Zeitschrift: Museum Helveticum : schweizerische Zeitschrift für klassische Altertumswissenschaft = Revue suisse pour l'étude de l'antiquité classique = Rivista svizzera di filologia classica

Herausgeber: Schweizerische Vereinigung für Altertumswissenschaft

Band: 30 (1973)

Heft: 1

Artikel: Eudoxus in the "Parmenides"

Autor: Schofield, Malcolm

DOI: https://doi.org/10.5169/seals-24366

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Siehe Rechtliche Hinweise.

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. Voir Informations légales.

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. See Legal notice.

Download PDF: 22.01.2025

ETH-Bibliothek Zürich, E-Periodica, https://www.e-periodica.ch

MUSEUM HELVETICUM

Vol. 30 1973 Fasc. 1

Eudoxus in the 'Parmenides'

By Malcolm Schofield, Cambridge

If any of Plato's dialogues was written exclusively for the Academy, then the Parmenides must have a strong claim to be such a work. Parmenides' critique of the Ideas in the first part of the dialogue is very plausibly read as Plato's contribution to the debate in the Academy (known to us from Aristotle) about the viability of the theory[1]. And he must have expected the huge and baffling dialectical exercise of the second part to appeal to readers in the Academy and to hardly anyone else: certainly that is where it made an impact, as Aristotle's exploitation of the dialogue proves[2]. It seems reasonable, therefore, to scrutinize the Parmenides for signs that Plato is not merely discussing topics which interested or were to interest other members of the Academy, but actually responding to theories already presented by them. It has sometimes been felt that he makes some allusion to the views of the mathematician and astronomer Eudoxus of Cnidus, in particular. I want to reconsider the question. I shall begin by considering the opinions of two recent writers.

Cherniss's view

Professor Cherniss suggests that one passage of Parmenides' critique of the Ideas – at 130 e 5–131 e 7[3] – should be read as an exposition of the difficulties which beset Eudoxus's conception of the Ideas, rival to Plato's, as immanent in things, not separated from them[4]. He notes that Aristotle used the arguments of

---

[1] Aristotle attacked the views of Plato and of Eudoxus in *Περὶ ἰδεῶν* (for the fragments of this work, see *Aristotelis Fragmenta*^{3}, ed. V. Rose [Leipzig 1886] nos. 185–189). Comprehensive criticisms of Plato's theory are put forward in *Metaph.* *A* 9, *M* 4 and 5; and, of course, Aristotle discusses it more or less incidentally in many other places. The evidence for the views of Speusippus and Xenocrates on Ideas is collected in P. Lang, *De Speusippi Academici scriptis* (Bonn 1911) nos. 42–43, and in R. Heinze, *Xenokrates* (Leipzig 1892) nos. 30–34. For the *Parmenides* as a contribution to a debate, see e.g. D. J. Allan, *Aristotle and the Parmenides*, in *Aristotle and Plato in the mid-fourth Century*, ed. I. Düring and G. E. L. Owen (Göteborg 1960) 133–144.

[2] For Aristotle's use of the *Parmenides* in the *Physics*, see G. E. L. Owen, '*τιθέναι τὰ φαινόμενα*', in *Aristote et les problèmes de méthode* (Louvain/Paris 1961) 92–102 (= *Aristotle:* A Collection of Critical Essays, ed. J. M. E. Moravcsik [New York 1967] 177–190).

[3] I follow Burnet's text (except where otherwise stated) and his lineation.

[4] For Eudoxus's theory, see Ar. *Metaph.* 991 a 14–19 (= 1079 b 18–23), with Alex. *In Metaph.* 97, 27–98, 24 Hayduck (= Rose^{3} Fr. 189). The most reliable discussions of it are those by K. von Fritz, *Die Ideenlehre des Eudoxos von Knidos*, Philologus 82 (1927) 1–26, and H. Cherniss, *Aristotle's Criticism of Plato and the Academy* I (Baltimore 1944) Appendix VII.

Klassisch-Philologisches Seminar
der Universität
8001 Zürich

this passage against Eudoxus[5], and thinks that Plato may have intended this target too. Here is his argument[6]: «At any rate, it is a conception of ideas as immanent that is there attacked (cf. 131 a 8–9 [*τὸ εἶδος ἐν ἑκάστῳ εἶναι τῶν πολλῶν*], 131 b 1–2, 131 c 6–7), so that there must have been such a notion current, and we have no reason to doubt Aristotle's ascription of it to Eudoxus.»

I find this unconvincing; and if one may judge from the silence with which the suggestion has been greeted in the literature, very few other people have been convinced[7]. In the passage which Cherniss cites, it is surely natural to take Parmenides as doing just what he claims to be doing: discussing Socrates' (i.e. Plato's) theory of Ideas. If he slips into speaking of them as immanent, despite his implicit recognition at the outset[8] of the argument in question of their separation from particulars, we should not therefore assume that Plato really has in mind not (or not only) his, but Eudoxus's conception of Ideas. It is better to take Parmenides as making a deliberately crude first attempt to get Socrates to consider just what he means when he says that particulars 'participate' in Ideas. For this allows us to see the sequence of arguments about participation (from 130 e 5 to 133 a 10) as a sequence of increasingly more sensible attempts to explain the idea, in which Socrates plays a progressively more active role (Parmenides takes the initiative in the second argument – the first regress [131 e 8–132 b 2] – but Socrates is the author of the suggestions that the Idea is a *νόημα* and that it is a *παράδειγμα* [132 b 3–6, c 11–d 4]). Thus when Parmenides suggests at the beginning of the first regress that Socrates is led to a belief in *εἴδη* because it seems to him that many large things share *μία τις ... ἰδέα ἡ αὐτή*, he is surely trying to pinpoint and so to avoid what is wrong in his first suggestion, that the *εἶδος* is apparently something which could be chopped up, very much a concrete thing – an *ἰδέα* is obviously not a concrete thing[9]. This general line of interpretation of the

---

[5] See Alex. *In Metaph.* 98, 2–9 Hayduck, with Cherniss, op. cit. 530–531.

[6] Ibid. 536.

[7] I have made no exhaustive check of the literature to verify this claim, but I recall only Professor Allan's undogmatic rejection of the suggestion (op. cit. 144).

[8] 130 e 5–131 a 2 (cf. 130 b 1–5, etc.).

