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ARISTOTLE, SPEUSIPPUS, AND THE METHOD OF DIVISION

INTRODUCTION

As Aristotle himself says, *A. Po.* 2.13 is an attempt to provide some rules to hunt out the items predicated in what something is, namely to discover definitions.¹ Since most of this chapter is devoted to the discussion of some rules of division (*diairesis*), it may be inferred that somehow division plays a central role in the discovery of definitions. However, in the following pages I shall not discuss what this role is. Nor shall I discuss what place division has in the wider discussion of definition and explanation as it emerges from *A. Po.* 2. I shall rather focus on the argument that Aristotle reports and discusses in *A. Po.* 2.13.97a6–22, and which our extant sources ascribe to Speusippus. As will become clear later on, this argument undermines the possibility of giving any definition, and Aristotle deals with it here because he can block it by exploiting some properties of the method of division. I shall also challenge the common view according to which Speusippus undertook division and wrote books on this subject. A short quotation from *The Riddle of the Early Academy* by Cherniss may help to illustrate this common view:

for Speusippus, however, the essential nature of each thing is identical with the complex of all its relations to all other things, so that the content of existence is nothing but the whole network of relations itself, plotted out in a universal diairetical [sc. divisional] scheme.²

Neither of the recent editors of the ancient evidence about Speusippus seems to have different views on this point. Both Isnardi Parente³ and Tarán⁴ would share, I think, the two claims of this quotation. On the contrary, I shall argue that Speusippus maintained something like the first claim, namely that each thing is identical with the complex of all its relations to all other things, but that he might not have accepted the second claim, namely that this complexity of relations is plotted out in a universal diairetical [sc. divisional] scheme.⁵

¹ *A. Po.* 2.13.96a13.22–3: πῶς δὲ δεῖ θηρεῦεν τὰ ἐν τῷ τί ἐστι κατηγορούμενα, νῦν λέγομεν.

² H. Cherniss, *The Riddle of the Early Academy* (Berkeley, Los Angeles, 1946), 42.

³ M. Isnardi Parente, *Speusippo. Frammenti* (Napoli, 1980).

⁴ L. Tarán, *Speusippus of Athens. A Critical Study with a Collection of the Related Texts and Commentary* (Leiden, 1981).

⁵ That Speusippus undertook division is an old, authoritative claim. The first scholar who advanced this claim was Lang in his essay on the catalogue of Speusippus' work (P. Lang, *De Speusippii Academici Scriptis* [Bonn, 1911], 21–2). That the division which Speusippus used is dichotomic was claimed by Stenzel in the article he wrote for the entry 'Speusippos' in the *Real-Encyclopädie der classischen Altertumwissenschaft* (J. Stenzel, 'Speusippus (2)', *RE* III A, cols 1636–69 [Stuttgart, 1929]). A further step into this tradition was the identification of this division with the dichotomous method that Aristotle criticizes in *P.A.* 1.2–3. Cherniss was the first to advance this additional claim (H. Cherniss, *Aristotle's Criticism of Plato and the Academy* [Baltimore, 1944], 59–64, and id. [n. 2], 42). In recent years this claim has been advanced again by Tarán ([n. 4], 396–406). According to him, *P.A.* 1.2–3 is nothing but a long, detailed criticism of Speusippus' dichotomous method of division. Although Isnardi Parente ([n. 3], 256–60) does not ascribe a dichotomous method of division to Speusippus, she has no hesitation in ascribing some method of division to Speusippus.

SPEUSIPPUS' ARGUMENT

In *A. Po.* 2.13.97a6–22, returning to the topic of definition, Aristotle deals with an argument which the extant Greek commentators ascribe to Speusippus. In this case we are lucky enough to know their common source. The anonymous commentator cites Eudemus as his authority in referring this argument to Speusippus.⁶ It is not easy to understand exactly how the argument should be set out, and what follows is only a paraphrase:

(i) One cannot know A without knowing how A differs from B, (ii) and one cannot know how A differs from B without knowing B. (iii) But to know B one has to know how B differs from other things, and finally from everything. (iv) Hence one cannot know A without knowing everything else.⁷

The Greek commentators are divided about the real aim of Speusippus. Philoponus and Eustratius think that through this argument Speusippus wanted to deny the possibility of definition, and that he held a sceptical attitude towards the very possibility of knowledge. The anonymous commentator reports that according to Eudemus the aim of Speusippus was to argue that it is impossible to define anything that there is without knowing everything that there is.⁸ This last testimony is ambiguous. It can be read in two ways: either the commentator cites Eudemus as his authority only in ascribing the argument to Speusippus or he cites Eudemus also as his authority for the interpretation of the argument he is going to endorse. In this case Eudemus himself says that Speusippus argued that in order to define anything it is necessary to know everything. If this way of reading the Greek is the right one, as I am inclined to think, the interpretation I shall develop goes ultimately back to Eudemus. At any rate, whatever may be the interpretation of the testimony reported by the anonymous commentator, this has to be preferred to that offered by Philoponus and Eustratius. The latter is only an abbreviation of the testimony reported by the anonymous commentator. The proof is that it is possible to reconstruct the version of the argument reported by Philoponus and Eustratius from that offered by the anonymous commentator, but not vice versa.

Premises (i) and (ii) of the argument depend on the assumption that in order to know anything it is necessary to know its place within the system where it is an element. Nevertheless, this assumption can be developed in two ways. Let us call these two ways respectively *the strong* and *the weak interpretation*:

The strong interpretation: to know something one must know everything in the world. The entire world is a system in which one cannot possess knowledge of a particular fact without possessing knowledge of the entire world of which it is an element.

