Classical Quarterly **53.2** 327–337 (2003) *Printed in Great Britain*

A TESTIMONY OF ANAXIMENES IN PLATO

No source earlier than Aristotle mentions Anaximenes by name,[1] and for that reason it is sometimes asserted that Plato himself had no acquaintance with Anaximenes.[2] In the twenty-three testimonies given in Diels–Kranz, *Fragmente der Vorsokratiker*, for Anaximenes of Miletus, there is none from a source earlier than Aristotle. Similarly, Kirk in *The Presocratic Philosophers* recognizes no early testimony.[3] Wöhrle's recent edition of Anaximenes (1993), *Anaximenes aus Milet*, while it adds some testimonies, produces no early ones.[4] McCabe's new study, *Plato and his Predecessors* (2000), does not treat Anaximenes.[5] Yet there is an important allusion to Anaximenes in Plato, one that embodies an interesting perspective on the Milesian's theory. Plato's reading is heterodox, but precisely for that reason it is especially valuable, for it is independent of traditional interpretations. Indeed, Plato contradicts the received interpretation of Anaximenes, and, by implication, that of early Ionian philosophy—which should provide sufficient reason to take Plato's discussion seriously. Moreover, Plato's discussion presents not just an interesting alternative, but, I shall claim, the correct interpretation of Anaximenes and early Ionian physics.

I. PLATO'S TESTIMONY

In discussing matter and change in the *Timaeus,* Plato calls attention to changes in the elements:

> First, what we have just now called water we observe, as we believe, turning into stones and earth as it is compacted; but then dissolving and being separated, this same thing becomes wind and air, and being ignited, air becomes fire, and being compressed and quenched in turn, fire departs and again assumes the form of air, and again air coming together and being condensed turns into cloud and mist, and from these being felted still more comes flowing water, and from water come earth and stones again, these things thus passing on to one another in a cycle, as it appears, their generation.
>
> Since, then, each of these things never appears the same, which of them can we steadfastly maintain is this determinate thing and not something else, without being embarrassed? None, but by far the safest course to take is to say this concerning such things: whatever we observe always changing from one thing to another, for example fire, we should in every case call not 'this' but 'such as this', or water we should call not 'this' but 'such as this', and we should never speak of anything else as though it had some stability in the realm of things we refer to by using terms like 'this' or 'that' with the aim of picking out something in particular. For such an object

[1] G. Wöhrle, *Anaximenes aus Milet: Die Fragmente zu seiner Lehre* (Stuttgart, 1993), 31.

[2] Thus O. Gigon, *Der Ursprung der griechischen Philosophie* (Basel, 1968^2), 43: 'Die entscheidende Tatsache ist, dass zur Zeit Platons von keinem der drei Milesier mehr Schriften bekannt waren. Das darf man daraus schliessen, das Platon von ihnen überhaupt nur Thales kennt . . .'

[3] G. S. Kirk, in G. S. Kirk, J. E. Raven, and M. Schofield, *The Presocratic Philosophers* (Cambridge, 1983^2).

[4] Wöhrle (n. 1) does add four testimonies not in DK: *Turba philosophorum* sermo 2, Simpl. *in Cael.* 202.11ff., Theodoret 4.23, and Sen. *QNat.* 2.17, all relatively late.

[5] M. M. McCabe, *Plato and his Predecessors* (Cambridge, 2000). This book does not claim to be a complete survey, for it deals only with the *Theaetetus*, *Sophist*, *Statesman*, and *Philebus.* But where the author does discuss Plato's views of his Ionian predecessors at *Sophist* 242c–243a, she has nothing to say about the Milesians (see esp. 64–5).

flees, never abiding to receive the designation of the phrase 'this' or 'that',[6] or any such expression that refers to things that stay the same. But we must not use these terms, but for each and every thing, whatever it is like at its particular stage in the cycle, we should refer to it in connection to that quality—especially fire, which is thoroughly a 'such', as well as everything that undergoes generation. (49b7–e7)

Plato initially gives an account of physical changes as they appear to us (first paragraph); then he draws out the philosophical implications (second paragraph). He does not name names in this discussion. But of course the lack of a name is no obstacle to ascribing a doctrine to someone. Indeed, one of the most important discussions of Anaximenes' theory—in Aristotle—is anonymous.[7] There are several reasons for identifying the doctrine presented here with the philosophy of Anaximenes:

1. The list of basic stuffs—which I shall call 'elements' for lack of a more suitable one-word expression[8]—is: fire, air, wind, cloud, water, earth, and stones. Now four of these elements—earth, water, air, fire—appear either in the standard list of Empedocles, or in some other combinations or by themselves. But the conjunction of seven elements does not appear in any other list than that of Anaximenes. Let us compare the list with that given in Simplicius' testimony of Anaximenes, which comes directly from Theophrastus:[9]