[9] Here *ἰδέα* seems to be the *character* shared by many particulars (so Taylor and Cornford). That many things share a single character is taken to be the *ground* for asserting that each Idea is a single thing (reading *ἓν ἕκαστον εἶδος οἴεσθαι εἶναι* [132 a 1] as containing a subject-predicate, not an existential clause, as is demanded by the parallels at 132 a 3–4 – *ἓν τὸ μέγα ἡγῇ εἶναι* –, 132 b 1–2. 5–6). It is not entirely clear what Parmenides and Socrates conceive to be the precise relation between this *μία ἰδέα* and the Idea (variously called [*αὐτὸ*] *τὸ φ* and *εἶδος*) in this argument, although in the next (at 132 c 3–8) they seem to be treated as identical. In any event, Socrates' suggestion that the Idea might be a *νόημα* has at least the virtue of emphasizing more strongly its *separateness* from particulars: particulars may exhibit a character, but they can hardly be held to exhibit a *νόημα* (cf. Parmenides' argument at 132 c 9–11, which presses Socrates to show what relation participation in a *νόημα could* be). And his last, and most Platonic, proposal (cf. e.g. *Phd.* 74 a–75 b, *Tim.* 29 b, 48 e–49 a, 50 c–d, etc., with G. E. L. Owen, *The Place of the 'Timaeus' in Plato's Dialogues*, CQ N.S. 3 [1953] 83 n. 4 = *Studies in Plato's Metaphysics* 319 n. 4) retains the separateness of the Ideas as clearly, and adds an account of the relation they have to par-

arguments about participation tallies well with Parmenides' recognition, at the beginning of his last argument about the Ideas, that the cardinal point of Socrates' theory (and that of any other proponent of self-subsistent essences of things: *αὐτήν τινα καθ' αὑτὴν ἑκάστου οὐσίαν*) is that none of these essences is in us (*ἐν ἡμῖν*) (133 c 3–5). So we may reject Cherniss's detection of a thesis of Eudoxus at 130 e 5–131 e 7. Nonetheless, the thesis of Eudoxus which he claims to find treated there is one that Plato might be expected to discuss had it been proposed by the time the Parmenides was written; and I shall argue that it may very well be that he does discuss it in Part II of the dialogue.

Brumbaugh's view

Professor Brumbaugh sees traces of Eudoxus elsewhere in the Parmenides. He sums up his conclusions in these words[10]: «We are probably not mistaken in relating to Eudoxus both the allusions to Anaxagoras in the Parmenides and the introduction of the «cut» in Hypothesis 2a [sc. 155 e–157 b], nor in seeing his immanent interpretation of forms as combining with the popular criticism of idle talk in the Academy to provoke Plato to a defense of the theory of forms in its transcendent form.» Very little of this is acceptable. There is no evidence that Eudoxus (if he saw his own views on Ideas as a development of Anaxagoras's philosophy)[11] proclaimed himself Anaxagoras's heir as insistently as would be

ticulars which manifestly preserves that separateness (it is not necessary nor even tempting to suppose that the Idea is here *identified* with the character which particulars exhibit: see Owen's construction of the argument, CQ N.S. 3 [1953] 82 [= *Studies* 318–319], with his note in *A Proof in the ΠΕΡΙ ΙΔΕΩΝ*, JHS 77 [1957] 105 n. 8 [= *Studies* 297 n. 2]). This is plainly the most sensible of the accounts of participation offered, given that the separateness of substantial Ideas is taken as essential to the theory; and it is perhaps worth remarking that it would not be too difficult for Plato to stop the regress argument Parmenides deploys against it, by stating that it is only similarity between particulars which requires explanation in terms of resemblance to a paradigm – similarity between particular and paradigm will then be excluded a priori from explanation in such terms (not an arbitrary step, since the point about Ideas is that they are supposed to be free from an *obscurity* which besets particulars and makes them unintelligible to a degree).

[10] R. S. Brumbaugh, *Plato on the One* (New Haven 1961) 25–26.

[11] Zeller favoured this view: *Die Philosophie der Griechen* II 1^5 (Leipzig 1922) 1039–40. Cf. O. Becker, *Eudoxos-Studien V: Die Eudoxische Lehre von den Ideen und den Farben,* Quellen und Studien zur Geschichte der Mathematik, Abt. B, Bd. 3 (1936) 389–410 (esp. p. 390); Brumbaugh, op. cit. 19 n. 2; K. Gaiser, *Platons Farbenlehre,* Synusia: Festgabe für W. Schadewaldt, ed. Flashar and Gaiser (Pfullingen 1965) 198–200, with nn. 90–91. But it has been rejected by H. Cherniss, op. cit. (above n. 4) I 532–535. The one piece of evidence is Ar. *Metaph.* 991 a 14–20 (cf. 1079 b 18–24). Despite uncertainty about the text (are Ross and Jaeger right to read ὡς Ab at 991 a 15 and again [without MS. support] at 1079 b 19?), I think it clear (i) that Aristotle does not strictly imply that Eudoxus consciously revived the theory of Anaxagoras in offering his own revised theory of Ideas, but (ii) that his use of the idea of mixture (certain from the criticisms of Aristotle reported at Alex. *In Metaph.* 97, 30–98, 2) and the very obviousness of the connexion between his position and Anaxagoras's theory surely make it hard to suppose that he was not aware of a debt to the earlier philosopher.

necessary for Brumbaugh's view to be plausible; and none outside the Parmenides that Plato thought there was a significant connexion between the opinions of the two men. Moreover, there are only two places in the dialogue where I find myself at all strongly inclined to suppose that Plato invites us to think of Anaxagoras, and in neither of these does any allusion to Eudoxus's views seem likely. First, at 145 b 6–146 a 8 I think one is inevitably reminded that Anaxagoras held that *τὸ ἄπειρον* lies in itself, at rest, and argued for 'at rest' from 'in itself' (as Parmenides argues with respect to *the one* in these lines)[12]. I take Plato to be replying to him here: why not, equally well, by exploiting just the same fallacies, 'in something else, in motion' (so he has Parmenides also argue)? There is no temptation to think of Eudoxus here. Second, Antiphon recites the dialogue as it was told to him by Pythodorus to some philosophers from Clazomenae. It is reasonable to suppose that we are meant to think of them as followers of Anaxagoras[13]. Why, then, should Plato represent them as eager to hear of the meeting between Socrates, Zeno and Parmenides?[14] The simplest explanation, to my mind, is that Anaxagoras is obliquely introduced at the periphery of the dialogue proper because Plato thinks of him as (after Parmenides) the most important source for the theory of Ideas – for he supplied Plato with notions such as 'separate', 'being on its own', 'purity'[15], and with the idea that every physical thing is characterized both by largeness and by smallness[16]; and of course, according to the Phaedo it was the book of Anaxagoras which stimulated Socrates to the method of *λόγοι* for which Parmenides praises him so highly in the dialogue[17]. I suggest that Plato acknowledges a debt to Anaxagoras in making his followers come to Athens to learn how another 'pupil' of Anaxagoras fared at the hands of the Eleatics. Again, it seems unlikely that we are meant to associate Eudoxus with this reference to Anaxagoras. I do not want to deny that Plato *may* well have seen some affinity between Anaxagoras's doctrine of mixture and Eudoxus's revision of the theory of Ideas, just as Aristotle did. But nothing in the Parmenides supports this possibility.

There is more to be said for Brumbaugh's third suggestion, that Eudoxus's proposal of Ideas as immanent in things spurred Plato to subject to criticism (rather than to defend, surely) his own account of Ideas in the Parmenides. Unfortunately, Brumbaugh presents no solid arguments for thinking that Eudoxus was not rather spurred by the Parmenides[18]. If I am right to suspect that Plato does criticize

[12] Ar. *Phys.* 205 b 1–5.