The weak interpretation: in some relative and independent domains to know one of its elements one must know also the others. In other words, there are certain

⁶ Anon., *In A. Po. Librum Alterum Commentarium* (CGA 13.3), 584.17.

⁷ *A. Po.* 2.13.97a7–11: καίτοι ἀδύνατόν φασί τινες εἶναι τὰς διαφορὰς εἰδέναι τῆς πρὸς ἕκαστον μὴ εἰδόμενα ἕκαστον· ἄνευ δὲ τῶν διαφορῶν οὐκ εἶναι ἕκαστον εἰδέναι· οὐ γὰρ μὴ διαφέρει, ταυτὸν εἶναι τούτῳ οὐδὲ διαφέρει, ἕτερον τούτου.

⁸ Anon., *In A. Po. Librum Alterum*, 584.17–18: Σπευσίππον ταύτην τὴν δόξαν Εὐδήμου εἶναι λέγει τὴν ὅτι ὀρίσασθαι ἀδύνατόν ἐστὶ τῶν ὄντων μὴ πάντα τὰ ὄντα εἰδόμενα.

systems in which one cannot possess knowledge of a particular fact without possessing knowledge of the entire system of which it is an element.

According to Plato, the letters of the alphabet are a system of the second type. We know each letter as far as we know its place in the alphabetic system, or also as far as we know how this particular letter differs from the others. In other words, a letter is not known in isolation, but only in combination with the other letters. Let us briefly focus on *Philebus* 17a–18d. Here Socrates credits the god or godlike man Theut with the discrimination first of the vowels from one another, and then of the vowels from other noises which are not quite like vowels and yet can be pronounced, noises probably like ‘mmm’ and ‘ssss’. After discriminating these from one another, Socrates says, Theut distinguished these two from the mutes, namely most of the consonants, which he then distinguished from one another. Finally Theut called each and all of them letters. But the most interesting part of the passage starts after this. Perceiving that none of us learns any one of them alone by itself without learning them all, and considering that this was a common bond which made them in a way all one, Theut assigned to them all an art and called it grammar.⁹ One might think that this account is not convincing, and that it is not true that any letter can be known only in combination with the others. In particular, one might argue that it is not necessary to know all twenty-two letters of the Greek alphabet in order to be able, for example, to write and to read the Greek characters ‘β’ and ‘γ’. The proof is that one could train oneself in order to learn how to read and to write only the characters ‘β’ and ‘γ’. Two things are to be said in response to this. First of all, the Greek word that Plato uses for ‘letter’, namely ‘στοιχείον’, is ambiguous. ‘Στοιχείον’ may refer both to written characters, e.g. ‘β’ and ‘γ’, and to the pronounced and heard noises that these characters stand for, the consonant sounds /b/ and /g/. Although it is possible to learn how to write and to read the characters ‘β’ and ‘γ’ in isolation from the other Greek characters, we learn the consonant sounds /b/ and /g/ only in combination with a vowel sound. Secondly, and more importantly, to know the letters of the alphabet is not merely to possess the ability to write and to read the characters ‘β’ and ‘γ’ in isolation. To know the letters of the alphabet is to know how the letters combine and arrange with one another. This is made clear in *Sophist* 253a. And a great deal is made of this point in *Theaetetus* 207d–208a. From this passage we learn that a person who spells ‘Theaetetus’ right but gets ‘Theodorus’ wrong does not know the spelling of ‘Theaetetus’. At least for Plato, a total mastery of the letters of the alphabet involves not only knowledge of the ways in which the letters combine and arrange with one another, but also knowledge of the combinations and arrangements the letters compose.

Did Speusippus offer his argument to support the weak interpretation? There is no evidence that this is so. First of all, Aristotle takes it for granted that the argument was offered to support the strong interpretation (*A.Po.* 2.13.97a6–7). If Speusippus had offered it to support the weak interpretation, Aristotle’s attack would represent an uncharitable misinterpretation of his intentions. Secondly, Aristotle would hardly have attacked this argument if Speusippus had offered it to support the weak interpretation. It should not have been difficult for Aristotle to find domains which can be known only as a whole. The example of the letters of the alphabet was easily at hand also for him.

⁹ *Phil.* 18b7–d2: καθορῶν δὲ ὡς οὐδεὶς ἡμῶν οὐδ’ ἂν ἐν αὐτῷ καθ’ αὐτὸ ἄνευ πάντων αὐτῶν μάθοι, τοῦτον τὸν δεσμὸν αὐτὸν λογισάμενος ὡς ὄντα ἓνα καὶ πάντα ταῦτα ἐν πως ποιοῦντα μίαν ἐπ’ αὐτοῖς ὡς οὖσαν γραμματικὴν τέχνην ἐπεφθέγγετο προσειπών.

Do we have to come to the conclusion that Speusippus held something like the strong interpretation? At least at first sight, Aristotle's discussion of the argument suggests that we have to come to this conclusion. In particular, this discussion suggests that Speusippus thought the world is a network of relations where one cannot know anything without knowing everything.¹⁰ Nevertheless, it is well worth trying to resist coming to this conclusion. It is not true that the world is a system of interrelated things such that we cannot know anything without knowing everything. In the animal kingdom, for example, it is possible to know animals such as the horse and the lion even without knowing animals such as the kangaroo or the tapir.