Anaximenes, son of Eurystratus, of Miletus, was an associate of Anaximander, who says, like him, that the underlying nature is single and boundless, but not indeterminate as he says, calling it air. It differs in essence in accordance with its rarity or density. When it is thinned it becomes fire, while when it is condensed it becomes wind, then cloud, when still more condensed it becomes water, then earth, then stones. Everything else comes from these. And he too makes motion everlasting, as a result of which change occurs.
(Simpl. *in Phys.* 24.26–25.1 = A5 DK = Theophr. *Phys. Opin.* fr. 2 Diels, Theophr. fr. 226A Fortenbaugh)

The exact same list appears in Hippolytus (*Haer.* 1.7.3 = A7 DK). The only anomaly in Plato's list is 'mist', which, apparently is a mere synonym for cloud or, perhaps, the name we give cloud-stuff found on the surface of the earth. In general, lists of elements are peculiar enough in early Greek philosophy to provide a kind of fingerprint for each theorist.[10] The seven-fold scheme of Plato's matches only that of Anaximenes.

[6] Omitting καὶ τὴν τῷδε with Cornford.

[7] *Ph.* 187a12–16, seen by both Theophrastus and Simplicius as a reference to Anaximenes, Simpl. *in Phys.* 149.28–150.1. (But DK fails to record the Aristotle passage as a testimony, while recognizing Simplicius. By contrast, DK cites Arist. *Mete.* 354a28–32 as a testimony of Anaximenes, A14, although the authors of the view are not named.)

[8] Of course the Greek equivalent, στοιχεῖον, does not appear in the relevant sense until the fourth century B.C. (Eudemus *ap.* Simpl. *in Phys.* 7.10–14), and the term suggests the modern notion of a chemical element—which is fixed throughout chemical changes, like the 'roots' of Empedocles, but not, I shall maintain, like the stuffs of Anaximenes. Notwithstanding the problems, the stuffs of Anaximenes are primitive like elements and otherwise difficult to name.

[9] 149.30–32 is repeated verbatim from 24.29–31 (quoted here following) with only one variant, evidently a quotation by Simplicius.

[10] Thus we find fire, air, and earth in the cosmogony of Anaximander (Pseudo-Plutarch, *Stromateis* 2 = A10 DK); earth and water in Xenophanes' theory (B29, B33 DK); fire, water, and earth in Heraclitus (B31a, B36 DK); light and night in Parmenides (B8.53–61 DK); an uncountably large number in Anaxagoras, but air, aether, and earth are singled out as being especially large in quantity (B1, B2, B4b DK); earth, water, air, and fire in Empedocles (B6,

Now if Plato were the only source repeating Anaximenes' set of elements, we might wonder if it were mere coincidence, even if a very striking one. But a century before Plato wrote, there is evidence for this series. For Anaxagoras gives an account of cosmogony that echoes most of these elements:

> From these things being separated the earth is compacted. For from clouds water is separated, from water earth, and from earth stones are compacted by the cold. These stones move outward more than water. (Anaxagoras B16 DK)

He refers to four of Anaximenes' seven elements, which are ordered, like Anaximenes' elements, in a series of increasing density. Because Anaxagoras has a similar cosmology—and despite the fact that he has a theory of basic matter and a physics of change that are incompatible with those of Anaximenes[11]—he is seen by the doxographical tradition as a student of Anaximenes, even though this is a chronological impossibility.[12] Evidently, Anaximenes' list of elements is unique and characteristic enough to stamp anyone who uses it (or a significant subset of it) as a follower of Anaximenes. But, it might be objected, perhaps Plato is reacting directly to Anaxagoras and only indirectly to Anaximenes. That seems unlikely, based on the context of the Anaxagoras passage: Anaxagoras is giving us a cosmogony, which is inherently a one-time event and a one-way process (especially for Anaxagoras, who does not have a cyclical theory);[13] Anaximenes, like Plato, is discussing elemental change, a repeatable event and a two-way process. Anaxagoras' passage represents an application of a theory of elemental change, including an ordered series of elements, but it does not constitute such a theory. In any case Anaxagoras' account of wind is inconsistent with that of Anaximenes: he holds that 'winds come to be when the air is thinned (λεπτυνομένου) by the sun' (Diog. Laert. 2.9)—rather than thickened or condensed. Thus even if there were a sevenfold scheme in Anaxagoras (which is not found in the extant material), his order of the elements is not the same as Anaximenes'. Accordingly, Plato would have to choose between Anaxagoras' account of wind (stationed between fire and air) and Anaximenes' (stationed between air and cloud), and clearly he follows Anaximenes' order of elements.[14]

B17.18 DK). An innumerable list of phenomena are derived from these, e.g. wind breaking out of clouds causes thunder and lightning (Sen, *QNat.* 2.17), but we should not confuse the complex events (e.g. lightning bolts) and physical objects (anhomoiomerous bodies in Aristotle's terminology) with the simple elements (homoiomerous bodies) which compose them. As Theophrastus puts it, 'Everything else comes from these [sc. elements]' ap. Simpl. *in Phys.* 24.31. The basic stuffs of the cosmos are the final explanantia of everything, meteorological and astronomical events the chief explananda.

