CHAPTER 11

Aristotle, Empedocles, and the Reception of the Four Elements Hypothesis

Timothy J. Crowley

C11.P1 The claim that seems first to have been put forward by Empedocles of Acragas, that there are four elements, of which all sensible things are made, and that these are fire, air, water, and earth, was an extraordinarily resilient one. A history of its reception would be a history dealing with over two thousand years of natural philosophy, if it began with Empedocles himself in the 5th century BC, and finished, say, in the 17th century, with the Irish scientist Robert Boyle's broadside against the four elements theory, and contemporary element theory in general, in his *Sceptical Chymist* (1661).[1] An adequate history might be expected to begin even

[1] *The Sceptical Chymist* (London, 1661), in T. Birch (ed.), *The Works of the Honourable Robert Boyle, vol. 1* (London, 1772). On Boyle, see, for instance, Chalmers 2016, and Clericuzio 2000, 103-148.

earlier, and end later,[2] much later, indeed, if one includes in the history the somewhat related career of the four humours.[3]

---

[2] See Guthrie 1965, 141-3. Guthrie finds evidence of advocacy of the four elements hypothesis in the late 18th c. (143, n. 1); Jane Marcet's *Conversations on Chemistry* indicates that the hypothesis continued to be generally accepted well into the 19th c.; see Rossotti 2006, 4, n. 1.

[3] For Wright 1981, 26-7, the theory of four humours is an adaptation of Empedocles' theory of elements; see also Nutton 2004, 81. But while the four humours may seem obviously related to the four elements, this appears not to be the case initially, in Polybus' *Nature of Man*, where the four humours first appear (Hipp. *Nat. Hom*. 4.1). Not until Galen, indeed, is there an explicit correspondence between the four elements and the four humours; see Jouanna 2012a, 339. For some idea of the hold that humoral medicine had on Western medical practice even into the 19th c., and humoral psychology beyond that, see Arikha 2007. The influence of the four humours is in fact still

C11.P2 Fortunately, that is not the task I set for myself here. My aim is much more limited. I am going to consider, rather, nothing beyond approximately the first century of the reception of the four elements hypothesis. To be more specific, I will be looking at its reception, or what seems to me to be some of the significant aspects of its reception, in the work of Aristotle. In particular, I want to try to see how much we can discover about the reception, and contemporary status, of the four elements hypothesis from an examination of Aristotle's remark at *Metaphysics* Alpha, that Empedocles "was the first to speak of the four so-called elements of the material kind" (I.4, 985a32). It seems to me to be important, in any attempt to assess the early reception of Empedocles' elements, to try to grasp the significance of what Aristotle is saying here. That, in any case, is what I shall try to do in what follows.

C11.S1 ## I

C11.P3 Let's begin, then, by attempting to get clear about the sort of originality that Aristotle intends to attribute to Empedocles, when

---

today apparent in South Asia, in Unani medicine ('Unani' being Arabic for 'Ionian'); see Bala 2007, 64.

he says that Empedocles "was the first to speak of the four so-called elements (τὰ λεγόμενα στοιχεῖα) of the material kind". In the very next line he identifies these four as fire, air, water, and earth (I.4, 985b1-2). So, it seems, we have it on Aristotle's authority that Empedocles identified fire, air, water, and earth as the στοιχεῖα, the elements, or principles, and, moreover, that he was the first to do so.[4]

C11.P4 Perhaps the first thing to do is to point out that Aristotle is not crediting Empedocles with terminological novelty. Empedocles did not call fire, air, water, and earth στοιχεῖα. The use of the term στοιχεῖον in the sense of 'element' or 'principle of nature' is generally accepted to be a later innovation.[5] Now this is well

---

[4] See, e.g., Diels 1899, 15; Burnet 1892, 228; Kahn 1960, 121; Longrigg 1976, 429, n. 44.

[5] One usually credited to Plato; see Diels 1899, 17; Burkert 1959, 167–97 at 174–6; but cf. Crowley 2005. Gallavotti 1975, 164-5 thinks it not improbable that Empedocles used the term στοιχεῖα at B7, as Hesychius seems to report; but in

known, and is not typically deemed to be of great significance, or in any way an impediment to understanding Empedocles. Indeed, that Empedocles did not use the term seems often to be treated as a mere historical accident, as if, incidentally, the word στοιχεῖον, in the appropriate sense, wasn't yet available to Empedocles; as if, had the word been available to him, he would have used it, to refer to fire, air, water, and earth. In other words, there appears often to be an assumption that Empedocles set out a theory of four elements, and simply used a different term for 'elements'—namely, 'roots', ῥιζώματα (DK31B6).[6] Thus Ross writes, "Empedocles' own word for elements was ῥιζώματα".[7] The

---

any case he doesn't think the term would have yet had for Empedocles a technical significance.

[6] Sedley 2007, 33, n. 7 suggests 'rootings' as a more literal rendering of ῥιζώματα; cf. Wright 1981, 164.

[7] Ross 1924, vol. 1, 138. Likewise Zeller 1883, 56. See also Lloyd 1970, 40, Vlastos 1975, 68, n. 7, Longrigg 1976, 420, Barnes 1982, 309, Inwood 2001, 37, Graham 2006, 39, 103, 195, Preus 2015, 142.

assumption here is that, in discussions of Empedocles' physics, the term that would later be used for 'elements', i.e., στοιχεῖα, or rather, the sense of this term, can readily be read into the term that Empedocles actually used, i.e., ῥιζώματα, 'roots'. But this is an assumption that we might well afford to treat with some caution.

C11.P5 Now, in raising this note of doubt, I do not mean to suggest that we should eschew talk of 'elements' when we talk of Empedocles' fire, air, water, and earth, and talk only and exclusively of 'roots'. This is indeed a move that we sometimes see adopted, motivated no doubt by a worry that to speak in terms of στοιχεῖα, 'elements', would be anachronistic.[8] But while such a move may be useful to signal that Empedocles doesn't use the term στοιχεῖα, it may well be more misleading to insist on referring to fire, air, water, and earth as Empedocles' 'roots', than to talk about

[8] Wright 1981 and Inwood 2001 show clear preference for 'roots' over 'elements', see, for instance, Inwood 31, n. 66. Curd 1998, 155f uses the term 'roots' exclusively throughout her discussion of Empedocles.

them as his 'elements'.[9] The issue here is not so much whether it is anachronistic or not to talk about Empedocles' fire, air, water, and earth as his 'elements'. If we take as central to the later use of the term στοιχεῖον in the sense of 'element', that is, its use in physical contexts, the notion that a στοιχεῖον is a basic constituent of bodies (*Metaph*. V.3, 1014a26-34), then it seems that Empedocles does have such a notion in mind, for he does deploy fire, air, water, and earth as the constituents of bodies. He does so, for instance, at B21 (especially 21.13–14; see also B23).[10] Empedocles holds that everything that comes to be is a mixture of these four. As such, these four things, insofar as they are constituents of compound bodies, are elemental, or at least candidates for elemental status,

---

[9] On this point I side with Sedley 2007, 33, n. 7; in fact the point can be put in even stronger terms (see below).

[10] See Lloyd 1970, 39-41, and Longrigg 1976, 429.

and so we might call them ‘elements’, indeed, ‘Empedocles’ elements’.[11]

C11.P6 That, then, is not the issue. The issue here, rather, is whether or not the term ῥιζώματα, as Empedocles uses it, does more or less the same job as στοιχεῖα will do for later writers, such that it is appropriate to think that, in effect, ῥιζώματα, as Empedocles uses it, and στοιχεῖα are more or less interchangeable. And there is some reason to think they are not. For one thing, while the term ῥιζώματα itself suggests something of an organic or botanic vitality, which may indeed evoke the idea of a principle or origin, that from which other things grow,[12] it is not clear that this can also capture the notion central to the term

---

[11] A nice antidote to fear of anachronism in using terms of later coinage when interpreting earlier philosophers is proffered by Barnes 1982, 475.

[12] LSJ, s.v., ῥίζα. Cf. Hesiod’s use, *Theog*. 728, with West’s comments, 1966, 361. See also Hershbell 1974, 152, Longrigg 1976, 423, with n. 17, Wright 1997, 165.