There is a third possibility. It may be the case that Speusippus did not offer the argument to support either the weak or the strong interpretation, but he offered it rather as a general *puzzle* about knowledge. If this is so, the puzzle offered by Speusippus would be something like this:

one cannot know what a horse is without knowing how a horse differs from a cow; but one cannot know how a horse differs from a cow without knowing what a cow is. But again one cannot know what a cow is without knowing how a cow differs from a sheep; but one cannot know how a cow differs from a sheep without knowing what a sheep is. But again one cannot know what a sheep is without knowing how a sheep differs from a dog. . . . And one could go on.

This puzzle is based on two claims. Aristotle reports the first in 97a9–10: (i) to know something, e.g. A, involves knowing the differences of A.¹¹ Aristotle reports the second in 97a8–9: (ii) it is not possible to know the differences of A without knowing everything.¹² Claims (i) and (ii) are corroborated by a general principle which is spelt out in 97a10–11: a thing is the same as that from which it does not differ and different from that from which it does differ.¹³ This general principle (which I shall refer to as principle [P]) may be rephrased as follows:

[P]: two things are the same when they share all the same differences, and they are different when they do not share all the same differences.

It is important to point out the notion of difference, in Greek *διαφορά*, which appears both in claim (i) and (ii). In particular, Δ is a difference of A if, and only if:

1. Δ is a feature of A
2. Δ is such that if Δ is a feature of A, then there is at least an x which is B and Δ is not a feature of B.

Clause (2) makes it clear how 'to know the differences of A' is to be taken both in claim (i) and (ii). In order to know that A and B are different it is enough to know that there are some differences which distinguish A from B. Nevertheless, in order to 'know the differences of A' in the qualified sense which is involved in (2), it is not enough to

¹⁰ Scholars are unanimous on this point: Speusippus would have advanced his argument to support something like the strong interpretation. See Th. Waitz, *Aristotelis Organon Graece* 2 (Leipzig, 1844–6), 419; Cherniss (n. 5), 59–64; W. D. Ross, *Aristotle's Prior and Posterior Analytics* (Oxford, 1949), 659–60; Tarán, (n. 4), 388–91. Isnardi Parente ([n. 3], 256–60) goes even further and claims that Speusippus offered his argument to support a sort of *πανσοφία*.

¹¹ *A.Po.* 2.13.97a9–10: ἄνευ δὲ τῶν διαφορῶν οὐκ εἶναι ἕκαστον εἰδέναι.

¹² *A.Po.* 2.13.97a8–9: ἀδύνατόν φασί τινες εἶναι τὰς διαφορὰς εἰδέναι τὰς πρὸς ἕκαστον μὴ εἰδόμενα ἕκαστον.

¹³ *A.Po.* 2.13.97a10–11: οὐ γὰρ μὴ διαφέρει, ταῦτόν εἶναι τούτῳ, οὐ δὲ διαφέρει, ἕτερον τούτου.

know *that* A differs from B, but it is necessary to know *how* A differs from B, namely what the differences by which A differs from B are.

ARISTOTLE'S DISCUSSION OF SPEUSIPPUS' ARGUMENT

Aristotle's discussion of the argument offered by Speusippus consists of two objections. Although I shall speak of a first and a second objection, it is important to bear in mind that these two objections cannot be split up. As will become clear very soon, the first objection in isolation cannot block the puzzle, and perhaps only the second objection together with the first one can do this.

In his first objection Aristotle attacks the notion of difference involved in the argument by arguing that a distinction between *types* of differences is needed:

(i) Now, first, this is false: one thing in fact is not different from another in virtue of every difference, (ii) in fact there are many differences between things which are the same in species—though not differences in respect of their essence or in themselves.¹⁴

It is not easy to understand what 'this' in (i) refers to. One could be tempted to think that it refers to the principle which Aristotle has just reported, namely to principle [P]. This is nevertheless excluded by the fact that [P] is a version (maybe only a weak one) of the so-called Leibniz Law, which elsewhere Aristotle accepts.¹⁵ But if 'this' cannot refer to principle [P], it has to be taken as a reference to the whole argument. In the argument Speusippus suggests that every difference makes a thing different from another, and that to know a thing is to know the *sum* of the differences that make it different from everything else. This is exactly what Aristotle does not accept. On his view this principle is false, and by relying on it Speusippus simply disregards the distinction between essential and non-essential properties.¹⁶

Although in his first objection Aristotle argues that *ἕτερον εἶναι* and *διαφέρειν* cannot be taken as synonyms, it is clear that this objection in isolation cannot solve the puzzle. Speusippus could have easily reformulated it in this way:

one cannot know what a horse is without knowing how a horse *essentially* differs from a cow; but one cannot know how a horse *essentially* differs from a cow without knowing what a cow is. But again one cannot know what a cow is without knowing how a cow *essentially* differs from a sheep; but one cannot know how a cow *essentially* differs from a sheep without knowing what a sheep is. But again one cannot know what a sheep is without knowing how a sheep *essentially* differs from a dog. . . . And one could go on.

¹⁴ *A.Po.* 2.13.97a11–14: *πρῶτον μὲν οὖν τοῦτο ψεῦδος· οὐ γὰρ κατὰ πάσαν διαφορὰν ἕτερον· πολλαὶ γὰρ διαφοραὶ ὑπάρχουσι τοῖς αὐτοῖς τῷ εἶδει, ἀλλ' οὐ κατ' οὐσίαν οὐδέ καθ' αὐτά.*

¹⁵ See, for instance, *Top.* 7.2.152b36–153a5. An analysis of this passage is offered in M. Mignucci, 'Puzzles about identity. Aristotle and his Greek commentators', in J. Wiesener (ed.), *Aristoteles Werk und Wirkung* (Berlin, New York, 1985), 57–66.

