

Democritus and Secondary Qualities

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Abstract: Democritus is generally understood to have anticipated the seventeenth-century distinction between primary and secondary qualities. I argue that this is not the case, and that instead for Democritus all sensible qualities are conventional.

Democritus is generally understood to have anticipated the seventeenth-century distinction between primary and secondary qualities – to have drawn, in Guthrie’s words, “essentially the distinction whose revival is often credited to Locke, though it is made in the clearest possible terms by Galileo [...]”, and so to have taken “the first step in an age-long controversy”¹. I shall argue that this commonplace reading of Democritus is quite wrong. Although there certainly are affinities between ancient atomism and seventeenth-century mechanistic philosophy, it is not the case that Democritus draws anything like a distinction between primary and secondary qualities. To be sure, there are many different formulations of that primary–secondary distinction, making it hazardous to assert categorically that the distinction is not to be found in Democritus. Still, a full consideration of the relevant evidence makes for a compelling case that this is so. The principles of Democritus’ theory lead him to a very different sort of position, one according to which *all* sensible qualities are conventional.

1. *Reduction*

So far as I can see, there are two principal reasons for ascribing the primary–secondary distinction to Democritus. The first, to be considered in the second section of this paper, comes from Democritus’ distinctive antirealism about secondary qualities, as expressed in the famous fragment concerning sweet and bitter, hot and cold. The second, which I

¹ Guthrie 1965, 502.

will consider first, arises from the general nature of the atomists' reductive project. According not just to Democritus but also to Leucippus and the Epicureans, all the phenomena of nature are to be explained in terms of how atoms of different kinds are distributed in different ways throughout the void. The atoms themselves have no color, sound, heat, flavor, or odor, but are limited to properties of the sort that have come to be called the primary qualities: shape, size, motion, position, solidity, and (perhaps) weight.²

This framework all by itself might look like decisive evidence for a primary–secondary distinction. When one considers the matter carefully, however, it becomes hard to see how the distinction is to be formulated. A natural first attempt would be to say that the ancient atomists reduce the secondary qualities to the primary qualities of atoms. Indeed, Aristotle might seem to be saying just this, when he says that Democritus and others reduce (ἀνάγouσιν) the special objects of sense to the common objects of sense (*De sensu* 442b10–11; T116). But this cannot be literally correct, if Aristotle has in mind a reduction to the qualities of individual atoms, because it is quite clear that individual atoms lack sensible qualities altogether, special or common.³ Thus Sextus describes Democritus as holding that “nothing is by nature sensible, since the atoms, which compose everything, have a nature devoid of every sen-

² For the basic explanatory scheme summarized here, see Aristotle, *Metaph.* I 4, 985b4–20 (67A6/T46a), *GC* I 2, 315b6–15 (67A9/T42a), *On Democritus* [= Simplicius, *Comm. de caelo* 294–95] (68A37/T44a). There is some controversy over how Democritus regards the case of weight. In what follows I will assume that atoms have weight, but nothing of substance rests on the issue. – Quotations generally follow Taylor 1999, with occasional alterations. I cite his numbering scheme as ‘T’ and when available also give the reference to Diels/Kranz 1966.

Hereafter, I will drop the circumlocution ‘... what have come to be called ...’ and refer directly, albeit anachronistically, to the primary and secondary qualities. Although I am arguing that Democritus drew no such distinction, we know what the distinction is supposed to be (at least extensionally) and we can avail ourselves of it for ease of reference.

³ One might try to understand Aristotle as claiming that, for Democritus, proper sensibles are reduced to large-scale and hence perceptible aggregates of atoms. This would suggest that to see a color just is to see a certain atomic pattern, consisting of common sensible qualities. In the next section of the paper I will attempt to undermine this possibility by showing that Democritus is an antirealist about all sensible qualities, primary and secondary. This reading of Aristotle also implies that Democritus' ontology includes not just individual atoms and their properties, but also macro-level properties – that is, features of atomic aggregates. I will take up this difficult question in the paper's final section.

sible quality (πάσης αἰσθητῆς ποιότητος)⁴. Strictly speaking, then, atoms have neither primary nor secondary qualities.

This is, perhaps, an overly fastidious point. For although it is strictly true that the primary–secondary distinction has traditionally been a distinction between *sensible* qualities, we can nevertheless think of each sensible quality as part of a larger class of that kind. The shapes of atoms are not sensible, and so not sensible qualities, but they nevertheless are still shapes, of the same kind as those shapes that are sensible. In contrast, there are no colors at the atomic level, and the same can be said for any secondary quality. Generally speaking, Democritus’ atoms have certain insensible properties of the same kind as each of the sensible primary qualities, and no properties of the same kind as any of the secondary qualities.