[11] Anaxagoras posits changeless elements that alter in appearance (but not in their own nature) by mixture and separation (B17 DK). A vortex motion causes separation of unlike stuffs, including dense and rare (B12 DK). Thus there is not really any compacting or rarefying, but only separation and mixture.

[12] Diog. Laert. 2.6; cf. Hippol. *Haer.* 1.8.1. According to Apollodorus, Anaximenes died during the 63rd Olympiad, 528–25 B.C. (Diog. Laert. 2.3), while Anaxagoras was born during the 70th Olympiad, 500–497 B.C. (Diog. Laert. 2.7). (In his discussion of Anaximenes' influence Wöhrle [n. 1], 31, surprisingly does not mention Anaxagoras B16 DK, though he does note general cosmological parallels.)

[13] As is established by Simpl. *in Phys.* 179.6ff., who locates B16 DK after B15, cf. Hippol. *Haer.* 1.8.2.

[14] In his account of the 'way up' he omits cloud (49c2), and in his account of the 'way down' he omits wind (c4–5); but clearly wind is thicker than air, and presumably thinner than cloud. Although this point should be fairly straightforward, it is complicated by the fact that Hippol. *Haer.* 1.7.7 reads ἀνέμους δὲ γεννᾶσθαι, ὅταν ἐκπεπυκνωμένος ὁ ἀὴρ ἀραιωθεὶς φέρηται,

2. Besides the list of elements itself is the twofold process by which transformation between elements takes place: the original element is 'compacted' (*πηγνύμενον*), 'compressed' (*συγκριθέν*), or 'condensed' (*πυκνούμενον*), on the one hand; and 'dissolved' (*τηκόμενον*) or 'separated' (*διακρινόμενον*) on the other. Plato's somewhat eclectic vocabulary expresses the two opposed processes of condensation and rarefaction, precisely the processes introduced by Anaximenes in his treatment of elemental change. Anaximenes alone seems to account for elemental change in these terms (Theophr. ap. Simpl. *in Phys.* 149.32–150.1), which he illustrates by the famous example of blowing on his hand (Plut. *De prim. frig.* 947F = B1). Now Plato's mention of a process of being 'separated' (*διακρινόμενον*, 49c1) brings in Anaxagoras' terminology,[15] and his reference to air being 'ignited' (*συγκαυθέντα*, c2) and fire being 'quenched' (*κατασβεσθέν*, c3) recalls Heraclitus' terminology,[16] so that we cannot say his account is purely Anaximenean. Nevertheless, the main causal mechanism he invokes is that invented by Anaximenes, rarefaction and condensation (and used as only a secondary mechanism by Anaxagoras),[17] not the aggregation and segregation of Anaxagoras or the perhaps spontaneous combustion of Heraclitus.

3. Finally, at 49c5 Plato talks about cloud and mist being 'felted' (*συμπιλούμενα*), invoking a model that almost certainly originates with Anaximenes. According to ancient sources, in Anaximenes' cosmogony earth was produced from air by felting.[18] In general cloud is produced from air by felting (Hippol. *Haer.* 1.7.3), and the heavens are said to rotate around the earth 'like a felt cap (*πιλίον*)' (*Haer.* 6).[19] As has often been noted, the process of felting provides an apt model for Anaximenes' conception of compacting. When wool is compacted, it is turned into a new fabric with different

which Diels corrects by dropping the *ἐκ-* and changing the final two words to *καὶ ὠσθεὶς φέρηται*. Much has been made of this by J. Klowski, 'Ist der Aer des Anaximenes als eine Substanz konzipiert?' *Hermes* 100 (1972), 131–42, esp. 137–8, following U. Hölscher, 'Anaximander und die Anfänge der Philosophie', *Hermes* 81 (1953), 257–77 at 273–4 and followed by Wöhrle (n. 1), 19–23; but their interpretation starts, I believe, with a misreading of Pseudo-Plutarch *Stromateis* 3 = A6 DK, as I have argued elsewhere (D. W. Graham, 'A new look at Anaximenes', *History of Philosophy Quarterly* 20 [2003], 1–20). One would need strong reasons to abandon Theophrastus in favour of Hippolytus and Pseudo-Plutarch when the latter two depend on the first; a key move in the brief for Hippolytus and Pseudo-Plutarch is an argument from silence: no one before Theophrastus knows of Anaximenes' theory of change (as reported by Theophrastus). But at least Anaxagoras and Melissus, as well as Plato, know of it.