στοιχεῖον, that is, the most basic, simplest constituent of bodies (*Metaph*. V.3, 1014a26-34).[13] Moreover, in the surviving fragments, Empedocles uses the term ῥιζώματα but once as a generic term for fire, air, water, and earth (B6). It does not seem, in other words, to be a devoted generic or 'technical' term adopted by Empedocles to refer to fire, air, water, and earth, one that effectively plays the role of, or can readily be replaced by, a later term like στοιχεῖα.[14] Arguably it would not be characteristic

---

[13] Kirk, Raven and Schofield 1983, 286, insist, without supporting argument, that "the name ['roots'] marks them as basic and mutually irreducible elements from which all other things are formed". Likewise Inwood 2001 sees no issue with the term's ability to do double duty: 'roots', he says "is chosen to highlight their permanence and their joint role as the causes and components of other things", 37. But compare Hershbell 1974, 153.

[14] For Gallavotti 1975, 173, ῥιζώματα is used here in a figurative, not a technical, sense.

of Empedocles to employ a technical term for specific uses.[15] These two points might already seem to count against both those who wish to say that Empedocles' word for στοιχεῖα or 'elements' is ῥιζώματα, as well as those more overly conscientious scholars who disdain to use the term 'elements' with regard to Empedocles, insisting upon the use of 'roots' instead.

C11.P7 But there is another point which is more pressing. On the one occasion when Empedocles uses the phrase 'the four roots of all things', he names these roots not as 'fire', 'air', 'water', and 'earth', but personifies them as the divinities Zeus, Hera, Nestis

---

[15] Guthrie 1965 remarks that "Empedocles has no fixed terminology", 141; see also Longrigg 1967, 4, and 1976 428, n. 39; see also Sedley, 2007, 33, n. 7. Empedocles doesn't even stick to calling his elements 'fire', 'air', 'water', and 'earth'; he refers to them like so, all four together as a group, on only two occasions, B17.18 and B109 (αἰθήρ replacing ἀήρ); in other fragments he calls them by different names; see Wright 1981, 22-3.

and Aidoneus (Hades) (B6).[16] There is no doubt, of course, that these divinities refer to fire, air, water, and earth. But likewise there is no doubt that their divine status ought to be taken seriously, and not as a mere poetic gesture. In the context of Presocratic physics, it is not unusual to find the basic principles ascribed with divine status, an ascription that captures their ungenerated and imperishable attributes. By perhaps the late 5th c. or so, however, things appropriately called στοιχεῖα are taken to be inanimate material entities, and not divinities (see, e.g., Plato's *Laws* 889b1f.).[17] Now this general observation in itself may introduce further hesitancy regarding a ready identification of the ῥιζώματα with στοιχεῖα. But this general observation is not the pressing point here; the point is rather more specific to the context of Empedocles' poem.

---

[16] See previous note. There is some controversy about which divinity corresponds to which root; for the history of the debate, see Guthrie 1965, 144-146; and esp. Kingsley 1995, 13-68, with Picot 2000. See also Palmer 2009, 262, n. 4.

[17] See Sedley 2013, 346f. Cf. Lloyd 2003, 24.

C11.P8 For, it seems, it makes a significant difference as to whether we understand fire, air, water, and earth as the completely separate and independent principles effected under the rule of Strife (νεῖκος), in which state their true nature is revealed, or as being regarded as mixed together, culminating in the complete uniformity of the Sphere or σφαῖρος, under the rule of Love (φιλία) (see B17, esp. 17.1–8, 16–20; B27, 28; see also A27). Indeed, as Primavesi has argued, it is under the former, but not the latter, condition, when each is separated into a purified, unmixed mass, that fire, air, water, and earth enjoy the status of divine beings.[18] In particular, they are, in this state, the 'long lived gods' to which Empedocles refers at B21.12. The σφαῖρος is a god too (B31), but at the opposite end of the cycle, when Love is ascendant; it ceases to exist when the cycle passes to Strife—and hence, like the other 'long lived gods', it is not eternal.[19]

---

[18] Primavesi 2009, 252f.

[19] Primavesi 2009, 255-6. See also Inwood 2001, 51, 57, 59. As Primavesi (253-5) argues, the length of time that the four pure masses exist in that state is not instantaneous, as, for

C11.P9 But what this may well indicate is that 'roots', ῥιζώματα, is, after all, a term with a sense or a use that is pertinent not to the 'elemental' status of fire, air, water, and earth, that is, when they are mixed together in compound bodies, but rather to the status of fire, air, water, and earth as the four pure masses that are fully formed at the end of the rule of Strife. Again, it is only in that purified state that fire, air, water, and earth are (or 'learn to be', B35.14) immortal, and as such divine; and, as noted, the one occurrence of 'roots' with reference to fire, air, water, and earth involves the use of divine names for these entities (B6).

C11.P10 If this reading is correct, then it would be a mistake to say, without qualification, that fire, air, water, and earth are divine; and likewise a mistake to use the term 'roots' as a generic term for Empedocles' fire, air, water, and earth.[20] The 'roots' are these entities under one aspect only, in their state as separate, pure,

---

instance, O'Brien takes it, 1969, 1, 57 (also Barnes 1982, 309), but lasts as long as the Sphere lasts. Cf. Aristotle, *Ph.* VIII.1, 252a7-10.

[20] See Primavesi 2009, 273, n. 64.

independent entities prior to the rule of Love.[21] It would seem, then, to be misleading not merely to insist upon talking of ‘roots’ instead of ‘elements’, when discussing Empedocles’ fire, air, water, and earth; it is also misleading to suggest that ῥιζώματα and στοιχεῖα, ‘roots’ and ‘elements’, are interchangeable terms, the former simply being the term Empedocles used, due to the unavailability of the latter.

C11.S2

II

C11.P11

The next point to make is that Aristotle presumably does not intend to suggest at 985a32 that Empedocles’ claim to originality lies in his selection of fire, air, water, and earth as his principles and

---

[21] Insofar as it recognises the mutability of the elements, this reading of Empedocles is in line with Osborne 1987, 41-2, and Palmer 2009, 279-298; it may in fact possibly defuse the apparently contradictory status that Empedocles gives to fire, air, water, and earth, that is, as being eternal and unchanging, and yet as being also subject to generation and corruption; see Aristotle *Gen. et corr.* 315a3-19 and discussion in s. II below, with n. 35.

elements. For Empedocles does not introduce as a principle anything that his predecessors had not already considered as a possible principle (see, e.g., *Ph.* II.1, 193a22). Admittedly, at an earlier point in *Metaphysics* Alpha, Aristotle seems to indicate that there is something novel about Empedocles' addition of *earth* to the principles that others had already identified, namely water, air, and fire (I.3, 984a5-9). Elsewhere, however, Empedocles is singled out for making *water* a fourth principle, as others had already named earth, and fire and air, among their principles (*Gen. corr.* II.1, 329a1-2). This blatant contradiction would seem to suggest that Aristotle is not intending in either place to make an historical claim about how Empedocles arrived at these four principles.[22] It is certainly not in naming water as a principle that Empedocles' originality lies, no more than in naming earth.[23]

---

[22] Cherniss 1935, 399 suggests Empedocles added *air* to the three others, already evident in Heraclitus (DK22B31, B36); but see Longrigg 1976, 424, and Wright 1981, 27, 29.

[23] Earth is somewhat unusual in that, as Aristotle notes, none of the monists named earth as their principle, even though the

C11.P12 Perhaps, then, what Aristotle thinks is significant about Empedocles is not the specific identity of Empedocles' principles, for these entities are familiar candidates; but rather the very fact that Empedocles insists upon *four*, and only four, of them. For many scholars, this is indeed the substance of Aristotle's claim for the originality of Empedocles. For Guthrie, for instance, the novelty that Aristotle credits to Empedocles is precisely that "for the first time the four take the rank of genuine *archai*: none is prior

---

view that all things come from earth is an old and popular belief (I.8, 989a5-12). But it was named by those positing more than one principle. Xenophanes, for instance, named earth and water, B29, B33, cf. B27; Aristotle often says Parmenides named earth as one of his principles or causes, alongside fire (*Metaph*. I.3, 984b4, I.5, 986b34, *Ph*. I.5, 188a20, *Gen. et corr*. I.3, 318b6, 330b14). Ion of Chios is likely the one to whom he is referring at *Gen. et corr*. II.1, 329a1-2, who named three principles, fire, earth and air; see Rashed 2005, 152.

to any other, nor is there anything else more fundamental."[24] Others recognised them indeed; but they either made one of them more fundamental than the others, as, for instance, air is for Anaximenes; or they posited a principle other than these four that is more fundamental, and from which they are derived, such as the ἄπειρον of Anaximander. Or, as in the cases of his contemporaries Anaxagoras, Melissus and Diogenes of Apollonia, the four are merely listed among other phenomena, such as clouds, stones, and, as Diogenes puts it, "all the rest that are seen to exist in this cosmos" (see, respectively, 59B16, 30B8, 64B2). Empedocles' originality, on this reading, is that there are no more—and no less—than four principles, and that his four have equal status as principles.