[13] *Parm.* 126 a–127 a.

[14] *Parm.* 126 b 8–c 5.

[15] Cf. Becker, op. cit. (above n. 11) 395–400.

[16] Anaxagoras 59 B 3 and B 6 ad init. (in H. Diels and W. Kranz, *Die Fragmente der Vorsokratiker*[6] 2 [Berlin 1951]): on the point in question, see the interpretation of C. Strang, *The Physical Theory of Anaxagoras*, Arch. f. Gesch. d. Philos. 45 (1963) 106–107. For Plato, see e.g. *Phd.* 102a–103e; *Rep.* 478e–479b, 523b–524d; *Parm.* 128e–130a.

[17] *Phd.* 97b–100a; *Parm.* 130 a 8–b 1, 135 d 2–3.

[18] As, for example, Professor Allan thinks (op. cit. 142–144).

Eudoxus's version of the theory in the second part of the dialogue, it will obviously be probable that Eudoxus's dissent from his own version of the theory was one cause of the critique of Ideas which Plato places in Parmenides' mouth.

Brumbaugh's second suggestion takes us on to new territory. He claims that the appendix to Movements I and II in the second part of the dialogue has to be read against the background of Eudoxus's general theory of proportion and its treatment of incommensurables in the manner of Dedekind[19]. In my view a fully adequate account of the argument of the appendix can be given without recourse to such a hypothesis; and neither the language nor the thought of the section reveals any specific 'point d'appui' with the theory of proportion. Brumbaugh treats *τὸ ἐξαίφνης*, 'the sudden' or as some think 'the instant', as equivalent to 'the cut'. But this notion is not introduced within the framework of a theory such as Eudoxus's or Dedekind's; and in any case, we are not justified in attributing to Eudoxus the idea of a cut just because his treatment of incommensurable magnitudes is in some respects equivalent to Dedekind's treatment of irrational numbers.

It must be allowed, however, that Brumbaugh has drawn our attention to another aspect of Eudoxus's work which could well have provoked a response from Plato in the Parmenides. And in fact Brumbaugh makes one particular suggestion (not mentioned in the summary of his views we have been examining) about where such a response is to be found which is worth pursuing.

A Eudoxan definition of inequality?

His suggestion relates to the passage in Movement I of Part II of the dialogue where it is argued that *the one* is neither equal nor unequal to anything. Here are the first few sentences of the passage, translated from Burnet's text[20]: 'Further, if it [sc. the one] is such as this, it will be neither equal nor unequal either to itself or to another thing. – How so? – If it is equal, it will be of the same measures as anything to which it is equal. – Yes. – Whereas if it is larger or less, it will have more measures than the things less than itself, and less than those larger than itself, given that it is commensurable with them. – Yes. – If it is incommensurable with them, it will be of smaller measures in the one case, larger in the other. – To be sure.' Parmenides goes on to argue that *the one* cannot satisfy any of these requirements.

Cornford[21] supposed that in this passage Parmenides is *defining* 'equal' and 'unequal'; Brumbaugh[22], too, speaks of these propositions as definitions. This is

[19] On Eudoxus's contribution to the theory of proportion, see T. L. Heath, *The Thirteen Books of Euclid's Elements*² (Cambridge 1926) Vol. II 112–129; O. Becker, *Eudoxos-Studien I: Eine voreudoxische Proportionenlehre und ihre Spuren bei Aristoteles und Euklid*, Quellen und Studien zur Geschichte der Mathematik, Abt. B, Bd. 2 (1933) 311–333.

[20] *Parm.* 140 b 6–c 4.

[21] *Plato and Parmenides* (London 1939) ad loc.

[22] Op. cit. (above n. 10) ad loc.

a very natural interpretation, and one which draws support from other passages in Movement I where it seems plausible to think that definitions are given. Preeminent among these is 137 e 1–4: 'Why, round, surely, is that of which the extremities are everywhere equally far from the middle. – Yes. – And straight, again, that whose middle is in front of both extremities. – It is.' These certainly look like definitions[23]. Other examples, however, are not so certain. Consider the passage which Cornford, Taylor[24], and Brumbaugh read as offering a definition of 'whole', 137 c 4–d 1: 'If one is, then of course the one would not be many? – How could it be? – Then neither must there be a part of it, nor must it be a whole. – Why so? – Why, a part, surely, is a part of a whole. – Yes. – And what of a whole? Would not that from which no part is missing be a whole? – Certainly. – Then either way the one would consist of parts, by being a whole and by having parts. – Necessarily. – Then in either of these cases the one would be many but not one. – True.'

Nobody would be inclined to deny that something correctly described as having parts is in some sense many; but a whole, it might be thought[25], need not be. Parmenides' tactic in this extract, accordingly, is to suggest that a whole must consist of parts, from which it follows that it must in some sense be many. How exactly does he make this suggestion? I take him to be drawing our attention to what are represented as the obvious truths that the concept of a part cannot be understood except by reference to that of a whole, and that the converse is also true: one test of whether something is a whole is whether or not it lacks a part. And I read him as supposing that these two points are sufficient to establish that an essential interdependence holds between the two concepts – and so to license the proposition that a whole must consist of parts. If this analysis is correct, we can ask of Brumbaugh and his precursors what ground there is for thinking that Parmenides asserts a stronger connexion between 'whole' and 'that from which no part is missing' than either the Greek or the logic demands. And Brumbaugh seems not to have considered a more positive objection to his idea. In Movement III Parmenides discusses at greater length the nature of parts[26]. Here he thinks it important to stress a feature of the whole not expressed in the criterion of Movement I: that it is a single character[27]. Would he not want some reference to this to be included in a full definition of 'whole'?

---

[23] It should be noted that of the 'definitions' referred to in n. 32 below, only these are put to use as such in a later deduction (145 b 1–5).

[24] *The Parmenides of Plato* (Oxford 1934) 64.

[25] And was thought by the historical Parmenides: Fr. 8, 4. 6. 22–25 Diels-Kranz; cf. Plat. *Soph.* 244 d 14–245 b 6.

[26] *Parm.* 157 c 1–158 b 2.

[27] *Parm.* 157 d 7–e 2; cf. *Theaet.* 203 e 2–5. At *Theaet.* 205 a 4–5 it is suggested that *ὅλον* is identical with (*ταὐτόν*) *οὗ ἂν μηδαμῇ μηδὲν ἀποστατῇ*. But this is in a dialectical passage where Socrates is seeking to establish the implausible proposition that a whole is just the sum of its individual parts (204 a–205 a). The lack of any reference in the formula not merely to unity but to parts should make us hesitant in taking it as Platonic doctrine, apart from any

In the other passage of Movement I (besides the one we are directly concerned with) where Cornford plausibly sees Parmenides as offering a definition, it is more difficult to decide which way the balance of probabilities is weighted. It seems reasonable to take the proposition[28]: 'Surely that which is characterized by the same is like' as a definition of 'like'. But, again, the argument at this point requires nothing more than necessary and sufficient conditions for being like. Fortunately we do not need to settle the question for our present purposes. I want simply to point out that in the case of 'whole' and 'like' there is ground for doubting whether Parmenides is best represented as *defining* these words.