¹⁶ In clause (ii) Aristotle gives his explanation for clause (i) by introducing a distinction amongst differences. I take *οὐδέ* in 97a13 as the negative counterpart of the epexegetic *καί*. According to this interpretation, in (ii) Aristotle is content to introduce only two types of differences: (a) essential differences, and (b) non-essential differences. It is nevertheless possible to read (ii) as if Aristotle is introducing the following tripartition: (a) differences in respect to the essence, i.e. essential differences; (b) *per se* differences; and finally (c) differences that are neither essential nor *per se*. Although this second interpretation is consistent with what Aristotle says elsewhere, it has at least two disadvantages. First of all, Aristotle does not need to introduce the *per se* differences. As a matter of fact, they add nothing to his first objection. Secondly, the *per se* differences would be introduced without any further clarification or explanation.

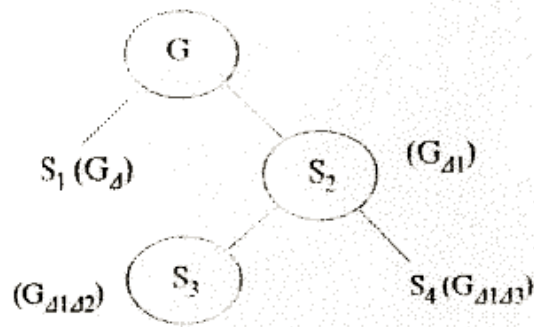


FIGURE 1

In his second objection Aristotle tries to block this possible move by exploiting the method of division.¹⁷ In a division one does not have to know everything. Assuming genus G , the differences by which G is divided, e.g. Δ and Δ_1 , and finally assuming that Δ_1 along with G makes the species S_2 , one needs to know that Δ and Δ_1 divide G *exhaustively*, and that what is to be defined falls under S_2 . By further dividing S_2 by its differences one will get the definition required. A diagram may clarify the point which Aristotle is making in his second objection. If the division of G is effected as it is described in Figure 1, one has clearly to know only the elements which in the diagram are circled.

Whereas in the first objection Aristotle distinguishes between two types of differences, namely essential and non-essential differences, in the second objection he exploits division as a method of defining from essential differences. Through his first objection Aristotle narrows down the possible scope of Speusippus' argument. Although this argument can be taken as a general puzzle about knowledge, Aristotle clearly takes it as a puzzle about a very particular type of knowledge, namely knowledge by definition. Through his second objection he shows that it is not necessary to know everything in order to define, but that it is enough to know genus G and the essential differences by which species S_2 is divided. These two objections work together and represent only *one* reply to Speusippus' puzzle.

One might think that this reply is not satisfactory, and that the puzzle is not yet blocked. The knowledge of G could still cause a difficulty. One might argue that Speusippus could still challenge Aristotle by appealing to the following *ad hoc* version of his puzzle. It is true that in dividing one does not need to know everything about any species other than S_2 , but what about G ? One cannot know G without knowing how G differs from G_1 ; but one cannot know how G differs from G_1 without knowing G_1 . But again one cannot know G_1 without knowing how G_1 differs from G_2 ; but one cannot know how G_1 differs from G_2 without knowing G_2 And one could go on. In other words, to know something one has to know everything. But in this case Aristotle has a final reply. He would probably say that one does not have to know everything in order to know G . There is a passage in the *Topics* where Aristotle is very clear on this point. If the species is known, he says, both the genus and the differences must be known;

¹⁷ *A.Po.* 2.13.97a14–22: εἴτα ὅταν λάβῃ τὸντικείμενα καὶ τὴν διαφορὰν καὶ ὅτι πᾶν ἐμπίπτει ἐνταῦθα ἢ ἐνταῦθα, καὶ λάβῃ ἐν θατέρῳ τὸ ζητούμενον εἶναι, καὶ τοῦτο γνώσκῃ, οὐδὲν διαφέρει εἰδέναι ἢ μὴ εἰδέναι ἐφ' ὧν κατηγοροῦνται ἄλλων αἱ διαφοραί. φανερόν γάρ ὅτι ἂν οὕτω βαδίζων ἔλθῃ εἰς ταῦτα ὧν μικρὸν ἔστι διαφορὰ, ἔξει τὸν λόγον τῆς οὐσίας. τὸ δ' ἅπαν ἐμπίπτειν εἰς τὴν διαίρεσιν, ὅν ἢ ἀντικείμενα ὧν μὴ ἔστι μεταξὺ, οὐκ αἴτημα· ἀνάγκη γὰρ ἅπαν ἐν θατέρῳ αὐτῶν εἶναι, εἴπερ ἐκείνον διαφορὰ ἔστι.

however, if the genus or the differences are known, it does not necessarily follow that the species is also known.¹⁸ Although one cannot know what a kangaroo is without knowing what an animal is, one can know what an animal is without knowing what a kangaroo is. Before the discovery of Australia no European was able to answer the question 'What is a kangaroo?'; however, every European was supposed to be able to answer the question 'What is an animal?' Let us take again a very simple world. This time the world consists of six elements arranged in two trees as in Figure 2. Aristotle would say that in order to know one of the elements of this world one does not have to know the other five also. In order to know S_1 one has to know only the circled elements, namely S_2 , G_1 , and G_2 . In particular, one can know G_2 without knowing S_3 and S_4 . In general, to know one of the four species of this world it is always enough to know four elements. Figure 2 shows the elements required to know both S_1 and S_2 .