[15] This particular term is first found in Anaxagoras as a quasi-scientific term (B12, B13, B17 DK); the last passage makes clear the image of mixing and separating in which nothing comes to be or perishes. Here Plato seems to be conflating terminology from pre-Parmenidean and post-Parmenidean theories, that is, theories of generation vs. theories of mixture (cf. C. H. Kahn, *Anaximander and the Origins of Greek Cosmology* [New York, 1960], 155). But since he conjoins the term with *τηκόμενον* 'dissolved', a term appropriate to early Ionian thought and found in the Anaximander doxography (Aetius 3.7.1 = A24 DK, with Kahn, 101), he seems unconcerned with the potential distinction. F. M. Cornford, *Plato's Cosmology* (London, 1937), 180 sees Anaximenes as moving towards Anaxagoras: 'Anaximenes . . . took a step towards the doctrine clearly formulated after Parmenides, that qualitative change is reducible to the bringing together or separation in space of a number of unalterable elements.' This, I take it, is precisely what he did not do; instead he made what Aristotle would later call coming to be and perishing the fundamental kinds of change, as Plato recognizes.

[16] See esp. Heraclitus B30 DK.

[17] Apparently only in the realm of meteorology; see n. 15 above.

[18] Pseudo-Plutarch, *Stromateis* 3 = A6.

[19] See P. J. Bicknell, 'Anaximenes' *Πιλίον* simile', *Apeiron* 1 (1966), 17–18 for a suggested reinterpretation of the cap as a circular strip. Whatever the specific apparel referred to, the

properties: felt. The industrial process provides a kind of image of how compression can change things and their properties.

The one thing missing in this account of Anaximenes is a reference to air as the ἀρχή.[20] But if we recognize that Plato's aim here is not to expound Anaximenes' theory *per se*, but only to identify a suitable theory of elemental change, we see that there is no reason for him to discuss which element, if any, is the source. The point is not to define the stuff that everything comes from but to understand how the several elements are related to each other.

These three points of comparison show how Plato has Anaximenes chiefly in mind in his description of elemental processes: he uses a list of elements unique to Anaximenes, he describes their changes in terms of processes characteristically identified by Anaximenes—and explicitly used only by him—and he alludes to a model first and most aptly invoked by Anaximenes. It is true that a thinker such as Anaxagoras can echo Anaximenes by referring to a subset of his elements (in what is a much smaller subset of Anaxagoras' innumerable list of elements), and that other thinkers can appeal to condensation and rarefaction (notably the atomists with a much different background theory of what these processes consist of), and even borrow the model of felting.[21] To be sure, the whole sequence of changes can be taken by Melissus as well as by Plato himself as the product of common-sense observations.[22] And Plato can flourish concepts borrowed haphazardly from other systems. But the overall observations are theory-laden, and the set of doctrines they presuppose forms a unified and coherent theory only in Anaximenes; and it is the original interconnection of all of them that Plato wishes to invoke in his discussion. In fact, commentators on the passage invariably identify Anaximenes as the inspiration of the theory.[23] Consequently we must conclude that Plato's discussion is, if not designed as a commentary on Anaximenes, at least a meditation inspired by *his* theory of elements more than any other. What emerges may be a kind of composite pre-Socratic theory of change, but if so, it is one which is dominated by Anaximenes' elements, causal mechanisms, and models. Surprisingly, Anaximenes, a figure whom Plato never names, emerges as the most interesting and important early theorist of change in his account. In what follows I shall focus on Plato's interpretation of Anaximenes. But Anaximenes may well serve for Plato as the representative of a more expansive view, perhaps a general Ionian theory of elements which he most fully embodies.

II. PLATO'S UNDERSTANDING OF ANAXIMENES

In this section I wish to show that Plato's reading of Anaximenes differs significantly from the traditional reading, and further, to suggest that Plato's reading may be the

peculiar reference to felt headgear seems to guarantee that felt played a significant role in Anaximenes (cf. Kirk et al. [n. 3], 156). If the term 'felted' did subsequently become a synonym for 'compacted' in Greek cosmology, we may reasonably trace its origin to Anaximenes.

[20] An objection raised in discussion by Christopher Taylor.

[21] See DK Wortindex, s.v. πιλεῖν and cognates.

[22] Melissus B8.3 DK on earth and stones coming from water. Kahn (n. 15), 122 stresses Plato's emphasis on common sense in the *Timaeus* passage, but elsewhere (*The Art and Thought of Heraclitus* [Cambridge, 1979], 314, n. 136) he recognizes that Plato's common-sense observations are predicated on Ionian theory.

