
- presuppositions 10, 13, 197
- prime mover 54, 145, 169 n. 30, 208, 255
- principle, *see* *arkhē*
- priority 216–7
Plato’s test for 217–19, 253, 257, 258,
262, 263, 264, 265
in *logos*, *see* substantial priority,
‘Platonic’
- proof, *see* demonstration
- Protagoras 98
- puzzle, *see* *aporia*
- Pythagoreans 85, 86 n. 61, 95–6, 105,
107, 176, 178, 179–80, 181 n. 21,
185, 187, 188, 192, 206, 220
- quiddity, *see* essence
- receptacle 224, 226
- science 1–2, 4, 6, 10, 13, 15, 16–17, 18,
20, 22, 47–50, 51, 57, 58, 62, 64,
68–9, 74–5, 113, 162, 247
Aristotle’s model of 103
demonstrative 76–9, 84, 89
universal 14, 70–1, 87–92, 99–101, 103
see also *sophia*; wisdom; *aition* (cause);
substance; *epistēmē*
- sense perception 135
- separate, separateness 17, 131, 139, 142,
146–7, 182, 190–1, 197–8, 200, 203,
205–6, 207
- Simplicius 218 n. 8
- Socrates 4, 15, 44, 58, 85, 218 n. 9
- sophia* (wisdom) 1, 13–6, 20, 30–1, 48–9,
52, 56, 58, 60–1, 64, 67, 69–70,
74–6, 78, 79, 81–9, 95, 99, 103, 105;
212, 261; *see also* science
- as theology 31
- unity of 54

- sophism 229, 235
 ‘Coriscus’ 229, 229 n. 43,
 232, 233
- soul 3 n. 7, 165–6
- species, *see* definition; *arkhē* (principle), ‘as species’
- speech, elements of 158–9
- Speusippus 54, 55–6, 111, 114, 128, 129,
 133, 194, 206, 209, 244
- Stilpo 235
- Stoics 225 n. 33, 230 n. 44, 235, 264
- stoikheion* (element) 105–7, 108, 109, 112,
 113, 154
 as constitutive parts 2, 10, 18, 21,
 106–8, 111–12, 113, 116,
 118, 146
- substance (*ousia*) 1–2, 10, 16, 71–2, 78,
 86–7, 89–91, 99, 136, 176–8,
 179–81, 181–5, 193–4, 201, 219–20,
 222–3, 261, 265
 accidents of 177–8
 corruptible vs. non corruptible 76
 natural 149–50; *see also* organisms
 perceptible vs. non perceptible 76,
 77 n. 14, 140, 201
 perishable vs. imperishable
 (eternal) 80, 135, 140, 162, 174; *see*
 also arkhē, ‘of perishable vs.
 imperishable entities’
- primary 93, 218
- science of 67, 71, 76, 90–3
- sensible 2, 14 n. 45, 18, 77, 79, 80, 87,
 94, 95, 99
- sensible vs. supra sensible 136–8,
 146 n. 25, 261
- types of 1–2, 76, 77
- physical bodies as substances 189–91,
 193–4, 196, 204
see also intermediate; knowledge, ‘of
 substance’; mathematical entities;
 arkhē, ‘of substance’; *hupokeimenon*
 (substratum)
- substantial priority:
 Aristotelian 203–4, 205
 Platonic 194–6, 204–5
- sunholon* (concrete whole, composite of
 form and matter) 2, 135–6, 138–9,
 141, 142, 145, 146–7
- syllogism 12, 49, 51–2, 110
- Syrianus 50, 94 n. 90, 126 n. 60, 147
- Thales 17
- theologians 170, 257
- Theophrastus 19
- Thetis 167
- Theudius 110
- third man regress 229 n. 43, 230–1
- tode, tode ti* (‘this’) 177, 192, 194, 205,
 222–4, 226, 233, 235, 264
- type/token* 263–264; *see also* letters and
 syllables
- understanding 151, 155–6, 195–6
- unity 2, 10, 18, 109, 153, 154–5
 numerical vs. specific 10, 16, 21, 22,
 154
- universals 2, 66, 106, 116, 117, 118, 135,
 141, 152, 181–4, 211, 214, 217–18,
 221–2, 226, 234–5, 243–5
- Vico 43
- wisdom, *see sophia*; science
- wonder 4–5, 137
- world:
 explanation of (its origin and
 contents) 212, 214–15
- Xenocrates 114, 116 n. 30, 120, 126–30,
 133, 194, 206
- Xenophanes 44
- Zeno 186–8, 230 n. 44
- Zeus 264