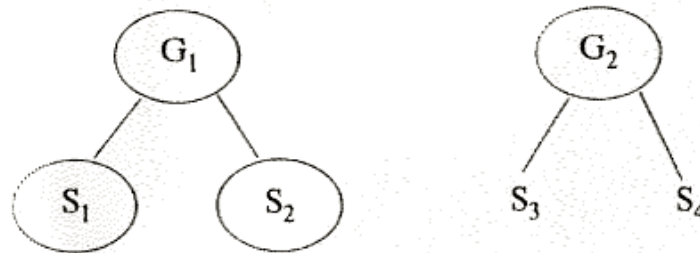


FIGURE 2

On the other hand, in order to know G_1 or G_2 one does not have to know any of the four species. It is enough to know G_2 and G_1 , as shown in Figure 3.

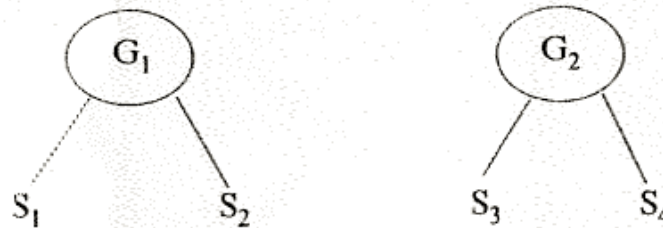


FIGURE 3

¹⁸ *Top.* 4.4.141b29–34: τοῦ μὲν γὰρ εἶδους γνωριζομένου ἀνάγκη καὶ τὸ γένος καὶ τὴν διαφορὰν γνωρίζεσθαι (ὁ γὰρ ἄνθρωπον γνωρίζων καὶ ζῶον καὶ πεζὸν γνωρίζει), τοῦ δὲ γένους ἢ τῆς διαφορᾶς γνωριζομένης οὐκ ἀνάγκη καὶ τὸ εἶδος γνωρίζεσθαι. According to a position of Aristotle's in *Metaph.* 7.12, definition is reduced to the last difference, which records all the information conveyed by the genus and the previous differences. Let us suppose that two-footed is the last difference of man. When one knows that man is two-footed, one knows that man is an animal, that man goes on feet, and finally that man has two feet. In this case knowledge of the difference, two-footed, is also knowledge of the species, man. Later on I shall offer a brief presentation and discussion of *Metaph.* 7.12. Here I am content to say that in this chapter Aristotle introduces a particular rule of division. According to this rule, every difference must be a difference of a previous difference. As far as I can see, Aristotle never relies on this rule in the *Topics* or in the *Posterior Analytics*. Here Aristotle never requires that division is conducted on the basis of this particular rule. Elsewhere I claimed that the method of division as it emerges from Aristotle's use and discussion of division in the *Topics* and in the *Posterior Analytics* is not consistent with this particular rule. Cf. A. Falcon, 'Aristotle's theory of division', in R. Sorabji (ed.), *Aristotle and After* (London, 1997), 127–41.

DID SPEUSIPPUS REALLY USE THE METHOD OF DIVISION?

Does Aristotle block the puzzle? Since he solves the puzzle by exploiting a particular property of the method of division, his solution works only if one accepts division as an adequate method of definition. In other words, there is still a last move to challenge Aristotle. One could argue against the possibility of arranging the world into divisional trees as suggested by Figures 2 and 3. Although Aristotle takes it for granted that our world consists of genera and species, and that it is possible to arrange it in divisional trees, it is far from clear that division is a pattern of reality. In particular, I shall argue that not only could Speusippus have found the Aristotelian solution of his puzzle unsatisfactory, but that he might also not have accepted division as an adequate method of definition.

It is commonly agreed that Speusippus wrote classifications, and that he undertook a particular version of the method of division. Lang, Stenzel, and Cherniss were the first scholars who suggested this possibility. They claimed that Speusippus inherited division from Plato.¹⁹ The most recent editor of the ancient evidence about Speusippus, Tarán, provides us with the most in depth refinement of this suggestion. According to Tarán, in *A. Po.* 2.13 Aristotle would report the *criteria* which Speusippus applied in division. These criteria would be the notions of identity and difference, in Greek *ταυτόν* and *θάτερον*. By applying principle [P], namely by asking himself whether two or more things are identical or different, Speusippus would be able to establish groups of identical things.²⁰ Moreover, from the fact that it is possible to point out *two* criteria of division, Tarán infers that the division used by Speusippus was strictly *dichotomic*. In other words not only the method of division but also the special version of this method which Aristotle criticizes in *P.A.* 1.2-3 is to be ascribed to Speusippus. More precisely, *P.A.* 1.2-3 would be nothing but a unified argument against Speusippus' dichotomous method of division.²¹

In my view the only clear implication of the argument as it is reported in *A. Po.* 2.13 is that Speusippus' method of definition consisted in the strict application of principle [P]. This is a very general principle, and it did not commit Speusippus to undertaking either division in general or a special version of it. Principle [P] strongly suggests that for Speusippus any thing is definable only within the network of relations of which it is the focus. The idea of being the focus of a network of relations is clearly distinct from that of being somewhere in a divisional tree either as genus or as species. Moreover, as the argument stands it does not imply any reference at all to the method of division. The argument is a general puzzle about knowledge, and Aristotle deals with it here because he can block it by exploiting his own version of the method of division.