This more careful statement of the situation seems accurate, yet it is not clear how it might yield the primary–secondary distinction. Continuing to appealing to reducibility, in particular, does not seem helpful. For although Democritus might well seem to offer a reductive account of the secondary qualities, the same would have to be said about the primary qualities.⁵ All sensible qualities, primary and secondary, are analyzed in terms of the insensible features of atoms. This can be seen from Christopher Taylor’s account of how Democritus marks the primary–secondary distinction. According to Taylor, “this theory describes the perception of any secondary quality as a response, not to the properties of an individual atom, but to a physical stimulus constituted by a continuous bombardment of a series of arrays of atoms”⁶. This is undoubtedly correct, but the ancient atomists might say the very same thing about any sensible property whatsoever. Since none of the properties of individual atoms are perceptible, those properties will necessarily give rise to a perception only in virtue of a continuous bombardment of the sort Taylor describes. Hence what Taylor describes as a special feature of the secondary qualities is in fact a quite general characteristic of all sensible properties.

⁴ Sextus, *Adv. math.* VIII.6; A59/T182a. Many other sources repeat the characterization of the atoms as qualityless. See, for instance, Stobaeus: “Some say that the atoms are all colorless, but that sensible qualities come to be apparent from things that are qualityless but theoretically describable” (A124/T120).

⁵ Here and earlier I have been assuming for the sake of argument that we should think of Democritus as offering a reductive account of sensible qualities. For a dissenting view, see Ganson 1999.

⁶ Taylor 1999, 177.

Now one might think that there is still an important distinction to be drawn here, in the neighborhood of reduction, inasmuch as the primary qualities are explained in terms of qualities of the same kind, whereas the secondary qualities are explained by qualities of a very different kind. But even this is not true, because it turns out that very few sensible qualities, primary or secondary, are given such in-kind explanations. Flavor, of course, is accounted for not in terms of atomic flavors, but in terms of atomic size and shape. But sensible shape is not itself explained in terms of atomic shape. Baseballs, for instance, need not be composed of round atoms; what matters is the *position* of the atoms. Likewise, the solidity of bodies is not explained by the solidity of the atoms,⁷ and the size and weight of bodies cannot be accounted for by atomic size and weight – something very large might be composed of very many small atoms or of fewer large atoms. In fact, the only cases of in-kind reduction are location and motion. A sensible body is located where its atoms are located, and moves in a way determined by how its atoms are moving. But these two cases are obviously not enough to support a primary–secondary distinction.

The only ground that remains, so far as I can see, is the bare fact that atoms have no color, sound, smell, taste, or heat – but do have shape, size, weight, position, motion, number, and solidity. This all by itself, however, does not take us very far. With respect to the latter set of properties, there is nothing very interesting about finding all of these at the atomic level. The elimination of the first set from the atomic level is more interesting, but only slightly so. After all, few have ever supposed that very many of the secondary qualities could be found among the elements. Anaxagoras does seem to have thought that all the sensible qualities could be found in matter, as far down as matter could be divided (that is, infinitely far). But the conventional Greek view, as defended for instance by Empedocles and Aristotle, held that the four elements – earth, air, fire, water – have the basic qualities of hot or cold, wet or dry. The remaining secondary qualities were thought to occur only at the macro level.⁸ In rejecting the four elements in favor of an ac-

⁷ Solidity is instead a function of the density and regularity of an atomic configuration (Theophrastus, *De sensibus* 62; A135/T113).

⁸ For the traditional doctrine of the four elemental qualities in Empedocles and elsewhere, see Guthrie 1965, 138–52. For Anaxagoras, see, e.g., DK 59B4a: “This being so, one should believe that in everything that is combining there are present many things of every sort and seeds of all things having all kinds of shapes and colors and savors.” Aristotle discusses the question of sensible qualities at the

count grounded on shape and size, the atomists certainly were doing something controversial, and anticipated the mechanistic philosophies of the seventeenth century. But insofar as this was controversial at the time, the controversy would have concerned only temperature and moisture, not the other secondary qualities. Moreover, even Democritus' arch-rival Plato accepted the need to eliminate all secondary qualities at the foundational level, remarking in the *Timaeus* (50e-51b) that the basic receptacle must be "invisible and characterless", and then going on to account for bodies in geometrical terms (53c-55c).

I conclude that there is little reason to associate ancient atomism in general with the distinction between primary and secondary qualities.

2. *Convention and Reality*

Among the ancient atomists, Democritus is distinguished by the anti-realism expressed in the famous fragment:

(α) By convention (νόμος) sweet and by convention bitter, by convention hot, by convention cold, by convention color; but in reality (ἔτερον) atoms and void.