Brumbaugh agrees with Cornford in finding a definition of 'like' in Movement I. Indeed, he holds that Parmenides gives definitions in many other places in the movement besides those we have considered. But none of his other examples has the plausibility which attaches to the cases of 'whole' and 'like'.

I next want to argue that in any event, what Parmenides has to say in Movement I about equality and inequality is to be compared rather with some of his remarks there about change (for example) than with those dicta about wholes and like things. For his argument that *the one* is not equal or unequal to itself or something else has just the same structure as does this argument denying to *the one* circular motion[29]: 'Now if it revolves in a circle, it must rest on a middle, and have that which revolves about the middle as further parts of itself. But if something cannot have either a middle or parts, how can it conceivably be borne in a circle about its middle? – There is no way it can.'

Here it is quite plain that Parmenides' first sentence specifies a necessary condition of 'revolving in a circle' and that his second argues that since this condition cannot be met by *the one*, in virtue of its partlessness, it cannot revolve in a circle. Neither the form of words used in the first sentence nor the logic of the argument suggests that he is *defining* 'revolving in a circle'. Consider in the light of this passage his proof that *the one* is not equal[30]: 'If it is equal, it will be of the same measures as anything to which it is equal. – Yes. – ... Now surely it is impossible that something which does not partake of the same should be of the same measures or of the same anything else? – Impossible. – It would not, then, be equal either to itself or to another thing if it were not of the same measures? – It certainly seems not.'

Again a necessary condition of the applicability of a predicate – here 'equal' – is agreed upon, and again it is argued that *the one* cannot satisfy it. Notice that the first sentence of each extract is conditional in form[31], in contrast to the cate-

---

other consideration: for which see G. E. L. Owen, *Notes on Ryle's Plato*, in *Ryle:* A Collection of Critical Essays, ed. O. P. Wood and G. Pitcher (New York 1970) 364–366.

[28] *Parm.* 139 e 8.

[29] *Parm.* 138 c 6–d 2.

[30] *Parm.* 140 b 7–8, c 4–8.

[31] In each case the conditional is expressed by means of a participial construction.

gorical form of the sentences in which on Cornford's and Brumbaugh's view Parmenides defines 'round', 'straight', 'whole' and 'like'.

So language, logic, and the comparison with the passage on revolving in a circle all suggest that in our passage Parmenides is interested not in defining 'equal' and 'unequal', but in specifying conditions which may be used to test whether something is or can be equal or unequal. It may be felt that the point is of little moment. But Cornford's mistake here is a close cousin to his more massive mistake of supposing that Parmenides defines the sense which he means 'the one' or 'the others' to carry in a given deduction in the course of its development[32]. The effect of both mistakes is to assimilate Parmenides' procedure more closely than is proper to the sort of axiomatic presentation of a science which we find as theory in Aristotle and as practice in Euclid (the connexion is in fact tenuous in the extreme), and so to underestimate its affinity with the sorts of argument employed by the historical Parmenides and his successor Zeno. Brumbaugh simply pushes this tendency of Cornford's interpretation consciously and explicitly to its logical conclusion, reducing Parmenides' dialectic to a system of postulates, axioms, definitions and theorems[33].

A more particular obstacle, too, seems to lie in the way of accepting the claim that Parmenides defines 'equal' and 'unequal'. Consider what he says about the case of something which is larger or smaller than a thing with which it is incommensurable (140 c 2–4): '⟨If it is larger or less than things, then⟩ if it is incommensurable with them, it will be of smaller measures in the one case, larger in the other.' If this is to be taken as a definition, it is clearly circular[34], and indeed bizarre. Parmenides will be claiming to have defined 'inequality' for the case of incommensurables simply by saying that two such magnitudes will be unequal when they can be divided into measures (presumably an equal number for each) which are unequal. Why should he bother even to pretend that the introduction of measures saves him from circularity?[35] If he *is* prepared to go through with the pretence, why does he not dispense with separate definitions for commensurables and incommensurables (or a disjunctive definition), and propound this as a simple general definition?

One might explain the introduction of measures in this way: Parmenides *needs* to introduce them in order that the following argument may be efficacious against

[32] See *Plato and Parmenides* 109–115, and e.g. pp. 115–119. 213. 234–235; criticized by G. Ryle, Mind N.S. 48 (1939) 537–543, and R. Robinson, *Plato's Earlier Dialectic*² (Oxford 1953) 268–274. Cf. now Owen, *Ryle*, esp. 362–363. Owen follows Cornford, however, in finding definitions of 'whole', 'round', 'straight', 'like', 'unlike', 'equal', and 'unequal', and adds 'coeval' (140 e) to the list: op. cit. 348 n. 9.

[33] See *Plato on the One* 47–53, et passim.

[34] So A. Wedberg (although he takes it as an *explanation*), *Plato's Philosophy of Mathematics* (Stockholm 1955) 95.

[35] And what of the notion of 'measures' itself? Is this a primitive, indefinable concept? Surely it is less primitive than 'larger' – and will not 'as large as', at any rate, be used in defining it? (I owe this point to Mr. D. Bostock.)

the possibility that *the one* might be larger or smaller than something incommensurable with it[36]: 'Again, if it were of more or less measures, it would be of as many parts as measures; and in this way it will again no longer be one but as many things as its measures.' Whatever other motive he may have for bringing in the idea of measures, this much is certain. Now for that argument to achieve its intended effect Parmenides requires *only* (i) that the terms of the relation of largeness or smallness be divisible into measures and (ii) that it be *true* that if something does not possess larger or smaller measures than other thing incommensurable with it, then it cannot be larger or smaller than that thing. He does not require that (ii) be a *definition;* and since we are not in consequence constrained to interpret it as such, we ought not to do so.

That is one line of argument which might be pressed in order to extricate Parmenides from the embarassments Cornford creates for him. But there is a more radical way, pioneered by Brumbaugh, which I favour: namely, to emend the text of the sentence referring to incommensurables. Here is the Greek of the best MSS., accepted by Burnet and Cornford (140 c 2–4): *οἷς δ' ἂν μὴ σύμμετρον, τῶν μὲν σμικροτέρων, τῶν δὲ μειζόνων μέτρων ἔσται.* If this is the right reading, then we have an extremely compressed and rather odd sentence. For one thing, one would perhaps expect to find *μέτρων* following *σμικροτέρων* rather than *μειζόνων.* Then again, one would naturally suppose, if one were ignorant of the context, that the articles belonged with the adjectives with which they agree. But, of course, one has to take the Greek as elliptical for: *τῶν μὲν μειζόνων σμικροτέρων μέτρων, τῶν δὲ σμικροτέρων μειζόνων μέτρων ἔσται.* 'It will be of smaller measures than the things larger than itself, and of larger measures than the things smaller than itself.' And as we have seen, it has further to be assumed that by 'smaller measures' and 'larger measures' Parmenides means 'an equal number of smaller/larger measures'.