SURVIVING TESTIMONIES IN FAVOUR OF THE ATTRIBUTION OF DIVISION TO SPEUSIPPUS

It has to be admitted that there is some evidence which may be brought to support the claim that Speusippus accepted division as an adequate method of definition. The first piece of this evidence is a fragment of the comic poet Epicrates which is reported by Athenaeus in his *Deipnosophist*. In this fragment Epicrates parodies the method of division for which the Academy must have been notorious at that time. More particularly, someone asks what Plato, Speusippus, and Menedemus are doing at that very moment. The interlocutor tells him that he saw a group of Plato's disciples in the

¹⁹ See note 5 for further details.

²⁰ Tarán (n. 4), 65.

²¹ Tarán (n. 4), 65-6.

Academy, in the presence of Plato himself, attempting to define animals and plants, and in particular the pumpkin, by the method of division.²² Although this testimony is very curious, it can hardly be considered historical evidence about the activity of the members of the Academy. What we can infer from the fragment of Epicrates, I think, is only that the practice of division was important in the Academy.²³

The second piece of evidence in favour of the traditional view is a title we find in the catalogue of works which Diogenes Laertius ascribes to Speusippus. Works on the subject of division are ascribed not only to Xenocrates, Aristotle, and Theophrastus, but also to Speusippus. In particular, in the list of titles reported by Diogenes Laertius it is possible to read *διαίρέσεις καὶ πρὸς τὰ ὅμοια ὑποθέσεις*.²⁴

Since this title is the only clear evidence in favour of the traditional attribution of division to Speusippus, it is important to establish how far we can rely on it. In other words, whatever the title *διαίρέσεις καὶ πρὸς τὰ ὅμοια ὑποθέσεις* may eventually refer to, it is important to evaluate it as evidence. On this point I prefer to recall the words by which Moraux introduces his study of another famous catalogue reported by Diogenes Laertius: the catalogue of Aristotle's works. In introducing the lists of Aristotle's works Moraux summarizes the main problems one has to face in studying any catalogue as follows:

Les catalogues anciens ont été victimes de toutes sortes d'alterations: les omissions de titres, les transcriptions erronées et les corruptions des chiffres indiquant les nombres des rouleaux y sont fréquentes. Indépendamment de ces modifications, les catalogues ont souvent subi des remaniements voulus: addition d'appendices, interpolations de titre nouveaux, bouleversement de l'ordre des titres etc.²⁵

The catalogue of Speusippus' works does not represent an exception. First of all, the list of works is incomplete. There are a few titles which are ascribed to Speusippus elsewhere and which cannot be reduced to the titles reported in the catalogue. Secondly, the list of works is surely in disorder. The proof is that there are titles which are repeated twice. To explain these repetitions it has been suggested that our actual catalogue is the result of two lists, of which the one was the abbreviation of the other.²⁶ Thirdly, there is a more general fact about all ancient titles which is illustrated very well in the case of the treatise of Speusippus we usually refer to by the title *On Similar Things*. Several fragments of this treatise have been preserved by Athenaeus, who also provides us with the title *ὅμοια*. Diogenes Laertius probably reports the same treatise under the title *διάλογοι τῶν περὶ τὴν πραγματείαν ὁμοίων*, which has been emended into *τῆς περὶ τὰ ὅμοια πραγματείας*.²⁷ In this case we have at least two possible titles for the same treatise, and the first is probably an abbreviation of the second. What happened in the case of the treatise *On Similar Things* is not unusual. In general, there is no reason to think that any title of any catalogue was originally given by the author himself. More particularly, there is no reason to think that the title *διαίρέσεις καὶ τὰ*

²² Athen. 2.59d-f (T. Kock, *Comicorum Atticorum Fragmenta* 2, fr. 11, 287).

²³ On this issue, see P. Merlan, 'Zur Biographie des Speusippos', *Philologus* 103 (1959), 198-214, now also in P. Merlan, *Kleine philosophische Schriften* (Hildesheim, New York, 1976).

²⁴ Diog. Laert. 4.5.

²⁵ P. Moraux, *Les Listes anciennes des ouvrages d'Aristote* (Louvain, 1951), 186.

²⁶ Lang was the first scholar who advanced this possibility. See Lang (n. 5), 48. On this suggestion, see also the additional notes which M. Gigante added to the second edition of his Italian translation of Diogenes Laertius (Diogene Laerzio, *Vite dei Filosofi* [Bari, 1976²], 579-81).

²⁷ On the reasons for this emendation, see Lang (n. 5), 16-17; Tarán (n. 4), 196; and Isnardi Parente (n. 3), 214.

πρὸς τὰ ὅμοια ὑποθέσεις goes back ultimately to Speusippus himself. Finally, how far can we rely on a title to infer its content? The capacity of any title, but especially of a Greek title, of informing us about its content is meagre. The very famous case of Aristotle's *Metaphysics* can illustrate this point. This title refers to the order of publication rather than the content of the work. As a matter of fact, there is no relation between the content of the work and its title, which tells us nothing about the content of the following fourteen books.