---

[24] Guthrie 1965, 142. Cf. Kahn 1960, 153: "The system which recognizes these four, and these four alone, is the innovation of Empedocles", also 149, 150. See also Ross 1924 (I), 138, Cornford 1935, 162, Longrigg 1976, 429, Wright 1981, 26f., Kirk, Raven and Schofield 1983, 286.

C11.P13 And yet perhaps even this is not entirely without some precedent. The earliest texts of Greek literature already recognise a rudimentary four-fold division of the cosmos,[25] a division which, as Kahn puts it, "can be assimilated to the classic doctrine of the elements," and indeed might perhaps help to explain the apparently rapid acceptance of Empedocles' tetrad.[26] Now to this one might respond as Aristotle did, to those who tried to downplay the originality of Thales by pointing to the use of water in the ancient poetic or mythical cosmogonies of Homer, Hesiod, and Orpheus (*Metaph*. I.3, 983b27-30).[27] One might point out, that is, that there

---

[25] See, for instance, Homer, *Il*. 15.187ff., 18.483; Hesiod *Theog.* 106-7, 736-7.

[26] Kahn 1960, 152; see full discussion in Kahn, pp. 133-154. See also Wright 1981, 28-29.

[27] For Ross 1924 (I), 130, Aristotle has in mind Plato's remarks in the *Theaetetus* about Homer being the source for Presocratic doctrines, but compare Snell 1944, 170-82.

is a very great difference between what Empedocles is proposing, and what can be found in Homer and Hesiod.[28]

C11.P14 On the other hand, however, Empedocles has predecessors who are clearly engaged in the same sort of enterprise as he is, and in their investigations the identification of *four* principles or forces seems also to be found. Ionian speculation may have been generally of a monist bent, but there we do find appeal to four forces, namely the opposites hot and cold, dry and wet (see, e.g., Heraclitus (B126)).[29] It has been suggested that Empedocles arrived at his four 'roots' by 'hypostasizing' these contraries.[30]

---

[28] As Kahn 1960 himself notes, 137. On Aristotle's conception of the difference between Thales and his predecessors, see Frede 2004, 28-33.

[29] See Lloyd 1964, and Wright 1981, 26, and 1997, 165.

[30] For this interpretation of Empedocles, see Burnet 1892, 228, and Kirk and Raven 1957, 119, 329; but cf. Longrigg 1976, 424-5, Guthrie 1965, 142, n. 2, Wright 1981, 27.

Then again, in his choice of four as the number of his elements, one cannot discount Pythagorean influence.[31]

C11.P15 Now one might again object that to point to such apparent precedents is merely to note that Empedocles' insistence on, and conception of, four elements or principles, as well as his selection of fire, air, water, and earth, is informed by a background of speculation.[32] Aristotle, of all people, so the objection might continue, would have been well placed to appreciate this, and yet, evidently, this does not, in Aristotle's eyes, take away from Empedocles' originality.

C11.P16 This objection, however, begs the question, insofar as it assumes that, as far as Aristotle is concerned, Empedocles'

---

[31] Ross 1924 (I), 138, Guthrie 1965, 141. For Empedocles' Pythagorean background, see Diog. Laert. 8.54-5, with Inwood (2001), 10. Epicharmus may have recognized four elements too, choosing water, earth, breath, and snow, see Ross 1924 (I), 138.

[32] Ross 1924 (I), 138, Guthrie 1965, 141, 142, n. 2; and 1962, 122f., 313. Cf. Wightman 1951, 15.

originality does in fact rest with the identification of four basic and irreducible principles. But this is an assumption that would appear to be undermined immediately by Aristotle himself. For in the very next line after telling us that Empedocles was the first to speak of the four so-called elements, Aristotle points out that Empedocles doesn't use these elements as four, but as two. For he opposes fire to the others, as if earth, water and air were 'of a single nature' (ὡς μιᾷ φύσει, *Metaph.* I.4, 985a33-b1; see also *Gen. corr.* II.3, 330b19). This would seem to indicate that these elements are not, after all, of equal power, at least as far as Aristotle is concerned.[33]

C11.P17 The issue is further complicated by the action, already adverted to above, of the two further principles in Empedocles' physics, Love and Strife (φιλία and νεῖκος). Indeed, just before crediting Empedocles with being the first to speak of the four elements, Aristotle explains how, under the influence of Love, the

---

[33] Burnet 1892 wonders where Aristotle gets this idea, and reiterates that fire "has no preeminence over the rest: all are equal" 231. But see Wright's support for Aristotle's interpretation, 1981, 24-5, and Palmer 2009, 315.

elements combine into a unity, the Sphere (σφαῖρος); and that, under the influence of Strife, they are separated out again (*Metaph*. I.4, 985a23-29, with I.3, 984a9-11). Moreover, elsewhere (*Gen. corr*. I.1, 315a3-19), Aristotle takes it that the elements throw off their differentiae when united by Love in the Sphere—and thereby cease to be.[34] But if the elements can cease to be in the Sphere, and come to be out of it again, then they are not truly eternal, and Empedocles seems to be contradicting himself.[35] In particular, this raises for Aristotle the question as to whether the four elements are indeed genuinely elemental, or whether the Sphere is more fundamental, a question Aristotle admits he cannot answer (*Gen. corr*. I.1, 315a19-25). If that is the case, then the claim that, in Aristotle's eyes, Empedocles' innovation was to insist upon fire,

---

[34] For a defence of Aristotle's interpretation here, see Wright 1981, 35-6, Osborne 1987, 33, 41-4, and esp. Palmer 2009, 289-298. For critique of Aristotle's reading, see Curd 1998, 161f.

[35] See Philoponus, *in De Gen. et Cor.* 19.3-10 (31A41), 20.6-9; see also n. 21 above.

air, water, and earth as four genuine ἀρχαί, equal in power and irreducible to each other or to anything else, seems extremely dubious. For Aristotle evidently does not think that Empedocles uses them as four distinct principles; and, in any case, Empedocles seems to posit a more fundamental principle from which they come to be. If he treats his principles in this way, then it would appear that Empedocles does not yet fully understand what a principle, or element, is (see also *Gen. corr.* I.8, 325b19-25).[36]

C11.S3

III

C11.P18 So what is Aristotle saying, then, when he says that Empedocles is the first to speak of the four so-called elements of bodies? Let's look again at the context, in particular at the preceding discussion. For when he says that Empedocles was the first to speak of four so-called elements, this is actually the second time in the space of a few Bekker lines that Aristotle credits Empedocles with originality (I.4, 985a29-33). His other original contribution, according to Aristotle, is with regard to the recognition of the moving cause,

---

[36] See Longrigg 1967, 3-4 for an attempt to defend Empedocles from the charge.

that is, the cause of moving things, and bringing things together. Now, of course, Aristotle is not saying Empedocles is the first to introduce such a cause. Hesiod was already groping towards such a cause (984b23), and indeed Aristotle says that every thinker before Empedocles touched upon this cause, as well as the material cause (985a10-13). Empedocles is said, rather, to be the first to provide a more advanced version of the moving cause, given that he posited two opposed principles of motion, Love and Strife (985a29-31). Nevertheless, although an improvement on his predecessors, Aristotle criticises Empedocles for an inadequate and inconsistent use of these principles (985a22-23; see also I.8, 989a19-26).

C11.P19 Now the point of looking at what Aristotle says about Empedocles as regards the moving cause is that it may help us understand Aristotle's thinking about the attribution of historical or philosophical priority, and thus what he intends when he says Empedocles is 'first' to speak of this or that; and, thus, what is, and what is not, intended when he says that Empedocles was the first to speak of the four so-called elements. The discussion here is part of Aristotle's enquiry at the beginning of the *Metaphysics* into the extent to which his predecessors recognised the causes of things, in particular the extent to which they recognised the four causes, the

material, formal, moving, and final causes, as set out in his *Physics* (I.3, 983a26-b6; see *Ph.* II.3). This is not intended as an exercise in the history of philosophy for its own sake, but as a way of reaffirming his view that there are four causes, and no more (I.3, 983b5-6, I.5, 986a13, I.7, 988a18-23, b16-18).[37] His concluding statement at the end of Book Alpha is that, indeed, his predecessors did try to seek the causes he identified in the *Physics*, and only these kinds of cause (I.10, 993a11-13). But he adds that they talked about the causes in a vague or confused way (a13; see also 988a22-23)—in his memorable image, like untrained fighters who sometimes land a blow (985a13-15).[38] Indeed, he adds, they don't quite understand what they are saying (985a16, cf. 993a22-24). So in one sense they hit upon all the causes that Aristotle

---

[37] Ross 1924 (I), 128. This is one of the aims of Alpha, but not the only one; see Frede 2004, 12f.