Brumbaugh proposes that we read *μέτρον* for *μέτρων*[37]. I translate: '⟨If it is larger or less than things, then⟩ if it is incommensurable with them, it will be the measure on the one hand of the things smaller than itself, on the other of the things larger than itself.' The point which emerges from this sentence and the preceding sentence about commensurables will be as follows. There are two different sorts of cases of inequality. In the one sort of case, if one thing is larger than another it will have more common measures than the other. But suppose there is no measure common between the two things. Then we have the second sort of case, in which the only conditions that have to be met if the two things are to be accounted unequal are (i) that the one can be measured against the other

[36] *Parm.* 140 c8–d 2.

[37] Op. cit. (above n. 10) 76–77. 272. According to Brumbaugh, the reading *μέτρον* occurs in a number of late MSS. Corruption must have occurred early, for Proclus clearly read *μέτρων*: *ἀσύμμετρον δὲ τὸ διαιρούμενον εἰς ἴσα μὲν κατ' ἀριθμόν, ἄνισα δὲ κατὰ μέγεθος* (*In Parm.* 1206 Cousin). It should no doubt be explained as due to the iterated *-ων* terminations of 140 c 3.

and (ii) that if it is, it will either extend beyond it or fall short of it. Admittedly, Parmenides does not state (ii) explicitly. But it is plainly bound up with the notion of 'measuring against' here in question.

Brumbaugh's reading clearly gives a smoother and more natural Greek sentence than does that of the received text; and the resulting logical point is a more apposite one, dispensing as it does with the idea of dividing incommensurables into an equal number of measures of different sizes. Moreover, if we accept his reading we can make much better sense than otherwise of the passage in which Parmenides argues that *the one* cannot be unequal[38]: 'Again, if it were of more or less measures, it would be of as many parts as measures; and in this way it will again no longer be one but as many things as its measures. – Correct. – But if it were of one measure, it would turn out equal to the measure; and that seemed to us impossible, that it should be equal to anything. – Yes, it did.'

The first sentence will constitute the argument against the possibility that *the one* might be larger or smaller than things commensurable with itself: for it was just in this case that *the one* would have had to have more or less measures, according to Parmenides. The second sentence will constitute the argument against supposing that *the one* might be larger or smaller than things incommensurable with itself: for it was just in this case that *the one* would have had to be able to function as *the* measure of the things with which it was compared[39].

Brumbaugh speaks of the sentence in which Parmenides deals with incommensurables as «a complex, compressed definition». He says by way of explanation: «Being greater or less than things with which it is incommensurable, the one defines a 'cut' dividing smaller and greater magnitudes into classes on either side.» And he comments that Plato «seems to take account of the mathematical work of Eudoxus»[40]. I hope it will now be agreed that we can dismiss the suggestion that a definition is intended here without more ado (though it is worth observing that if it were, the definiendum would surely be 'unequal', not 'a cut'). We are on safer ground if we suppose – as I advocate – that the sentence expresses simply a necessary condition of its being the case that something is unequal to things incommensurable with it.

It must be immediately obvious that this condition is the sort of formulation which might be offered by anyone who had grasped the distinction between commensurable and incommensurable magnitudes. One does not need to introduce

[38] *Parm.* 140 c 8–d 4.

[39] Limitations of space forbid me to explore the awkwardness of these sentences if the *μέτρων* of the received text at 140 c 4 be retained. I simply ask: is not the use of 'more' and 'less' to mean 'many' and 'few' in the first sentence strange? and what sort of case is 'if it were of one measure', in the second sentence, designed to meet? Answers *can* be devised, but not without discomfort.

[40] Op. cit. 76. Ch. Mugler, *Platon et la recherche mathématique de son époque* (Paris 1948) 242–245, took this view too (retaining *μέτρων,* however). He was criticized by H. Cherniss, *Plato as Mathematician*, Rev. Metaph. 4 (1950–51) 413 n. 44. We may note here that Brumbaugh *quite* implausibly sees a further echo of the Eudoxan 'cut' at 150 d 7–e 1 (op. cit. 129).

the notion of a 'cut' or to postulate the influence of Eudoxus to explain it. At the same time, it is very likely that Plato's interest in the work of the mathematicians in the Academy was one cause of his thinking to spell out conditions of equality and inequality in terms of measures and consequently of his distinguishing between the cases of commensurables and incommensurables[41]. Both Theaetetus and Eudoxus, of course, made enormously important contributions to the treatment of incommensurables: Theaetetus is generally believed to be responsible for much of the work on the classification of types of irrational magnitudes preserved in Book X of the Elements[42]; and Eudoxus formulated the substance at least of the fifth definition of Book V, which propounds a criterion of magnitudes being in proportion that does not depend on all four terms in proportion sharing the same measure[43].

A 'Eudoxan' account of contact?

The section on equality and inequality in Movement II[44] is preceded by one on contact[45] which is something of an anomaly. In the first place, it corresponds to nothing in Movement I. This is not surprising, since an appeal to the impossibility of one form of contact is the ground for denying that *the one* is 'in itself' there, and since it is pretty obvious that something which occupies no room (is neither in itself nor in anything else) cannot be in or out of any form of contact with anything – the question does not arise[46]. More importantly, the section in Movement II seems out of place at the particular point within the deduction at which it now stands. It interrupts the sequence of proofs relating to 'same' and 'different', 'like' and 'unlike', 'equal' and 'unequal'; and it would seem more logically to follow the proof of 'in itself' and 'in something else'. One reason for this postponement of the section is probably that the longest and most important proof in it depends on an argument not propounded until the section on 'same' and 'different'[47]. I shall suggest another (and perhaps more significant) reason when we have examined that proof.

Parmenides begins the section by referring back to the patently fallacious conclusion, that *the one* is in itself as a whole (145 b 6–c 7), and its twin (also fallaciously derived), that it is in something else also (145 c 7–e 3), although here he sub-

---

[41] I can in this article do no more than draw attention to the curious and apparently vicious inattention to the features of incommensurables noticed here in the corresponding passage in Movement II, 151 b 7–e 2.

[42] For the evidence, see e.g. T. L. Heath, *The Thirteen Books of Euclid's Elements*[2] (Cambridge 1926) Vol. III 1–4; K. von Fritz, art. *Theaitetos*, RE V A 1353–63.

[43] Cf. schol. in Eucl. V prooem.; F. Lasserre, *Die Fragmente des Eudoxos von Knidos* (Berlin 1966) 166–168.

[44] *Parm.* 149d–151e.

[45] *Parm.* 148d–149d.

[46] Cf. *Parm.* 138 a 2–b 6.

[47] The argument at 149 a 3–d 5 depends on that at 147 a 3–b 3 (see 149 c 4–d 1).

stitutes 'in the others' for 'in something else' (148 d 6–8). He then argues that it must accordingly be in contact with both itself and *the others*, apparently on the ground that 'in' *entails* 'in contact with' (148 d 8–e 4).