[23] For example A. E. Taylor, *A Commentary on Plato's Timaeus* (Oxford, 1928), 314–15; Cornford (n. 15), 180; G. Vlastos, *Plato's Universe* (Seattle, 1975), 80, n. 22. Chalcid. *in Tim.* 280, 325 mentions Anaximenes among other ancient theorists without showing any special appreciation of his influence.

right one. First, however, let us turn to the traditional and, I believe, still standard reading of Anaximenes, which will serve as a foil to Plato's reading.

1. The standard interpretation of Anaximenes

The standard interpretation of Anaximenes goes back to Aristotle, who classified him as a Material Monist. According to Material Monism (hereafter MM), all things originate from one single substance, and all return to that substance in the end; but that is not all: the manifold of different things always *are* that one single substance, even when they have different appearances:

> Of the first philosophers, the majority thought the sources of all things were found only in the class of matter. For that of which all existing things consist, and that from which they come to be first and into which they perish last—the substance continuing but changing in its properties—*this*, they say, is the element and source of existing things. Accordingly they do not think anything either comes to be or perishes, inasmuch as this nature is always preserved. . . . For there is a certain nature, either one or more than one, from which everything else comes to be while this is preserved. All, however, do not agree on the number and character of this source. . . . (Arist. *Metaph.* 983b6–20)

Thus, for Anaximenes, all things originate from air and return to air, but even now fire, water, earth, and stones really *are* air. For air is an enduring substratum for all phenomenal things; the accidents may change, but the substratum remains the same. Hence the processes commonly referred to as coming to be and perishing, that is, substantial change, are reduced to alteration, or qualitative change (Arist. *Gen. Corr.* 314a8–11). Thus just as a modern physicist may say that ice, liquid water, and water vapour are all water, for they all consist of H_2O molecules in different states, so the manifold stuffs of experience are, for the advocates of MM, just the ἀρχή, or original stuff, in a certain state.

With the authority of Aristotle, the endorsement of Theophrastus, and the collaboration of the ancient doxographical tradition, this interpretation has, not surprisingly, dominated into the twentieth century, and despite some challenges has remained the standard interpretation.[24] It is accepted and applied to Anaximenes by a number of scholars, and, most forcefully among recent writers, by Jonathan Barnes.[25]

Yet there are grounds for being deeply suspicious of MM. First, while there is good evidence that, for the early Ionians, all things come from the ἀρχή and all things perish into it, this point does not of itself entail that all things always *are* that ἀρχή. That is, the claims that at some time in the past there was only air, and that the cosmos and the

[24] Critics of MM as an interpretation of the pre-Socratics include W. A. Heidel, 'Qualitative change in Presocratic philosophy', *Archiv für Geschichte der Philosophie* 19 (1906), 333–79; H. Cherniss, *Aristotle's Criticism of Presocratic Philosophy* (Baltimore, 1935), 362 ff.; Hölscher (n. 14), 267–8, 273–4; J. B. McDiarmid, 'Theophrastus on the Presocratic causes', *Harvard Studies in Classical Philology* 61 (1953), 85–156; M. C. Stokes, *One and Many in Presocratic Philosophy* (Washington, 1971), ch. 2; J. Klowski, 'Das Entstehen der Begriffe Substanz und Materie', *Archiv für Geschichte der Philosophie* 48 (1966), 2–42.

[25] J. Burnet, *Early Greek Philosophy* (London, 1892/1930[4]), 73–4; C. Bailey, *The Greek Atomists and Epicurus* (Oxford, 1928), 16–18; Cornford (n. 15); W. K. C. Guthrie, *A History of Greek Philosophy* I (Cambridge, 1962), 115–16; G. E. R. Lloyd, *Early Greek Science: Thales to Aristotle* (New York, 1970), 19–20, 21–2; id., *Magic, Reason and Experience* (Cambridge, 1979), 140–1; Kirk (n. 3), 145–6; J. Barnes, *The Early Greek Philosophers*, rev. edn (London, 1979/1982), 38–44. Against Barnes in particular see D. W. Graham, 'Heraclitus' criticism of Ionian philosophy', *Oxford Studies in Ancient Philosophy* 15 (1997), 1–50 at 12–17.

things in it arose from air, do not entail that everything that is now in the cosmos just *is* air.

Second, MM as characterized by Aristotle presupposes a distinction between things and their properties, or, in Aristotle's terms, substances and accidents, for according to MM the apparent elements other than air are just accidental manifestations of air. But such a distinction was not made explicitly until Aristotle wrote his *Categories*.[26] And Aristotle criticized Plato for not making the relevant distinctions (for example, *Metaph.* 1038b34–1039a3). We may observe that even in the century after Anaximenes, Parmenides' light and night are difficult to characterize as either substances or properties, while Anaxagoras seems to treat matter and qualities as categorially similar (B4 DK).