[38] Aristotle even allows that Empedocles and Anaxagoras stumbled, unknowingly as it were, upon the final cause; I.7, 988b8-11.

recognises; but in another sense they failed to grasp any, because they failed to state them clearly (993a13-15, 22-24).

C11.P20 Thus when Aristotle states that Empedocles is the first to offer a more sophisticated account of the moving cause, we ought to understand that Empedocles' notion of the moving cause, while an improvement on his predecessors', is still somewhat ill expressed, and is still some distance from Aristotle's notion (I.8, 989a25-6). Accordingly, then, given this context, and a clearer appreciation of what Aristotle is doing in this part of the *Metaphysics*, when Aristotle names Empedocles as the first to speak of the four so-called elements, we ought presumably to understand the significance of Empedocles' innovation in a similar manner.

C11.P21 The point Aristotle is making, then, is perhaps something like this: Empedocles hits the mark in naming the four so-called elements, but, as Aristotle immediately makes clear, he fails to treat them as proper principles. There is still some distance between Empedocles' grasp of the principles of matter and Aristotle's. Nevertheless, Empedocles is on the right track. He offers a decisive advance upon his predecessors; what is crucial, however, as the context makes clear, is that it is an advance in the

direction of Aristotle's own conception of the principles. For Aristotle has no interest in recording originality or innovation in the history of philosophy *per se*; he is interested rather in the question as to whether one's originality anticipated later theories, in particular, his own. His history of philosophy is a motivated account, marking stages in the development of philosophy towards his own position.

C11.P22 Perhaps the difficulty, then, with assessing Aristotle's claim at 985a32 about the priority of Empedocles with regard to fire, air, water, and earth, is one that arises because we have been looking from the wrong direction. Aristotle says Empedocles was the first, and we naturally look to see what others did, or did not do, before him, to judge the claim for priority or originality, to determine precisely wherein the originality lies. But then we find that the claim for originality is somewhat attenuated: some of his predecessors chose as their principles one or more of fire, air, water and earth; and even the choice of four principles is not an unqualified novelty. And so we might be tempted to say that Aristotle identifies Empedocles as the first to see that fire, air, water, and earth are four genuine principles, equal in power and irreducible to each other or to anything else. But in fact Aristotle

himself blocks this reading. What needs to be emphasised, then, is that Aristotle's account of the history of philosophy is not retrospective but, we might say, prospective; he is looking back from his own position for evidence that his predecessors hit upon any of his four causes (and no further cause). And, tracing the line of inquiry backwards, he finds that the first to speak of fire, air, water, and earth as the material elements of things, the first, that is, to say that everything consists of an organised mixture of fire, air, water, and earth, or the first to come appreciably close to saying something like this, such that we can conjecture that this is what he intended to say, is Empedocles.[39] This is a novelty worth highlighting as a 'first' precisely because it is the earliest anticipation of Aristotle's own view. But it is not yet Aristotle's own view; Empedocles, after all, does not treat fire, air, water, and earth as four genuine elements or principles of matter.

C11.S4

IV

[39] On attending to the intent, rather than the expression, of Empedocles, see *Metaph.* I.4, 985a4-5 (A39), and *Cael.* III.6, 305a1-4 (A43A.).

C11.P23 This, then, is what I suggest Aristotle intends when he says that Empedocles was the first to name fire, air, water, and earth as the material elements of bodies. Now this interpretation is not without consequence for the issue of the reception, and status, of Empedocles' natural philosophy in the 4th century. This is because it is a reading that opens up the possibility that the four elements hypothesis, as understood by Aristotle's contemporaries, is not necessarily a hypothesis that would have been immediately associated with Empedocles.

C11.P24 Consider again what Aristotle is doing when he tells us that Empedocles was the first to speak of the four elements fire, air, water, and earth. As I have argued, he intends to highlight that something approaching his own theory of matter can be traced back to Empedocles, as part of his overall project of reaffirming his own view that there are four, and only four causes. In other words, Aristotle is sharing the fruits of his research into the history of the material cause. Presumably, then, when he is informing his audience of this point, he is telling them something that they might not have been expected to know, namely, that Empedocles was the first to name fire, air, water, and earth as the elements of bodies.

C11.P25 But we might be persuaded to go further, and suggest that it was not well known that Empedocles held the view that fire, air, water, and earth are the four elements of bodies, let alone that he was the first to do so. This, at least, seems to be a plausible reading of the following passage from Aristotle's *Topics*. "One should collect premises from written works," Aristotle writes, and "make marginal notes on the opinions of particular people, for example, that it was Empedocles who said that there are four elements of bodies" (*Top.* I.14, 105b12-18; trans. Smith).[40] The reason why one would make such a note about, say, Empedocles, is that, in an argument over the elements of bodies, one's opponent might concede that there are four, if told that a famous or reputable philosopher, such as Empedocles, had held this view. Empedocles was well known, it seems, but not well read. Aristotle seems to be suggesting that he knows this point about Empedocles because he has access to, and has read, Empedocles' book, and has duly noted it. Aristotle was known, of course, to place, for the time, an

[40] Smith 1997.

unusual emphasis on collecting and reading books.[41] It is notable indeed that, whereas his treatment of Plato's views can often be brief and paraphrastic, he regularly quotes from Empedocles, and other Presocratics, sometimes at some length (e.g., B84 at *Sens*. 2, 437b11f.). As Natali points out, what we might reasonably infer from this is that, whereas Plato's texts were presumably readily available to Aristotle's audience, the work of Empedocles was not.[42]

C11.P26 Now to give this as an example of something that one has read, and might wish to make a note of, for later use in argument, would seem to be a good indication that it was not, after all, common knowledge that Empedocles named fire, air, water, and earth as the four elements of bodies, let alone that he was the first to do so. What we might also infer from the use of this example is

---

[41] Natali 2013, 20, 157.

[42] Natali 2013, 98-9. Indeed, Hussey 1995, 546 suggests that the writings of Empedocles, as well as Parmenides and perhaps Democritus, "probably would have been intended for restricted audiences from the start".

that an argument or debate over the number, and perhaps too the nature, of the elements or constituents of bodies could be won if one pulled out the trump card of Empedocles' authority. This imagined scenario invites the speculation that such disputes were reasonably frequent, and moreover, it seems, were often conducted in ignorance of the view of Empedocles on the matter. After all, Aristotle's point here is about examining written sources in order to strengthen one's arguments; in particular, to find and record persuasive nuggets of information of which one's opponent can be expected to be unaware.

C11.P27 Admittedly this may seem quite a lot to hang on one example. But perhaps there is some corroborating evidence in the Hippocratic treatise *The Nature of Man*, credited to Polybus, and written perhaps in the last decades of the 5th century.[43] For there is clear reference here to public disputations over the constituents of bodies, particularly the human body, that were going on at the

[43] For Polybus' authorship, see Aristotle, *Hist. an.* III. 3, 512a12–513a7; for date of the *Nature of Man*, see Craik 2015, 212.

time.[44] Moreover, it seems the protagonists in these disputations apparently did not invoke the authority of Empedocles, at least not explicitly. Indeed, this point is all the more striking considering, firstly, that all four elements are mentioned in the first chapter, and secondly, Polybus himself will proceed to name as constituents of bodies the four humours (Hipp. *Nat. Hom*. 4.1). Yet no connection is made here between the four humours and the four elements.[45] Polybus is concerned rather with criticizing monists, that is, those who attempt to explain the body in terms of *one* of earth, water, air, and fire. The possibility of a theory that makes more than one of these elements the constituents of body—or all four, as with Empedocles—is not entertained. It is clear, too, that Polybus is referring to monists among his own contemporaries: he is talking

---

[44] Lloyd 1978, 38, Craik 2015, 210.