The rest of the section is devoted to the proof that the contradictory of this conclusion must also obtain. The first limb of this proof – a demonstration that the notion of *the one* being in contact with *itself* leads to a contradiction – is straightforward enough. Parmenides points out that since contact requires bodies to lie in immediate succession, occupying neighbouring places, and since no body can occupy two distinct places without becoming two bodies, *the one* cannot (after all) have contact with itself and remain one (148 e 4–149 a 3).

It remains to show that *the one* cannot be in contact with *the others*. This conclusion is achieved by a most odd piece of argumentation (149 a 3–d 5). Here is a translation of the puzzling part of it[48]: 'But again, neither will it have contact with the others. – Why indeed? – Because, as we say, that which is to be in contact with a thing must be distinct from what it is to be in contact with, but next to it, and there must be no third thing between them. – True. – Then there must be, at the very least, two things, if there is to be contact. – There must. – And if a third term is added next to the two, the things will be three, the contacts two. – Yes. – And if we continue adding in this way, whenever one term is added one contact is added, too; and consequently the contacts will be fewer by one than the amount of the numbers. For each succeeding total number has an advantage over all the contacts equal to that held (with respect to their being more in number than the contacts) by the first two things over the contacts. For at each stage thereafter there is at the same time an addition of one to the number and one contact to the contact. – Correct. – Then however many in number the things are, the contacts are always one less than them. – True. – And if there is only *one* thing, not a pair, there would be no contact. – How could there be?' Parmenides now reminds us of the arguments about *the others* at 146 d 1–147 b 6: it was agreed that they had no number, and that they were not one in any sense at all. But if they are not one nor any other number, then only *the one* is a unit; and at least two terms are required for contact. So there is not contact between *the one* and *the others*[49].

The oddity I find in this argument is not the treatment of *the others* which I have just recounted. Parmenides clearly requires it or something like it in order to reach the appropriate denial of contact demanded by the general schematism of Movement II. What is so strange is his careful elaboration of the conditions under which any given number of contacts may be found. For the development of this theory is irrelevant to the conclusion he desires. All he needs for that is the premiss on which he builds the theory, namely that at least two terms are required for contact. It seems reasonable to conclude that Plato spells out his theoretical

[48] 149 a 3–c 5.
[49] 149 c 5–d 5.

treatment of contact solely because it holds for him a quite independent interest of its own[50].

I want to argue that Plato's thesis about contact was very probably modelled on an account of continued proportion which must have been either the source or an ancestor of the treatment of continued proportion in the definitions of Book V of Euclid's Elements. Here are the relevant definitions in Heath's translation:

8. A proportion in three terms is the least possible.

9. When three magnitudes are proportional, the first is said to have to the third the *duplicate ratio* of that which it has to the second.

10. When four magnitudes are ⟨continuously⟩ proportional, the first is said to have to the fourth the *triplicate ratio* of that which it has to the second, and so on continually, whatever be the proportion.

I submit that what Plato has to say about contact bears a very remarkable similarity to Euclid's definitions. Both begin by specifying the minimal conditions which have to be satisfied for an instance of the relation they are considering to occur. Then each stipulates the conditions for introducing the notion of duality with respect to the relation[51]. Finally, they both indicate the conditions under which any given number one chooses may be correctly assigned to the relation in question. Plato, indeed, offers more than an indication: he provides a careful proof in general terms[52], whereas Euclid simply gives us another example and then adds: 'and so on continually [or perhaps more strictly, in sequence]'. The similarity extends yet further than this, however. For Plato seems to have adopted some of the language of the theory of proportion: *ὅρος* (used by Euclid in Def. 8) and *ἑξῆς* (Def. 10). And he was perhaps led to treat of *ἅψις* in this way by reflecting upon the use of the word *συνάπτειν* to describe continuous proportion: as Heath says[53], «another word for *compounded* ratio is *συνημμένος* (*συνάπτω*) which is common in Archimedes and later writers», and Professor Einarson has pointed out[54] that although Aristotle speaks of *συνεχὴς ἀναλογία* in expressing the notion, he connects *συνεχές* with *συνάπτειν* (and indeed, at Phys. 227 a 10–15 partly explicates its meaning in terms of *σύναψις*). One further sign that Plato borrows from the theory of proportion is this: he sometimes writes in this passage as though he were establishing a connexion not between the number of terms in contact and the number of contacts between them, but between numbers and contacts – see in particular 149 b 2–4 (*καὶ συμβαίνει τὰς ἅψεις τοῦ πλήθους τῶν ἀριθμῶν μιᾷ*

---

[50] We may note, too, that if *the one were* in *the others*, it would presumably be in contact with them *at many points* (cf. 138 a 3–7), so that the analysis of a *linear* sequence of contacts here presented is doubly irrelevant.

[51] It need hardly be mentioned that quite different sorts of duality are in question in the two cases.

[52] Analyzed mathematically by A. Wedberg, *Plato's Philosophy of Mathematics* 140–141.

[53] *The Thirteen Books of Euclid's Elements*² II 133.

[54] B. Einarson, *On Certain Mathematical Terms in Aristotle's Logic*, AJP 57 (1936) 163 n. 56.

ἐλάττους εἶναι) and b 6–c 2 (*ἤδη γὰρ τὸ λοιπὸν ἅμα ἕν τε τῷ ἀριθμῷ προσγίγνεται καὶ μία ἅψις ταῖς ἅψεσιν*). This feature of his style is very easily explained if he is adapting to his own ends an account of the relations between numbers (or magnitudes in general) and ratios (items of a quite different sort from numbers or magnitudes)[55].

So Plato appears to draw heavily upon the work of mathematicians in working out his account of contact. Now we do not know which mathematician or group of mathematicians was responsible for the propositions (or rather, the crucial third proposition) in the theory of proportion which provide Plato with his starting point. There is some chance that it may have been Eudoxus. According to a scholium on Book V of Euclid's Elements, he made the discoveries embodied in the book[56]. It is generally assumed, accordingly, that we ought to ascribe to him the discovery at least of the most important definitions and theorems in the general theory of proportion which is expounded there. It may be that we should also attribute to him the stipulation implied in Def. 10, that, in general, a ratio compounded of n ratios holds between n+1 terms. But I do not press the point. What does seem very likely is that Plato's quite deliberate and obvious exploitation of proportion theory here would have caused his Academic reader to think of mathematicians like Eudoxus who worked in this area of mathematics. I suggest that Plato may have intended such a reaction; and that another possible reason for his postponement of the section on contact (and for his inclusion of the strictly irrelevant mathematical material in it) may have been to prepare the reader for a reference to Eudoxus in the next section, on equality and inequality.

An attack on Eudoxus's account of Ideas

That section begins with the suggestion that things are equal to each other or larger or smaller than each other because they possess or have belonging to them or have in them the Ideas of Equality, Largeness and Smallness. The consequences of this suggestion are then drawn out as regards Largeness and Smallness. It is argued that contradictions are entailed by the supposition either that Largeness or that Smallness could be in things, and it is concluded that Largeness and Smallness must therefore be conceived as having no relation to things at all and that *the one* and *the others* must accordingly be equal to each other (149 d 8–150 e 1).