Third, if some of the early Ionians adhere to MM, Parmenides really had no one to attack, or at least no philosophical opponents.[27] The claim that what-is cannot come from what-is-not is otiose because the Ionians, his predecessors, already had assumed this point: what-is is always present insofar as all things are, were, and will be the ἀρχή. Aristotle's invention of matter to block the Eleatic challenge turns out to have been anticipated by the Ionians themselves, who were never really vulnerable to Parmenides' attack. Aristotle may make some advances in detail, but the basic theoretical position needed to answer the Eleatics was always in place. Indeed, if Aristotle is right, there was never any dialectical motivation for the Eleatic challenge.

2. *Plato's account of Anaximenes*

To the extent Plato provides an alternative reading of Anaximenes, he provides a much-needed balance to the Peripatetic reading. For in the absence of some earlier and equally respectable interpretation, Aristotle and his followers have no competition in the realm of ancient authority: they win by virtue of being the only game in town. But Plato is Aristotle's intellectual equal, and is earlier chronologically.[28] What he says should be taken seriously, whether in the end we judge him or his student to be right. What, then, does Plato see in Anaximenes?

Besides describing a cycle of changes that takes place in the first paragraph quoted, Plato infers that the elements pass on 'to one another in a cycle, as it appears, their generation'. One element begets another, which, in turn begets the next in the series. In the next paragraph he draws the radical conclusions for which he is famous: we cannot even refer to the elements before us by demonstratives or indexicals because they do not stand fast: they are always changing into something else. We can only say that they are 'such as this', where the ostensive definition picks out a kind of thing rather than a permanent object. But changeability precludes genuine reference. The problem is that the stuff we point to 'flees' as we indicate it, not remaining the same from moment to moment.

[26] The novelty of Aristotle's ontology of things is argued forcefully in W.-R. Mann, *The Discovery of Things: Aristotle's Categories and their Context* (Princeton, 2000).

[27] Cf. Hölscher (n. 14), 268. Parmenides might be replying to Hesiod and common-sense views, but if non-philosophers are his only targets, he ignores the whole previous philosophical tradition.

[28] In fact, it is too often assumed that Aristotle is always reacting to Plato and never vice versa. The *Timaeus*, whose date of composition is controversial, could have been composed after Aristotle's own invention of matter in *Ph.* 1 and his application of it to the four-cause theory in *Ph.* 2, and to the pre-Socratics in *Metaph.* 2. But even if Aristotle's accounts are earlier, Plato does not accept them.

Now Plato's understanding of Anaximenes' matter seems to preclude anything remaining the same through a transformation. Plato does, to be sure, also use an analogy that might seem to allow for a permanent substratum: the changes are like what would happen if someone were moulding plastic gold continually. The only sure answer to the question, 'What is it?' would be, 'Gold' (*Ti.* 50a–b). But evidently the thing that is to be taken as always present for Plato (corresponding to the gold) is not some stuff, but rather the Receptacle, a space-like field.[29] The matter, or matter-like congeries of qualities, that we give the names of matter to, does not remain. What Plato seems to get out of Anaximenes' account of matter is the impermanence of matter. Air turns into wind, then cloud, then water, then earth, then stones, without air being present throughout the change. When earth is present, air is not, and vice versa. Any stretch of (what we would call) matter that we might point to is undergoing transformations as we speak, so that it provides no secure object of reference.

At this point one may object that this reading of Anaximenes is not really anything new, but simply a hand-me-down Heraclitean interpretation of Anaximenes.[30] A Heraclitean interpreter will see the elements as changeable and miss the stability of the air which is always present. Since we know that Plato is naïvely persuaded by an implausible Heracliteanism apparently derived from a youthful and all too uncritical exposure to the lectures of Cratylus (Arist. *Metaph.* 987a32–b1), we may safely dismiss his reading as just another manifestation of his prejudice. On the contrary, this objection opens up a new line of defence for Plato. Plato's reading may indeed be mediated by Cratylus and whatever Heraclitean school or tradition he represented. But in fact this reading seems to go back beyond Cratylus and his exaggerated interpretation of Heraclitus to the Ephesian philosopher himself. For while Heraclitus worked with a simplified scheme of elements (namely earth, water, fire) (B31a, B36 DK), he seems to have understood the theory of Anaximenes, and indeed to have shared in some of its essentials.[31] Living in proximity to Miletus and probably being a younger contemporary of Anaximenes, he understood the theory of transformation as a neighbour and contemporary. In his version, half of water changes to earth, half to fire, while an equivalent amount of earth and fire turn back into water, maintaining a conservation of matter (B31b DK). But when water has changed to earth, it is no longer water, not to mention fire, but only earth. In his most exact account of interchanges Heraclitus notes that fire is an exchange for all things as gold is for goods and goods for gold (B90 DK). Gold does not turn into goods, but it remains a standard of worth against which they are valued. Indeed, it seems plausible to claim that it is just Anaximenes' theory of elemental transformation that provides the dialectical point of departure for Heraclitus. Given that one's alleged ἀρχή does not continue through a transformation, there is no reason to elevate any one substance to prominence over the others. For substances are not permanent things. They are only stages in a series of transformations. That stuff is most revealing which is least substantial: fire—for by its very nature it is a process, not a thing, and its evanescence undermines the claims of it or any other stuff to be the principle of reality.