[45] See Jouanna 2012a, 336, and n. 3 above. Jouanna 2012b does think, however, that the *Nature of Man*'s humoral theory was "indirectly influenced by Empedoclean philosophy" 230. Cf. Rashed 2005, xxxv. Note that the term 'humour' (χυμός) does not actually appear in this treatise.

of people who hold such views *now*, and whose debates one could attend, and not of people who held such things in the past.[46]

C11.P28 Clearly, then, among Polybus' contemporaries, and significantly he makes clear he is not talking of the physicians (*Nat. Hom*. 2.1), there are those who say that water is the sole constituent of the body; others air, or fire, or earth (1.1-2). The four elements are all present and accounted for, but they are not spoken of as a quartet, and Empedocles—without reference to whom one might have thought it difficult to speak, near the end of the 5th century, about fire, air, water, and earth—is absent.[47] Together with the evidence of the *Topics*, this seems to give encouragement to the claim towards which we are moving, namely, that, in

---

[46] Lloyd 1970, 61, Huffman 1993, 294.

[47] Empedocles, of course, is typically thought to be a major background influence on the Hippocratic writings (see Jouanna 1961), but there is only one explicit reference to him, at *On Ancient Medicine* 20, and this is a brief and rather hostile dismissal of the sort of 'philosophical medicine' that he and others espouse.

Aristotle's time, while the four elements hypothesis is well known, its origin with Empedocles is not, nor even the specific views of Empedocles on the elements. With this in hand, let's look again at Aristotle's remark at 985a32, to see if we seem to find support for this claim.

C11.S5

V

C11.P29 Let's start by drawing attention to what is perhaps the least contentious point that emerges from Aristotle's remark about Empedocles at 985a32. It is this: the remark minimally implies that others, after Empedocles, also say that fire, air, water, and earth are the elements or constituents of things. This, after all, is generally what we intend when we recognise someone to be the first to do or say something. For, obviously, to be identified as the first to do or say something, it is necessary that there be others who come after, who do or say more or less the same thing. So there were others, presumably, who came after Empedocles, who also spoke about what Empedocles was the first to speak about, namely, the four elements fire, air, water, and earth. As he puts it at *De Generatione et Corruptione* II.7, there are "those who speak as Empedocles

does" (334a26-7), that is, about the elemental composition of bodies.

C11.P30 Moreover, it would seem clear that, unlike Empedocles, these people actually did use the term στοιχεῖα with reference to fire, air, water, and earth. In fact, the very phrase that Aristotle uses here, τὰ ὡς ἐν ὕλης εἴδει λεγόμενα στοιχεῖα τέτταρα, "the four so-called elements of the material kind" would seem itself clearly to point towards this conclusion. If fire, air, water, and earth are τὰ λεγόμενα στοιχεῖα, the 'so-called elements', or 'the things that are called στοιχεῖα', then the very least we can infer from this is that there are people who call these things στοιχεῖα. Whatever further significance Aristotle's use of this phrase may have, and, as we shall note in a moment, commentators have often invested in it a great deal of significance, his use of the phrase τὰ λεγόμενα στοιχεῖα at 985a32 confirms this much at least; that Empedocles spoke of things that later came to be called, by some people, στοιχεῖα, and indeed are presumably still called, by some people, presumably contemporaries of Aristotle, στοιχεῖα. But who are these people? By whom are fire, air, water, and earth called the στοιχεῖα?

C11.P31 The temptation to say that they must be self-professed followers of Empedocles ought, I think, to be resisted.[48] For if it were only 'neo-Empedocleans', those who took themselves to be followers of Empedocles, and were known to be so, that identified such things as fire, air, water, and earth as elements or principles, then this fact, that Empedocles was the first to say such things are elements, or principles, would hardly need pointing out. In fact, it would render the remark rather trivial, as Aristotle would be saying that Empedocles was the first to name as elements of bodies the things that his followers call elements. This tells us little.

C11.P32 Compare the use of the similar phrase τὰ καλούμενα στοιχεῖα near the beginning of *Physics* I.4, where Aristotle is distinguishing the doctrines of Anaxagoras and Empedocles. They

---

[48] Aristotle refers to "followers of Empedocles" (οἱ περὶ Ἐμπεδοκλέα) at *Cael.* III.7, 305b1, and *Gen. et corr.* I.1, 314a21. Rashed 2005, takes Aristotle to be thinking of followers of Empedocles throughout the *De Generatione et Corruptione*; see xxxv, and his explanation of τὰ καλούμενα στοιχεῖα, at 129.

are similar, he says, insofar as they both separate things out from a mixture (μῖγμα), but whereas the former separates out an infinite number of things, Empedocles separates out "only the so-called elements" (τὰ καλούμενα στοιχεῖα μόνον, 187a20-26). Now if τὰ καλούμενα στοιχεῖα were to be completed as "by Empedocles' followers", then what Aristotle would appear to be saying at *Physics* I.4 is: "Empedocles separates out only the things that Empedocles' followers call 'elements"'. This in the context would be a peculiarly uninformative claim to make, as it would leave one at a loss to specify precisely *what* Empedocles separates out from the mixture, and why his doctrine differs from that of Anaxagoras on this point—unless one knows already what it is that Empedocles, and his followers, identify as the elements.

C11.P33 On the other hand, if one does not already know what Empedocles identifies as the elements, but one does know to what Aristotle is referring by the phrase τὰ καλούμενα στοιχεῖα, then one will learn from this passage what Empedocles identifies as his elements or principles. This, indeed, seems to me to be the function of Aristotle's use of the phrase τὰ καλούμενα, or λεγόμενα, στοιχεῖα. It would be no good, for instance, to say "Empedocles

separates out the στοιχεῖα", nor, indeed, to say "Empedocles was the first to speak of the four στοιχεῖα", that is, without qualifying στοιχεῖα with the participles καλούμενος or λεγόμενος. This is because it would be too vague. For it appears that Aristotle's contemporaries used the term στοιχεῖον for a whole range of entities other than fire, air, water, and earth, incorporeal as well as corporeal. There is, for instance, some evidence in Aristotle that the Platonists call their incorporeal principles στοιχεῖα (*Metaph.* XIV.1, 1087b9-10, b12-13; cf. XIII.6, 1080b6-7, XIII.7, 1081b32, XIV.3, 1091a9-10). And in his definition of στοιχεῖον at *Metaphysics* Delta, Aristotle notes that the most universal things, for instance, the genera, are called στοιχεῖα (στοιχεῖα τὰ γένη λέγουσί τινες, 1014b10-11).[49] Aristotle himself is often rather catholic in his use of the term στοιχεῖον with reference to the material principles of his predecessors. He uses στοιχεῖα, for

---

[49] Here it is usually thought that Aristotle has in mind Plato, or Platonists, and Pythagoreans; Ross 1924 (I), 295. Cf. *Metaph.* I.5, 986a1; III. 3, 998b9-11; VII.2, 1028b25-8; XII.1, 1069a26-28.

instance, for Anaxagoras' principles (τὰ γὰρ ὁμοιομερῆ στοιχεῖα, *Cael.* III.3, 302a31, III.4, 302b13; cf. also *Metaph.* I.8, 989a31f.), and also the atoms of Democritus (see, e.g., *Gen. et corr.* I.1, 314a18-20, *Ph.* III.4, 203a20, *De an.* I.2, 404a4-5; cf. also *Metaph.* I.4, 985b5). Even when speaking of Empedocles, he on occasion refers to Love and Strife as στοιχεῖα (e.g., *Metaph.* XIV.4, 1091b12, and *De an.* I.5, 410b6).

C11.P34 When Aristotle uses the phrase τὰ καλούμενα or τὰ λεγόμενα στοιχεῖα, however, he always has a particular set of corporeal elements in mind, and these are fire, air, water, and earth. Aristotle's aim or intention when using the phrase, presumably, is to underline that what he is talking about, when he uses the phrase, are the things commonly called 'elements', namely, fire, air, water, and earth. Clearly Aristotle's use of this phrase, then, ought to be recognised as an excellent resource when discussing the reception of the four elements theory in the work of Aristotle and his contemporaries. But it seems to me that the potential usefulness of this resource has been obscured by the prevalence of the view that Aristotle is using the participle λεγόμενος, or καλούμενος, to signal misuse of the term qualified,

i.e., στοιχεῖα. In other words, there is a widespread assumption that the participle carries a negative or sceptical connotation, corresponding somewhat to the attributive use of the English participial adjective 'so-called'.[50] Thus fire, air, water, and earth are *merely* 'so-called' elements, as opposed to genuine elements.[51]

---

[50] Something is a 'so-called *x*' in the attributive use when it is "called or designated by this name or term, but not properly entitled to it or correctly described by it", OED, s.v., 'so-called'.