THEORY AND PRACTICE OF DIVISION

I have claimed that the curious fragment of the comic poet Epicrates cannot support the claim that Speusippus undertook division and wrote on this subject. If this is so, the title reported by Diogenes Laertius is the only clear evidence in favour of the attribution of an interest in the method of division to Speusippus, though I have argued that it does not necessarily carry any great weight. But let us focus again on the first part of this title, namely *διαίρεσεις*. In this case the plural is, I think, significant. What I would like to claim is that if this title is a piece of evidence at all, it is evidence about the attribution of a certain number of divisions to Speusippus. What one may infer from this title is that Speusippus wrote down a few divisions, which were gathered in a single book. What one may not infer from this title is that Speusippus wrote a treatise on division. The plural *διαίρεσεις* is not a suitable title for a theoretical discussion of division. Aristotle's discussion of the dichotomic method of division is surely such a discussion. In *P.A.* 1.2–3 Aristotle offers nothing but a *theory* of division. More particularly, *P.A.* 1.2–3 is a relatively independent composition which consists of two parts: (a) a *pars destruens*, where Aristotle attacks the dichotomous division and explains why in his view it is inadequate, and (b) a *pars construens*, where he offers a few rules according to which every division should be conducted. There is no doubt that *P.A.* 1.2–3 would hardly have been described by any catalogue with the title *διαίρεσεις*. If therefore the title *διαίρεσεις* reported by Diogenes Laertius refers to something at all, it cannot refer to a theoretical discussion of the method of division; it presumably refers to divisions of the same kind as those we conventionally know as Aristotelian divisions.²⁸

Whatever the origin of the Aristotelian divisions may be, one thing is fairly clear: they are to be taken as a testimony about the Aristotelian (or Academic) *use* of division, but not as a testimony about the Aristotelian (or Academic) *theory* of division. I would like to make this last point clear. Let us take, for instance, the divisions which have been numbered by Mutschmann as *Div.* 2 and 3. They contain a classification of virtues and vices. More particularly, virtue is divided into four different kinds: justice, bravery, temperance, and *phronesis* (*Div.* 2). On the other part, vice is divided into injustice, cowardice, intemperance, and *aphrosune* (*Div.* 3). Moreover, both in *Div.* 2 and *Div.* 3 a correspondence is established between virtues and vices on the one hand and parts of the soul on the other hand. There is no doubt that these divisions document the idea that there is a connection between ethics and psychology, that it is

²⁸ H. Mutschmann, *Divisiones Quae Vulgo Dicuntur Aristotelicae* (Lipsiae, 1906). A translation and a commentary has recently been offered by C. Rossitto, *Aristotele ed altri. Divisioni. Introduzione, traduzione e commento* (Padova, 1984). On the formation of this corpus of divisions and its transmission, see T. Dorandi, 'Ricerche sulla trasmissione delle Divisioni Aristoteliche', in K. A. Algra, P. W. van der Horst, and D. E. Runia (edd.) *Polyhistor. Studies in the History and Historiography of Ancient Philosophy Presented to Jaap Mansfeld on his Sixtieth Birthday* (New York, Leiden, Köln, 1997), 145–65.

possible to offer a psychological model of ethics, and that whoever wrote this division wanted to register this commonly held belief. There is also no doubt that whoever wrote these divisions was not concerned with offering rules of division or with discussing division as a method. It is a matter of fact that these divisions tell us something about ethics but nothing about division as a method of definition or classification. The reason for this is, I think, that whoever wrote these divisions did not mean to offer a theory of division but just contented himself with using division.

At this point it should be clear that even those who think that the catalogue of works reported by Diogenes Laertius can help us to shed some light upon the activity and the views of Speusippus could accept my reconstruction and analysis of the argument which Aristotle reports and discusses in *A. Po.* 2.13. In particular, evidence about the use of division is not necessarily evidence about the acceptance of a corresponding theory of division. Speusippus might well have used division because he was interested in introducing distinctions in one or more areas, for instance in ethics or in mathematics, without accepting division as an adequate method of definition. At this point the only remaining reason for attributing the acceptance of division as an adequate method of definition of Speusippus is the fact that this very method was important within the Academy. In other words, if Plato, Aristotle, and Xenocrates were interested in division and thought it was an adequate method of definition, then Speusippus too, who was the first scholarch of the Academy after the death of Plato, should have been interested in division and have thought it was an adequate method of definition. This is a very weak reason. Despite the obscurity which surrounds the Academy one thing is clear enough: orthodoxy was not a feature of Academic thought and tradition.²⁹ The positions within the Academy were so different that it would not be a great surprise to discover that on the issue of division too there was no unanimity.³⁰

To sum up, there is an authoritative tradition according to which (a) Speusippus used the method of division; (b) this method was dichotomous; (c) it is the dichotomous.

²⁹ See, for instance, Cherniss (n. 2), 81ff.; and H. J. Krämer, 'Die Ältere Akademie im Allgemeinen', in H. Flashar (ed.), *Die Philosophie der Antike* (Stuttgart, 1983), 6.