Cornford took this passage to be an attack on the theory of Ideas propounded in the Phaedo[57]: «The assumption that a thing's being great means that it has greatness in it, is the doctrine of the Phaedo, where these very examples, Greatness and Smallness, were used. This doctrine, already attacked by Parmenides in

[55] Mr. C. C. W. Taylor suggests to me that 149 b 4–6, too, looks more like the clumsy expression of a mathematical handbook than unadulterated Plato.

[56] See n. 43 above.

[57] *Plato and Parmenides* 172.

the first part of our dialogue, is the false premiss which entails the absurd conclusion. We should conclude that, so far at least as Greatness and Smallness are concerned, the Phaedo doctrine is untenable.» The particular feature of the Phaedo theory which is here attacked, according to Cornford, is its explanation of why things are large or small in terms of their possession of an *instance* of largeness or smallness: *τὸ ἐν ἡμῖν μέγεθος κτλ.*[58]

A resemblance between the Phaedo theory and the suggestion developed and reduced to absurdity here must be allowed. But there are good grounds for denying an identity. The crucial point which must be made is that resemblance is not nearly good enough for one to be justified in drawing the conclusions Cornford draws. For unless there is a context favourable to the idea, it would clearly be a mistake to suppose that an assertion to the effect that largeness and smallness are *εἴδη* in things is an assertion of the theory of Ideas of the Phaedo. On its own, that assertion runs flatly counter to the main theory of the Phaedo, and in particular to that theory as defended by Socrates in this dialogue – with his talk of 'participation' and 'separation' and his denial that self-subsistent essences of things could ever be in us or among us[59]. Unfortunately for Cornford's interpretation, there is nothing in the context of our passage which suggests that we may take the proposition in question as compatible with the doctrine of the Phaedo; i.e., as an expression of a truth concerning not Ideas *sensu stricto*, but instances of Ideas (which Cornford does not seem to regard as logically or metaphysically distinct from Ideas: here, I suspect, lies the root of his erroneous view)[60]. And the conclusion of the argument developed by Parmenides, that Smallness and Largeness cannot be in things, but are related only to each other, is obviously much easier to take, indeed probably only intelligible, on the assumption that he has Ideas, not their instances, in view (Cornford accepts that Ideas are in question here, but for the reason I have just suggested fails to observe the damaging consequences for his interpretation). I will only add that it would be surprising to find Parmenides attacking the Phaedo theory of Ideas again after his comprehensive scrutiny of it in Part I of the dialogue.

---

[58] Ibid. p. 173. Cf. *Phd.* 102a–103c.

[59] 'Participation': 129 a 4. 7, b 3; 130 b 3, e 5, etc.; cf. *Phd.* 100 c 5, 101 c 3–5, 102 b 2, etc. 'Separation': 130 b 2–4, c 1, d 1; cf. *Phd.* 64 c 5–8, 66 d 7–67 a 2. 'His denial': 133 c 3–6; cf. *Phd.* 74a–e. Notice that in the present passage expressions such as *ἰσότητα ἔχοιεν* (149 e 4–5) and *ὁποτέρῳ ... τῷ εἴδει μέγεθος προσείη* (149 e 7) are used: this is more the sort of language used in the *Phaedo* with reference to *τὸ ἐν ἡμῖν μέγεθος* (cf. 102 c 2. 4. 7, *Parm.* 130 b 3–5) than that appropriate to Ideas (*μετέχειν, προσεοικέναι*, etc.).

[60] See his whole discussion of the passage, op. cit. 172–175. He speaks sometimes of «an instance of greatness» and «immanent characters», but he does not appear to mean more than 'the Idea, Largeness, in this particular thing' (which will, of course, be precisely ['numerically'] the same as in any other particular thing). This understanding of the *Phaedo* has occasionally been defended, but it is proven mistaken by *Parm.* 130 b 3–5 (and compare the distinction between Ideas and their *μιμήματα* at *Tim.* 50 a–52c). On the whole question see D. O'Brien, *The Last Argument of Plato's Phaedo (Pt. I)*, CQ N.S. 17 (1967) 200–208; G. Vlastos, *Reasons and Causes in the Phaedo*, Phil. Rev. 78 (1969) 298–301.

We should rather suppose that Parmenides discusses here a quite different conception of Ideas, which dispenses with the notions of participation and separation and speaks only of 'possessing' and 'being in'. It is unlikely that this version of the theory was simply invented by Plato for his purposes of the moment. Parmenides is made to elaborate the conclusions which can be drawn from his argument against it very carefully; and as Cornford justly remarks, «any eristic, by playing on words, could easily invent a much shorter proof that all magnitudes are equal»[61]. As in the section on contact, Plato seems to be absorbed by the idea he introduces quite independently of any interest in the formal point he has to have Parmenides establish. Moreover, he has already had Parmenides present an argument to show that if participation in Ideas (as Socrates conceives them) is held to involve the Ideas being in things, unacceptable consequences follow[62]. Surely he would not traverse here what is so nearly the same ground unless this treatment of Ideas as immanent had been proposed by some contemporary whose opinion had some weight as a distinct and improved alternative to the Phaedo theory. Indeed, it seems unlikely that he would have troubled even to mention such an alternative had its backer not been a name to reckon with. For Parmenides and Socrates agree at the beginning of the last argument in Part I that *nobody* who posited the existence of self-subsistent essences of things – i.e., who held any theory that could reasonably be called a doctrine of Ideas – would allow that they are in us.

I suggest that Plato's target is the proposal of Eudoxus that Ideas should be regarded as *mixed* with the things characterized by them. His specific idea of mixing is not mentioned, it must be admitted. But it is not implausible to suppose that Plato would have wanted to capture the crucial feature of his proposal in a quite general form; and that feature seems to have been the notion that the contribution Ideas make to things can be unmetaphorically expressed as the contribution *ingredients* make. That Eudoxus's proposal antedates the Parmenides is, of course, a mere guess. But *someone* whom Plato was prepared to take seriously even when he considered him misguided in the extreme upheld the interpretation of Ideas as immanent considered here, if my reasoning is valid. We know of no other notable proponent of this interpretation than Eudoxus[63]; and it can at least be said that in the *previous* section, on contact, our minds were turned to one of the subjects on which he set his stamp, the theory of proportion[64].

It is important for my suggestion that the argument Plato has Parmenides bring

---

[61] Op. cit. 175.

[62] *Parm.* 130 e–131 e.

[63] Aristotle refers to ἄλλοι τινές (991 a 17), but gives no names.