[51] This is by far the most common explanation of Aristotle's use of the phrase τὰ καλούμενα στοιχεῖα. Explicit commitment to this explanation can be found in Burnet 1892, 230, n. 3; Diels 1899, 25; Joachim 1922, 137; Ross 1936, 484; Düring 1943, 124; Kahn 1960, 120; Sokolowski 1970, 269f.; Williams 1982, 152; Graham 1987, 476, n. 5, and 2006, 39; Longrigg 1993, 151; Crubellier 2000, 142; and Rashed 2005, 152-3.

C11.P35 But this presumption reveals a far too narrow conception of the kinds of things the participle καλούμενος is capable of doing when it qualifies a term. For, just as the English participial adjective 'so-called' need not always be used to indicate impropriety, so also this is not the only function that the participle καλούμενος performs—if indeed it ever does perform it. And in fact it is not at all clear that καλούμενος does perform this function; certainly it is difficult to discover precedents for the understanding of the participle καλούμενος that the prevailing explanation of τὰ καλούμενα στοιχεῖα requires.[52]

C11.P36 It seems to make more sense, then, to think that the phrase τὰ καλούμενα στοιχεῖα is being used here, at *Physics* I.4, because Aristotle is confident that, when he uses this phrase, his audience will immediately know just what it is that Empedocles separates out from the mixture. For Aristotle, I suggest, uses the phrase τὰ καλούμενα στοιχεῖα (and τὰ λεγόμενα στοιχεῖα) as a way of fixing the reference to the four elements of bodies, fire,

---

[52] For further discussion, see Crowley 2008, esp. 233-240.

air, water, and earth. But for this to be the case, the 'so-called elements' must be the things that are quite generally called 'elements', regardless of whether or not Empedocles, or anyone else, chooses them as his elements. It might seem reasonable to infer, then, from Aristotle's statement at 985a32, that such things as fire, air, water, and earth have become, by Aristotle's time, the sort of things that are often or frequently identified as the elements and principles of things. And, indeed, the view that fire, air, water, and earth are the material constituents of things would appear to be already fairly common by Plato's time.

C11.P37 Take what Plato says in the *Timaeus*, for instance. Plato has the main spokesman of the dialogue, Timaeus, criticise the view that fire, air, water, and earth are the most basic constituents of things, because they can be further analysed into more fundamental elements or στοιχεῖα (48b-c). Now presumably the reason why Plato is eager to criticise this view is that it is a common or popular view, perhaps the most popular view, regarding the material constituents of the world that is to be found among his own

contemporaries.[53] For the most significant feature of the *Timaeus* passage, for our present purposes, is that it seems these four elements are commonly or popularly called ἀρχαί and στοιχεῖα. Indeed, what irks Timaeus here is precisely that people tend to call fire, air, water, and earth the ἀρχαί and στοιχεῖα of everything. Timaeus will agree that fire, air, water, and earth are constituents of bodies, but he wants to deny that they deserve to be called the ultimate or most elemental constituents, the στοιχεῖα, of bodies.[54]

---

[53] Cf. *Ti*. 49b. Further evidence in Plato's works that fire, air, water, and earth are popularly regarded as the material constituents of things is available at *Phlb.* 29a, *Crat.* 408d, *Prt.* 320d. See also Hershbell 1974, 154, and Crowley 2005, 278f.

[54] It is often held that Plato himself introduced the term στοιχεῖον in the sense of 'element' (Diels 1899, 17; Burkert 1959, 174-6); if that is so, then Plato cannot be saying that some people call fire, air, water, and earth στοιχεῖα. But see Crowley 2005.

What is at issue, in other words, has to do with contemporary usage of the terms ἀρχαί and στοιχεῖα.[55]

C11.P38 What Aristotle seems to be saying, then, at 985a32, is that Empedocles was the first to say something that is now, in Aristotle's time, fairly common, that is, that fire, air, water, and earth are the στοιχεῖα, the material constituents of bodies. But, in acknowledging this, and keeping the *Topics* evidence in mind, we need to be very cautious about concluding that it is the four elements theory of Empedocles, or the 'Empedoclean theory of elements', that has evidently become a familiar or popular natural philosophy in 4th c. Athens. That is, the identification of Empedocles as the first to say that there are four elements, and that these are fire, air, water, and earth, hardly seems sufficient to commit everyone else who says this to the Empedoclean theory of elements. To put it in a nutshell: To say that someone was the first to name *x*, *y*, and *z* '*F*' certainly implies that others, who came

---

[55] I disagree with Burkert 1959, 176, then, who does not think that *Ti*. 48b is of relevance for the question of the usage of στοιχεῖον.

later, also said that the *x*, *y*, and *z* are *F;* but it does not follow that these others necessarily share or agree with the original conception either of *x*, *y*, and *z*, or of the way in which *x*, *y*, and *z* are *F*. It does not follow, in other words, that those who hold that fire, air, water, and earth are the material constituents of things share, or would share, if they were to become aware of it, Empedocles' conception of the nature of fire, air, water, and earth.

C11.P39 Consider again, for instance, how, as we noted above, immediately after crediting Empedocles with the introduction of the four so-called elements, Aristotle points out that Empedocles doesn't use the elements as four, but opposes fire to the others, as if there were just two elements (*Metaph.* I.4, 985a33-b1). If indeed it is common among some of Aristotle's contemporaries to speak of fire, air, water, and earth as the elements of things, it might seem a reasonable conjecture, then, that Empedocles' use of the four elements differs in this respect to the common conception. For Aristotle is saying, in effect, that Empedocles is the first to speak of the four so-called elements, but, he adds immediately, he doesn't speak of them in the way we might expect, or, perhaps, in the way that people who speak of these things use them today, because he opposes three of them, as if they were one, to the

fourth. Aristotle's repetition of this point at *De Generatione et Corruptione* II.3 adds support to this conjecture (330b19-21). For here he says that *some* (ἔνιοι) say that there are four elements, for instance, Empedocles; but he then specifies that Empedocles alone reduces them to two, setting fire against the others.

C11.S6

VI

C11.P40 One must be wary, then, of inferring that, if there are people who say that fire, air, water, and earth are the constituents of things, and who duly call these things ἀρχαί and στοιχεῖα, then these people, while not consciously following Empedocles, are, after all, without realising it, following Empedocles. Aristotle's purpose, when he credits Empedocles as the first to speak of the four so-called elements, is not to reveal to people, who now speak of the four so-called elements, that they thereby hold a theory that is rightly to be credited to Empedocles, and as such they are, without realising it, really Empedocleans. On the contrary, it seems plausible, from what Aristotle says, to think that there is a theory, or hypothesis, that fire, air, water, and earth are the elements of bodies; and this theory of the four elements, which seems to be a common or popular theory already by the time Plato wrote the *Timaeus*, is

similar to, but somewhat independent of, the Empedoclean natural philosophy.

C11.P41 Now one might well object that, if we look again at Plato's *Timaeus*, then surely we must concede that this work is heavily influenced by Empedocles;[56] and that, if Plato has a target when he criticises the elemental status of fire, air, water, and earth, one would most naturally assume that the target is, in fact, Empedocles.[57] But, in general, the fact is that in the *Timaeus* we find no explicit reference to Empedocles or his writings; no

---

[56] For Taylor 1928, the *Timaeus* is Plato's attempt to graft Empedoclean biology and medicine onto Pythagorean mathematics; see also Taylor 1926, 436. Cf. Cornford 1935, v-x, for rejection of Taylor's interpretation. Cornford, however, like many others, maintains that Empedocles is a continuous presence in the *Timaeus*; see also Guthrie, 1965, vol. 2, 237-8, O'Brien 1969, 144-5, Gregory 2000, 37-9, and 2008, xvi, xviii, 137.

[57] See, for instance, Vlastos 1975, 68, Zeyl 2000, 37, n. 51, Polito 2013, 128 131. Cf. Taylor 1926, 436, n. 1.

quotations, not even paraphrases, are in evidence; and stylistic or verbal echoes of Empedocles cannot be affirmed with any certainty.[58] Certainly, we might readily concede, Plato does have a view in mind that can be traced back to Empedocles; for, as Aristotle tells us, Empedocles is the first to speak of the four so-called elements. And perhaps Plato himself is aware that it is, ultimately, a view that can be traced to Empedocles.[59] But it seems

---

[58] See Hershbell 1974, 146, 151, 165. Hershbell's deflationary discussion of the question of Empedocles' influence on the *Timaeus* remains valuable. Cf. also Kingsley 1995, who, while insisting that Plato knew Empedocles' work very well (114), nevertheless admits that establishing Plato's "direct indebtedness" to Empedocles is "far from simple or straightforward", 142; and Johansen 2004, 5.