³⁰ From Simplicius we learn that Speusippus left a division (*diairesis*) of names. A discussion of this testimony cannot be postponed any longer. According to Simplicius, first Speusippus divided names into ταυτόνομα and ἑτερόνομα, and then ταυτόνομα into ὁμώνυμα and συνώνυμα, and ἑτερόνομα into ἰδίως ἑτερόνομα, πολυώνυμα, and παρόνομα. Cf. *Simpl. In Cat.* 38.19–24. This testimony goes back ultimately to Boethus and his commentary on the *Categories*. Simplicius did not have direct access to Boethus but knew his commentary indirectly, presumably through Porphyry and his major commentary on the *Categories*, the *Πρὸς Γεδάλιον*. (For a convenient discussion on the sources of Simplicius, see J. Barnes, 'Homonymy in Aristotle and Speusippus', *CQ* N.S. 21 [1971], 65–80; L. Tarán, 'Speusippus and Aristotle on homonymy and synonymy', *Hermes* 106 [1978], 73–99, and more recently Tarán [n. 4], 406–14.) In the light of the previous discussion this can be nothing but a testimony about Speusippus' use of division. Nevertheless, Tarán ([n. 4], 413–14) made an attempt to prove that this use is *not* neutral with respect to a particular theory of division. According to this theory, division is to be conducted by the strict application of the notions of identity and difference. Let us turn to Speusippus' division of names. At a first stage names are divided into ταυτόνομα and ἑτερόνομα. But what about the second stage? In particular, what about the ἑτερόνομα? They are divided into ἰδίως ἑτερόνομα, πολυώνυμα, and παρόνομα. According to Tarán, a third principle is here operative. Division is in fact conducted first on the basis of the notion of identity and difference, and then on the basis of the notion of similarity, in Greek ὁμοιότης. The reference to the notion of similarity is puzzling. In particular, it does not seem very helpful to describe the relationship which holds between paronyms by making appeal to the notion of similarity. Derivativeness, a special kind of co-ordination, and ordering are clearly involved in paronymy. I do not want to enter into this further issue. I am content to claim that this particular division cannot provide evidence in favour

tomous method of division which Aristotle criticizes in *P.A.* 1.2-3. A careful reading of the argument of Speusippus which Aristotle reports and discusses in *A.Po.* 2.13 casts doubts on this tradition, and in particular on point (b) [and consequently (c)]. Moreover, in the light of the distinction between *use* and *theory* point (a) is ambiguous. As it stands, this may be understood in two ways: (i) Speusippus had a theory of division and he consequently used it; (ii) Speusippus did not have a theory of division but he used it. Point (a) can also be questioned if it is taken, as usual, in the first, stronger way. The idea of a thing as the focus of a network of relations is crucial for the argument as it is reported in *A.Po.* 2.13. This very idea is *neutral* with respect to any theory of division, and the argument itself strongly suggests that Speusippus had a different method of definition based on the notion of similarity and difference. According to this method, to define a thing is to know the relations that this thing has with all surrounding things.

A.Po. 2.13 AND *Metaph.* 7.12

There is a general objection which might be raised against my reconstruction and analysis of the argument which Aristotle reports and discusses in *A.Po.* 2.13. I claimed that this argument is a puzzle, and that Aristotle blocks this puzzle by taking it for granted that the world is arranged into divisional trees. It might be objected that Aristotle's attitude towards the method of division changes, and that on this issue it is possible to discern different stages in the Aristotelian *corpus*. Briefly, at first Aristotle would have accepted division as a sort of Platonic heritage, and later he would have rejected it to elaborate his own method of definition.

Against the thesis that division is only a Platonic heritage which Aristotle abandoned to develop his own non-divisional method of definition there is the fact that *nowhere* does Aristotle condemn division as a method of definition. On the contrary, either Aristotle rejects division as a method of proof (*A.Pr.* 2.31 and *A.Po.* 2.5) or he criticizes a particular version of the method of division, namely the dichotomic division (*P.A.* 1.2-3). Furthermore, a careful reading of *P.A.* 1.2-3 shows that Aristotle's first aim is to establish his own method of division more firmly. *P.A.* 1.2-3 is a collection of rules of division which Aristotle himself thinks adequate to define objects in the animal kingdom. If Aristotle never condemns division as a method of definition, his solution to the puzzle cannot be taken as a first, provisional solution which becomes inadequate when Aristotle develops his own method of definition. On the contrary, Aristotle appeals to this particular defining method because its properties provide him with a solution to a general puzzle about definition.

I would like to conclude by pointing out that this particular usage of division does not represent an exception in the Aristotelian corpus. Aristotle makes appeal to this method to solve a general issue concerning definition also in *Metaph.* 7.12. Here Aristotle is concerned with the question of unity in definition. He makes the assumption that an adequate method of definition should guarantee that a definition is unitary. In this case he makes appeal to the rule that every difference must be the difference of a difference. Relying on this rule, and on idea that the last difference

of the attribution of a dichotomous method of division to Speusippus. Nor can it provide evidence in favour of the attribution of a particular theory of division to him. It merely confirms that Speusippus made use of division. More precisely, he made use of division in order to reach a *classification* of names. Division is in fact neutral with respect to the goal which may be chosen. Division may be an instrument of definition as well as of classification.

contains all prior differences, division becomes an adequate method of definition and offers a solution to the problem of the unity of definition. More particularly, a definition consists of a plurality of elements: a genus G and a series of differences $\Delta_1, \Delta_2, \dots, \Delta_{n-1}, \Delta_n$. If division is effected on the basis of this rule, the differences can be reduced to the last one, namely Δ_n , which entails its predecessors. The consequence is that a definition consists only of the genus G and the last difference Δ_n . Moreover, at least in *Metaph.* 7.12, Aristotle seems to think that the genus G is contained, in one way or another, in the first difference Δ_1 . Aristotle takes into account two possibilities: (a) the genus does not exist apart from its differences; (b) the genus exists apart from its differences but only as matter with respect to form. Aristotle does not choose one of the two possibilities. He is content with the result that both guarantee. However the genus may be taken away, a definition is reduced to the differences, and ultimately to the last difference. Thus all parts of the definition are reduced to the last difference alone, which is the *ousia* of the thing and the definition itself.

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