[29] *Ti.* 50b–51b, in a series of mixed metaphors.

[30] This seems to be the view of Cornford, who in commenting on the *Timaeus* passage recites the Aristotelian orthodoxy: 'Anaximenes had conceived that all things at all times really are air. Air is the permanent nature; fire is air in a rarefied state . . . ' ([n. 15], 180). Plato was not reporting Anaximenes' real views because 'Plato's position was nearer to that of Heraclitus who *alone* had rejected the notion of a substance underlying change and had taught the complete transformation of every form of body into every other' (178, my italics).

[31] G. Vlastos, 'On Heraclitus', *American Journal of Philology* 76 (1955), 337–68 at 354, 362–7.

Correctly understood, Anaximenes' elements are not things but stages in a series of transformations, phases of an ongoing process. Only Heraclitus appreciates the implications of the theory, and to that extent the reading of Anaximenes is Heraclitean. But Heraclitus would have no criticism to make of Ionian theory if Anaximenes did not portray elemental change as radical change in which the resultant element is not identical to the antecedent one, and indeed shares no essence with it. The new element, in other words, *comes to be* from the old element in such a way that it *is not identical* to that element.[32] This relationship provides the foundation for Heraclitus' rejection of the one-ἀρχή theory in favour of a process philosophy. And Heraclitus' criticism provides the starting-point for Parmenides' criticism of all Ionian theory, including Heraclitus', insofar as it involves radical change, in some sense a coming to be of what-is from what-is-not.

We see, then, that Plato's interpretation, even if it is mediated by Heraclitus and Cratylus—or perhaps because it is—makes philosophical and dialectical sense as a reading of Anaximenes. It shows the Milesian as advancing a theory of basic stuffs that is grounded on the fact that one stuff can change into another if it is compressed or rarefied. In this theory stuffs undergo radical change under the influence of an empirically observable process.

We must note one important feature of Plato's description of elemental change that we have so far ignored: Plato qualifies the whole account by saying 'we observe, as we believe'—all subsequent verbs depend on that phrase and are thus subject to correction, as Vlastos pointed out.[33] By distancing himself from the following account, Plato accomplishes two things: he accepts the plausibility of it as reflecting ordinary observations, and he reserves the right to correct it insofar as it departs from the true account. He thus presents a suggestive theory without endorsing it. Indeed, his own theory will entail that water is not interchangeable with earth,[34] and at least to that extent will contradict the present account. Furthermore, his own account envisages only the four elements postulated by Empedocles. But in a certain sense we find additional grounds for confidence in Plato's report of Anaximenes' theory: Plato is not trying to give us his own account here, but merely a plausible theory that approximates it. He is fully capable of drawing a line between Anaximenes' theory and his own, and here he offers us the former in anticipation of the latter.

3. Plato's account in relation to Aristotle's

Let us turn back to Aristotle's understanding of Anaximenes and Ionian philosophy. Aristotle holds that the ἀρχή is not only the starting point but the material substrate of all other elements. This reading is crucial to his claim in *Metaphysics* A that the pre-Socratics discovered the material cause, but were only dimly and imperfectly aware of the other three Aristotelian causes. In one way his analysis is brilliant: it brings out the kind of explanation that the pre-Socratics were most interested in and most successful at, while revealing a domain in which their approach fell short. But in another way, Aristotle's analysis is transparently self-serving: to show that his predecessors were forerunners of the true philosophy as embodied in Aristotle himself. The material cause he attributes to his predecessors is just the concept of

[32] Cf. Gigon (n. 2), 104.

[33] Vlastos (n. 23), 80, n. 21.

[34] *Ti.* 56d: earth cannot change into other elements insofar as it is composed of incommensurable triangles, 55b–c.

matter put to work as an answer to a why-question.[35] And the concept of matter—one of Aristotle's most important inventions—is deeply Aristotelian.[36] It is the concept of a continuing substratum for substance, one that makes substantial change possible without violating the Eleatic challenge.[37] The Aristotelian concept of matter is, then, not just a concept of some physical stuff—matter in the modern sense—but a concept that already presupposes an articulation of the world into substances and accidents, and substances as metaphysically complex entities, composed of form and matter.