[59] There is no question, of course, about Plato's general awareness of Empedocles, and his doctrines; see, e.g., *Meno* 76c (A92), *Tht*. 152e (the only two occasions where Plato mentions Empedocles by name), *Phd*. 96a-b (A76), *Grg*. 493a, *Soph*. 242c-e (A29). Aristophanes' speech at *Symp*.

to me that there is an important sense in which it may be going beyond the evidence, indeed misleading, to say, for instance, that when Plato criticises the view that fire, air, water, and earth are the elements and principles in the *Timaeus*, he must have specifically Empedocles, or even Empedocleans, in mind. If this is a view that is, as it were, 'in the air', then it is not necessary to conclude that Plato is directly attacking Empedocles.[60] Again, the reason why Plato's character Timaeus attacks this four elements theory is presumably because it is a popular view that he regards as mistaken.

189c-193d is often thought to be based on, indeed a parody of, Empedocles; see, e.g., O'Brien 1969, 227-9; but see also Guthrie 1965, 205, n. 2, and esp. Allen 1991, 31, n. 52.

[60] As Hershbell 1974 points out, "the discussion of the four elements in the *Timaeus* is in a language and conceptual scheme far removed from that of Empedocles' roots … it is possible that Plato is drawing on [a] common tradition, and not directly on Empedocles at all," 153-4.

C11.P42 A similar point, perhaps, may be made for the critique of the natural philosophy that underlies the atheist thesis in Book X of the *Laws*. On the face of it, it may seem that Plato, or his spokesman, the Athenian, must have had Empedocles in mind, for he outlines a physics based on fire, air, water, and earth, which, together with nature and chance, is said to be sufficient to explain all things—the earth and the heavenly bodies, and all plant and animal life (889b-c).[61] But, despite the foundation of this argument on the four elements, it is even less certain, indeed unlikely, that Plato is attacking Empedocles here. What Plato is attacking, rather, is a concoction of different views, or perhaps something like a "climate of opinion".[62] Or indeed the critique might be taken as

---

[61] For Taylor 1928, 19, in *Laws* X "Empedocles more than anyone else is plainly aimed at"; Curd (1998), 159 reckons the theory that the Athenian describes is "probably" that of Empedocles.

[62] Saunders' phrase 1970, 409. Saunders thinks it "almost impossible" to identify a single thinker or school as the target here, likewise Stalley 1983, 168. Mayhew 2008, 79,

evidence of an established atheist movement in contemporary Athens, a group who, of course, to avoid prosecution for impiety, anonymously publish and circulate texts that set out their views.[63] In any case, the *Laws* may well offer further evidence that a four

---

points out that, on the atheist thesis so summarised, fire, air, water, and earth need not even be assumed to be the four basic elements, as they are for Empedocles, and concludes that Plato has no particular figure in mind; see also England 1921, 453. Guthrie 1978 thinks Plato is thinking of the great Sophists and their followers, who were drawing opportunistically from Presocratic natural philosophy, 361-2. Cf. Bury 1967 who takes Plato to be summarising Atomism, n. 1 at 889c. See also Popa 'Elements and their Forms: The Fortunes of a Presocratic Idea', in this volume, for the similar suggestion that certain views regarding the elements may have formed a 'sort of intellectual common currency'.

[63] Sedley 2013 makes a strong case for this last possibility, notably making no reference to Empedocles at all.

elements hypothesis could have been proposed in 4th and late 5th century Athens without it necessarily implicating Empedocles.

C11.S7

VII Conclusion

C11.P43

The four elements hypothesis, the hypothesis that the basic constituents of things are fire, air, water, and earth, proved very successful, and much of this success can be explained by a sense of familiarity. The notion of four divisions of the world was familiar from the poets; and the identity of the elements themselves was familiar from the speculations of preceding thinkers.[64] There was also, of course, an observational or empirical plausibility to the hypothesis.[65] But what I have suggested here is that there is evidence that the hypothesis was so successful that it was held by many who were not in any sense Empedocleans, or followers of Empedocles, or who may well have had little idea that the first thinker to put forward the hypothesis was in fact Empedocles. Indeed, the evidence suggests that we need to separate the question of the reception of the four elements hypothesis from the question

---

[64] See above, s. II.

[65] Wright 1981, 27-8.

of the reception of *Empedocles'* four elements theory. A careful look at what Aristotle, and Plato, has to say about fire, air, water, and earth compels us to accept that it was a common, popular view that fire, air, water, and earth are the elements of all things. When Aristotle says that Empedocles posited the four so-called elements, or that was he was the first to do so, he is not saying, as would be redundant, that Empedocles posited the Empedoclean elements, or was the first to do so. Rather, he clearly intends to point out that the hypothesis that the fundamental constituents of bodies are fire, air, water, and earth, which is a familiar hypothesis in the 4th century, was, as a matter of fact, held by Empedocles, indeed, Empedocles was the first to posit it. Moreover, the priority of Empedocles is worth pointing out, if indeed it is has become relatively common, among a significantly broad selection of Aristotle's contemporaries, to speak of fire, air, water, and earth as the elements or principles; and if, moreover, Empedocles' priority is not well known. But, and this is crucial, once Empedocles' theory is delineated by Aristotle for the benefit of his audience, it appears that it is best understood to be a *version* of a view that was already common or popular by Plato's time, namely, that fire, air, water, and earth are the elements of bodies. For Empedocles'

version is a version that Aristotle rejects; Aristotle, it turns out, will offer his own version.[66]

C11.S8

Bibliography

Allen, R.E. 1991. *The Dialogues of Plato, Vol. II: The Symposium* Translated with Comment. New Haven: Yale University Press.

Arikha, N. 2007. *Passions and Tempers: A History of the Humours*. New York: HarperCollins.

Bala, P. 2007. *Medicine and Medical Policies in India: Social and Historical Perspectives*. Lanham: Lexington Books.

Barnes, J. 1982. *The Presocratic Philosophers*. London: Routledge. 1st ed.1979.

Burkert, W. 1959. "Στοιχεῖον. Eine semasiologische Studie." *Philologus*, 103: 167–97.

Burnet, J. 1892. *Early Greek Philosophy*. 4th edition, 1930, reprint of the 3rd edition, 1920. London: Adam and Charles Black.

Bury, R.G. 1967. *Plato Laws*. Loeb Classical Library. London: Heinemann/Cambridge (Mass.): Harvard University Press.

---

[66] See Crowley 2013 for a fuller defence of this claim.

Chalmers, A. 2016. "Robert Boyle's Corpuscular Chemistry: Atomism before its Time." In *Essays in the Philosophy of Chemistry*, edited by E. Scerri and G. Fisher. Oxford: Oxford University Press.

Cherniss H. 1935. *Aristotle's Criticism of Presocratic Philosophy*. Baltimore: Johns Hopkins Press.

Clericuzio, A. 2000. *Elements, Principles and Corpuscles: A Study of Atomism and Chemistry in the Seventeenth Century. International Archives of the History of ideas, 171*: Dordrecht: Kluwer Academic Publishers.

Cornford, F. M. 1935. *Plato's Cosmology: The Timaeus of Plato*. London: Routledge and Kegan Paul.

Craik, E. M. 2015. *The Hippocratic Corpus: Content and Context*. New York: Routledge.

Crowley, T. J. 2013. "*De Generatione et Corruptione* 2.3: Does Aristotle Identify the Contraries as Elements?". *The Classical Quarterly* 63.1: 161–182.

Crowley, T. J. 2008. "Aristotle's 'So-Called Elements'." *Phronesis* 53.3: 223–42.

Crowley, T. J. 2005. "On the Use of *Stoicheion* in the Sense of 'Element'."*Oxford Studies in Ancient Philosophy* 29:367–94.

Crubellier, M. 2000. "*Metaphysics*Λ 4.". In *Aristotle's* Metaphysics *Lambda*, edited by Michael Frede and David Charles. Oxford: Clarendon Press.

Curd, P. 1998. *The Legacy of Parmenides: Eleatic Monism and Later Presocratic Thought*. Princeton, NJ: Princeton University Press.

Diels, H. 1899. *Elementum*. Leipzig: Teubner.

Düring, I. 1943. *Aristotle's* De Partibus Animalium: *Critical and literary Commentaries*. Göteberg: Elanders Boktyckeri aktiebolag.