[64] Lasserre (*Die Fragmente des Eudoxos von Knidos* 149–151) seems inclined to doubt whether Eudoxus intended his mixture theory as an interpretation of the theory of Ideas, so unlike the canonical theory it is. But Aristotle's information that Eudoxus put forward his views διαπορῶν (*Metaph.* 1079 b 21) surely suggests that he was entering the debate about the Ideas. Cf. e.g. D. J. Allan, op. cit. 143.

against the notion that things are large or small because they have Largeness or Smallness in them should be a plausible one. I think it is a plausible argument, but a few comments may be apposite. The gist of Parmenides' reasoning (at 150 a 1–c 4) is that if Smallness came to be in something, it would have either to contain or to be coextensive with that thing or some part of it, and so be larger than or equal to something; and that if Largeness came to be in anything, there would be something larger than Largeness[65], namely the thing in which Largeness was. These results are thought to be incompatible with the characters of Largeness and Smallness, and so it is concluded that they cannot come to be in things. Now if this argument has any force at all, it can only be effective against someone who believes (or who does not show clearly that upon his own premisses he has any alternative to believing) that Smallness and Largeness are *things*, or at least can be conceived of as extended in the same way that things are extended. Parmenides' assumption that the proponent of the version of the theory of Ideas here in question is committed to such a belief arises from two sources, it seems: first, the protagonist for the Ideas is taken as meaning that they are 'in' things in some spatial manner; second, he is taken as holding that Ideas are 'self-predicative'[66]. Eudoxus was probably vulnerable on both counts. Anyone who (like him) thinks of Ideas as ingredients in things is obviously susceptible to the first charge; and if he modified the theory of Ideas only with respect to the nature of the relation between Ideas and particulars, he was no doubt susceptible to the second – certainly Aristotle treats him as open to embarassment over the question: How, then, do the Ideas function as *παραδείγματα* on your theory?[67] It might be objected, against the cogency of Parmenides' argument, that he plays fast and loose with the concept 'in'. He takes it as entailing 'surrounding' or 'coextensive with' when he wants to consider the proposition that Smallness is in things[68], but as implying 'surrounded by' when he considers the corresponding proposition for Largeness[69] – in each case to suit his own polemical purpose. This is certainly true, and Parmenides' argument is shown to be somewhat artificial by the objection: but not therefore lacking in force. For however 'in' be taken, it is clear that if it is taken in one and the same way for Largeness *and* for Smallness, objectionable consequences will follow for one or both of them. And one piece of nonsense is enough to discredit the theory Parmenides is seeking to demolish.

---

[65] At 150 b 8–c 1 the MSS. read: *μεῖζον γὰρ ἄν τι εἴη ἄλλο καὶ πλὴν αὐτοῦ μεγέθους*. Cornford translates: «for then there would be something else, besides Greatness itself, that would be 'greater'». I think the conjunction of *καὶ* and *πλὴν* rather odd; and Cornford's translation «besides» seems forced. I propose that we excise *πλὴν*, and translate: 'for then some other thing would be larger than largeness itself' (which of course goes very well with the immediate sequel: *ἐκεῖνο ἐν ᾧ τὸ μέγεθος ἐνείη*). The corruption is readily explicable: the end of the previous sentence had stuck in some copyist's mind: *οὐδέ τι ἔσται σμικρὸν πλὴν αὐτῆς σμικρότητος* (150 b 6–7).

[66] On Plato's obvious awareness of this source, see Owen, *Ryle* 356–357.

[67] Alex. *In Metaph.* 98, 16–19 Hayduck.

[68] *Parm.* 150 a 3–7. [69] *Parm.* 150 b 8–c 1.

Parmenides could have moved directly from here to his further (fallacious) conclusion that since *the one* is not larger or smaller than other things, it must be equal to them. As it is, he dwells upon the consequences of his argument for this version of the theory of Ideas at some length. The language and thought of this coda (150 c 4–d 4) are reminiscent of the conclusion to the argument in which he expounds his 'greatest difficulty' with Socrates' conception of the Ideas (134 d 4–e 6)[70]. He there concludes: *μήτε ἐκεῖνα τὰ εἴδη πρὸς τὰ παρ' ἡμῖν τὴν δύναμιν ἔχειν ἣν ἔχει, μήτε τὰ παρ' ἡμῖν πρὸς ἐκεῖνα, ἀλλ' αὐτὰ πρὸς αὑτὰ ἑκάτερα* (134 d 4–7).

Here similarly: *Οὔτε ἄρα τὰ ἄλλα μείζω τοῦ ἑνὸς οὐδὲ ἐλάττω, μήτε μέγεθος μήτε σμικρότητα ἔχοντα, οὔτε αὐτὼ τούτω πρὸς τὸ ἓν ἔχετον τὴν δύναμιν τὴν τοῦ ὑπερέχειν καὶ ὑπερέχεσθαι, ἀλλὰ πρὸς ἀλλήλω, οὔτε αὖ τὸ ἓν τούτοιν οὐδὲ τῶν ἄλλων μεῖζον ἂν οὐδ' ἔλαττον εἴη, μήτε μέγεθος μήτε σμικρότητα ἔχον* (150 c 6–d 4).

Parmenides' point is that the 'immanent' treatment of Ideas is subject to the same sort of consequences as is the Phaedo version of the theory, but to a much more serious one too. The Phaedo version seems to put us in the unfortunate position of saying that (for example) human beings can have knowledge only of human affairs and things in their world, never of the Ideas, which are the objects – the sole objects – of divine knowledge. But the interpretation of Ideas as immanent results in something not just unwelcome but actually absurd. *Nothing* could count as large or small but the Ideas, if this interpretation of the Ideas is pressed to its logical conclusion, whereas Parmenides would presumably allow (so far as his 'greatest difficulty' goes) that on the Phaedo theory things in our terrestrial realm *could* be said to be larger or smaller in a derivative sense, so long as the other term to the relation was also to be found in that realm. The significant thing is that the very point which enables him there to maintain such a position – the notion taken as crucial to the doctrine of Ideas, that none of them is *itself* in us and in things of our realm – is what the 'immanent' interpretation surrenders.

It might be felt that Parmenides' destruction of what – if I am right – we are meant to see as Eudoxus's position on Ideas is not so devastating as at first might appear. Clearly, it is only with respect to Smallness and Largeness that absurdities can be generated as easily as they are generated here. I think two observations are in order. First, Parmenides' argument is surely powerful enough to make one wonder whether unacceptable and contradictory consequences could not fairly readily be shown to follow by other arguments for other Ideas; and Aristotle's discovery of such arguments proves the point. Second, and more important, Parmenides' argument is in a way *more* damaging than one may realize initially. For the notions of largeness and smallness are fundamental to mathematics and to the definitions in proportion theory which represent one of Eudoxus's most

[70] So Cornford, op. cit. 174 n. 1.

important contributions to mathematics. How far advanced his work on proportion theory was when Plato wrote the Parmenides, and what knowledge of his work Plato then possessed, we have no means of knowing. But Plato has certainly here achieved a demonstration that Eudoxus's work in the foundations of geometry would be rendered null and void if it was made to depend at any point on the understanding of largeness and smallness implied by his own version of the theory of Ideas, at any rate as it is interpreted in this dialogue[71].

[71] I have benefited from comments by Messrs. D. Bostock, I. M. Crombie, and C. C. W. Taylor on earlier drafts of this paper. I am most grateful to them.

Klassisch-Philologisches Seminar
der Universität