But it is always difficult for us to see things from another historical perspective. Living after Parmenides, Aristotle assumed that the problems that worried his generation had worried all previous generations. If the Ionians said all things arose from an ἀρχή and returned back to it, then they must see the ἀρχή as answering the question, 'What is there?', in such a way that it would show what was always there. The Ionians must be Material Monists, making their one source a unified continuing matter or substrate. In making his analysis Aristotle may be reading into the Ionians a whole set of metaphysical distinctions that did not arise until two centuries later.

The scanty evidence we have seems to indicate that the Milesians were not worried by post-Eleatic concerns. They were satisfied with genetic explanations, and the supposition that everything came from a single source and returned to that by some orderly process met their standards for the unity of explanation. Heraclitus, the one philosopher contemporary enough to understand them, sympathetic enough to take their position seriously, and sophisticated enough to recognize its weaknesses, saw them as proposing radical change while holding to a static ontology. If every element changes into every other, why should one designate air, for example, as the ἀρχή? In his own thought he embraced the former while rejecting the latter. (I take it that Heraclitus' choice of fire as the ἀρχή is ironic: fire is the least substantial, the most kinetic, of elements.) Reacting to Heraclitus and the Ionians, Parmenides rejected radical change while embracing the substantiality.[38]

We may conclude that the interpretations of Plato and Aristotle are both anachronistic. But while the interpretation of Aristotle brings in the Eleatic metaphysics of the fifth century and the sophisticated Academic ontology of the fourth century, Plato's interpretation relies only on Ionian criticisms of the late sixth century. To that extent it has a prima-facie advantage over Aristotle's interpretation.

It is still open to object that Plato's reading is inadequate in various ways. But whatever its inadequacies, it is at least a coherent philosophical reaction to Anaximenes' thought, and hence a testimony as to how an informed reader understood Anaximenes. Why then does it receive no recognition as a testimony? Apparently the Peripatetic interpretation—which became the foundation of the doxographic tradition for the rest of antiquity—became so entrenched by modern times that any alternative interpretation ran the danger of being seen as not an interpretation at all, but just a wilful misappropriation of ancient thought.[39] Plato's testimony could not even be a testimony, for it did not conform to the received pattern of interpretations.

[35] See D. W. Graham, *Aristotle's Two Systems* (Oxford, 1987), ch. 6.

[36] Ibid. ch. 5.

[37] Aristotle's definition of matter identifies it as a substratum for substantial change: *Ph.* 191a31–2. For its application to the Eleatic challenge, see *Ph.* 1.8.

[38] The claim that Heraclitus influenced Parmenides is controversial. It is defended in D. W. Graham, 'Heraclitus and Parmenides', in Victor Caston and Daniel W. Graham (edd.), *Presocratic Philosophy: Essays in Honour of Alexander Mourelatos* (Aldershot, 2002), 27–44.

[39] As is the case with Cornford's interpretation (nn. 15, 30).

The present result can perhaps only count as preliminary, pending a more thorough investigation of early Ionian patterns of explanation. But I believe it is sufficient to cast serious doubt on the received view of Anaximenes' theory of elements in particular and the alleged proponents of Material Monism in general. There is at least another way of viewing their contribution which is incompatible with the Aristotelian account of their theories.

III. CONCLUSION

Because Plato was sympathetic to a Heraclitean point of view, he could see Anaximenes and his fellow Ionians with a minimum of distortion. Or, if his views are distorted, they are distorted through a lens different from Aristotle's—a late Ionian rather than an Eleatic one. Plato's own philosophy embodied a kind of theoretical dualism: a Heraclitean theory of matter in the sensible world, and an Eleatic theory of reality in the world of Forms, that is, an Ionian physics and an Eleatic metaphysics. The Heraclitean strain made it possible for him to appreciate the Ionian perspective on the world in a way Aristotle could not. For Plato, Anaximenes illustrates the mutability of matter. His reading of Anaximenes provides a corrective to that of Aristotle and the relatively monolithic tradition that followed him. Plato's is virtually the only voice from antiquity that speaks out against Peripatetic orthodoxy concerning Milesian physics. It would be well for us to pay heed.[40]

Brigham Young University DANIEL W. GRAHAM
daniel_graham@byu.edu

[40] I read a version of this paper at the 6th Annual Colloquium in Ancient Philosophy at the University of Arizona, Tucson, Arizona, 17 February 2001. I am indebted to the participants for their reactions, in particular to Christopher Taylor, Charles Kahn, and Patricia Curd for discussion, and to Daniel C. Russell for prepared comments.