England, E.B. 1921 *The Laws of Plato*, 2 vols. Manchester: Manchester University Press.

Frede, M. 2004. "Aristotle's Account of the Origins of Philosophy." *Rhizai* 1: 9–44.

Gallavotti, C. 1975. *Poema fisico e lustrale: Empedocle*. Milan: Mondadori.

Graham, D.W. 2006. *Explaining the Cosmos: The Ionian Tradition of Scientific Philosophy*. Princeton, NJ: Princeton University Press.

Graham, D.W. 1987. "The Paradox of Prime Matter." *Journal for the History of Philosophy* 25: 475–90.

Gregory, A. 2008. *Plato: Timaeus and Critias*. Introduction and Notes by A. Gregory, translated by Robin Waterfield. Oxford: Oxford University Press.

Gregory, A. 2000. *Plato's Philosophy of Science*. London: Duckworth.

Guthrie, W.K.C. 1978. *A History of Greek Philosophy, Volume V: The Later Plato and the Academy*. Cambridge: Cambridge University Press.

Guthrie, W.K.C. 1965. *A History of Greek Philosophy, Volume II: The Presocratic Tradition from Parmenides to Democritus*. Cambridge: Cambridge University Press.

Guthrie, W.K.C. 1962. *A History of Greek Philosophy, Volume I: The Earlier Presocratics and the Pythagoreans*. Cambridge: Cambridge University Press.

Hershbell, J. P. 1974. "Empedoclean Influences on the *Timaeus*." *Phoenix*, 28.2: 145–166.

Huffman, C. 1993. *Philolaus of Croton: Pythagorean and Presocratic*. Cambridge: Cambridge University Press.

Hussey, E. 1995. "Ionian inquiries: on understanding the Presocratic beginnings of science." In *The Greek World*, edited by A. Powell. London: Routledge.

Inwood, B. 2001. *The Poem of Empedocles*. Text and Translation with Introduction. Toronto: University of Toronto Press.

Joachim, H.H 1922. *Aristotle On Coming-to-be and Passing-away* A Revised Text with Introduction and Commentary. Oxford: Clarendon Press.

Johansen, T. K. 2004. *Plato's Natural Philosophy: A Study of the* Timaeus-Critias. Cambridge: Cambridge University Press.

Jouanna, J. 2012. *Greek Medicine From Hippocrates to Galen: Selected Papers*. Edited by P. Van Der Eijk. Leiden: Brill.

Jouanna, J. 2012a. "The Legacy of the Hippocratic Treatise *The Nature of Man*: The Theory of the Four Humours." in Jouanna 2012.

Jouanna, J. 2012b. "At the Roots of Melancholy: Is Greek Medicine Melancholic?" In Jouanna 2012.

Jouanna, J. 1961. "Présence d'Empédocle dans la Collection hippocratique." *Lettres d'Humanité*, 20: 452–63.

Kahn, C. H. 1960. *Anaximander and the Origins of Greek Cosmology*. New York: Columbia University Press.

Kingsley, P. 1995. *Ancient Philosophy, Mystery, and Magic: Empedocles and the Pythagorean Tradition*. Oxford: Clarendon Press.

Kirk, G.S., and J.E. Raven. 1957. *The Presocratic Philosophers: A Critical History with a Selection of Texts*. Cambridge: Cambridge University Press, 1971 reprint with corrections.

Kirk, G.S., and J.E. Raven and M. Schofield. 1983. *The Presocratic Philosophers: A Critical History with a Selection of Texts*. Cambridge: Cambridge University Press, 2nd edition.

Lloyd, G.E.R. 2003. *In the Grip of Disease*. Oxford: Oxford University Press.

Lloyd, G.E.R. 1978. *Hippocratic Writings*. London: Penguin.

Lloyd, G.E.R. 1970. *Early Greek Science: Thales to Aristotle*. New York: Norton.

Lloyd, G.E.R. 1964. "The Hot and the Cold, the Dry and the Wet in Greek Philosophy." *The Journal of Hellenic Studies*, Vol. 84: 92–106.

Longrigg, J. 1993. *Greek Rational Medicine: Philosophy and Medicine from Alcmaeon to the Alexandrians*. London: Routledge.

Longrigg, J. 1976. "The 'Roots of All Things'." *Isis* 67:3: 420–438.

Longrigg, J. 1967. "Roots." *The Classical Review*, New Series Vol. XVII, No. 1: 1–4.

Mayhew, R. 2008. *Plato: Laws* 10. Translation and Commentary. Oxford: Clarendon Press.

Natali, C. 2013. *Aristotle: His Life and School*, edited by D.S. Hutchinson. Princeton, NJ: Princeton University Press.

Nutton, V. 2004. *Ancient Medicine*. London: Routledge.

O'Brien, D. 1969. *Empedocles' Cosmic Cycle*. Cambridge: Cambridge University Press.

Osborne, C. 1987. "Empedocles Recycled." *The Classical Quarterly*, 37: 24–50.

Palmer, J. 2009. *Parmenides and Presocratic Philosophy*. Oxford: Oxford University Press.

Picot, J.-C. 2000. "L'Empédocle magique de P. Kingsley." *Revue de Philosophie Ancienne*,18: 25–86.

Polito, R. 2013. "Asclepiades of Bithynia and Heraclides Ponticus: medical Platonism?" In *Aristotle, Plato and Pythagoreanism in the First Century BC* edited by M. Schofield. Cambridge: Cambridge University Press.

Preus, A. 2015. *Historical Dictionary of Ancient Greek Philosophy*, 2nd edition. New York: Rowman and Littlefield.

Primavesi, O. 2009. "Empedocles: Physical and Mythical Divinity." In *The Oxford Handbook of Presocratic Philosophy* edited by P. Curd & D.W. Graham. Oxford: Oxford University Press.

Rashed, M. 2005. *Aristote De la Génération at la Corruption: Texte et Traduction*. Paris: Les Belles Lettres.

Ross, W. D. 1936. *Aristotle's Physics: A Revised Text with Introduction and Commentary*. Oxford: Clarendon Press.

Ross, W. D. 1924. *Aristotle's Metaphysics: A Revised Text with Introduction and Commentary*, 2 Vols. Oxford: Clarendon Press.

Rossotti, H. 2006. *Chemistry in the Schoolroom: 1806: selections from Mrs. Marcet's 'Conversations on Chemistry'* Bloomington, In: Authorhouse.

Saunders. T.J. 1970. *Plato: The Laws* Translated with an Introduction. London, Penguin.

Sedley, D. 2013. "The Atheist Underground." In *Politeia in Greek and Roman Philosophy* edited by V. Harte and M. Lane. Cambridge: Cambridge University Press.

Sedley, D. 2007. *Creationism and its Critics in Antiquity*. Berkeley and Los Angeles, University of California Press.

Snell, B. 1944. "Die Nachrichten liber die Lehre des Thales und die Anfange der griechischen Philosophic- und Literaturgeschichte." *Philologus* 96: 170–182.

Smith, R. 1997. *Aristotle: Topics I and VIII*. Translated with commentary. Oxford: Clarendon Press.

Sokolowski, R. 1970. "Matter, Elements, and Substance in Aristotle." *Journal of the History of Philosophy*, Vol. 8: 263–288.

Stalley, R.F. 1983. *An Introduction to Plato's Laws*. Oxford: Blackwell.

Taylor, A.E. 1928. *A Commentary on Plato's* Timaeus. Oxford: Clarendon Press.

Taylor, A.E. 1926. *Plato: the Man and his Work*. London: Methuen. 7th ed. 1960.

Vlastos, G. 1975. *Plato's Universe*. Oxford: Clarendon Press.

West, M.L. 1966. *Hesiod*: *Theogony* Edited with prolegomena and commentary. Oxford: Clarendon Press.

Williams, C.J.F. 1982. *Aristotle's De Generatione et Corruptione*. Translated with notes. Oxford: Clarendon Press.

Wightman, W. 1951. *The Growth of Scientific Ideas*. New Haven: Yale University Press.

Wright, M.R. 1997. "Empedocles." In *Routledge History of Philosophy vol. 1: From the Beginning to Plato*, edited by C.C.W. Taylor. London: Routledge.

Wright, M.R. 1981. *Empedocles: The Extant Fragments*. New Haven: Yale University Press.

Zeller, E. 1883. *Outlines of the History of Greek Philosophy*, 13th ed. Revised by W. Nestle, trans. By L.R. Palmer. New York: Meridian Books.

Zeyl, D. J. 2000. *Plato: Timaeus*. Indianapolis: Hackett.