It is unclear to what extent Leucippus held views of this sort, and Epicurus is known to have fiercely denied that atomists should maintain any such thing. For Epicurus, atomic theory is compatible with acknowledging the reality of the full range of sensible qualities at the macro level.⁹ Hence it seems especially promising to look for the primary–secondary distinction in Democritus, and to expect to find it in his distinction between what exists in reality and what exists by convention.

Fragment (α) appears in at least four other places, in three distinct forms:

(β) By convention hot, by convention cold, but in reality atoms and void.

(γ) By convention color, by convention sweet, by convention bitter, but in reality atoms and void.

micro level at *De sensu* 6, 445b3–446a20, and argues that one can deny their actual presence there without resorting to atomism. The key move, he thinks, is to recognize that insensible bits of matter are potentially sensible, but not actually so, until combined.

⁹ See Plutarch, *Against Colotes* 8.111 (T206): "So Epicurus is being altogether shameless when he says that he posits the same principles, but does not say that color is by convention, and sweet and bitter and the other qualities." For discussion, see Furley 1993, Sedley 1988.

(δ) By convention there is color, and by convention sweet, and by convention the compound, but in reality atoms and void.¹⁰

Setting aside for now the reference in (δ) to “the compound”, the four passages are in substantial agreement on the beginnings of two lists:

τὰ νόμῳ	τὰ ἔτεῳ
hot, cold	atoms
flavor	void
color	

Plainly, the list of τὰ νόμῳ is not complete – we are meant to supply a tacit ‘*and so forth*’. But how do we fill out the list? It is a notable fact that these and other statements of Democritean antirealism almost always use secondary qualities as their examples of things that exist by convention. It should be equally noteworthy, however, that no one ever attempts a complete list of what belongs on the conventional side, or even comments on the need to fill in the list. Galen, for instance, glosses (γ) as follows: “People think of things as being white and black and sweet and bitter and all the others of this sort, but in truth thing and nothing [that is, atoms and void] is all there is” (A49/T179d). Is it so obvious how to expand the phrase “all the others of this sort” (πάντα τὰ τοιαῦτα)? It seems so to us, having read the early moderns. But those authors had to enumerate with care their lists of secondary qualities. If the full extension of that list was not obvious in the seventeenth century, it surely would not have been obvious to the ancients. Sound, for instance, is never explicitly listed as something that exists by convention. To us it obviously belongs on the list. To an ancient author like Sextus, however, this was a conclusion that had to be drawn out explicitly: “in doing away with every sensible object, Democritus also does away with sound, which seems to be something sensible” (*Adv. Math.* VI.53; T123b). If it seems obvious to us how to complete the list of τὰ νόμῳ, this is only because we read Democritus anachronistically, in light of the seventeenth century.

My suggestion is that Democritus’ list of τὰ νόμῳ should be understood to extend to *all* sensible qualities, secondary and primary. This should not be surprising, because it is what the texts quite consistently

¹⁰ (α) Sextus Empiricus, *Adv. math.* VII.135 (B9/T179a); (β) Diogenes Laertius IX.72 (B117/T179b); (γ) Galen, *On Medical Experience* 15.7 (B125/T179c); Galen, *On the Elements according to Hippocrates* I.2 (A49/T179d); (δ) Plutarch, *Against Colotes* VIII.1110.EF (T206).

seem to say. Galen, for instance, immediately after quoting (γ), reports as follows:

(ε) Democritus thinks that all the sensible qualities are brought into being relative to us who perceive them, by the combination of atoms; but by nature nothing is white or black or yellow or red or bitter or sweet (A49/T179d).

Again the examples are of secondary qualities, but the claim extends generally to “all the sensible qualities” (ἀπάσας τὰς αἰσθητὰς ποιότητας). Sextus gives much the same gloss of (α):

(ζ) In some places Democritus does away with the sensory appearances, and says that none of them appear in reality but only in belief, and that what is real in things is that there are atoms and void. For he says ‘By convention [... = α].’ That is to say, the objects of sense are conventionally considered and believed to exist, but in reality they do not exist, but only atoms and void (B9/T179a).

Here Democritean antirealism is made to extend quite generally to all “sensory experiences” (τὰ φαινόμενα ταῖς αἰσθήσεσι) and to all “the objects of sense” (αἰσθητὰ). But it seems quite clear that the term αἰσθητὰ extends to all sensible qualities, primary and secondary. Hence this passage, and many others like it,¹¹ have to count as strong evidence against finding the primary–secondary distinction in Democritus.

Could all these terms – αἰσθητὰ, φαινόμενα, ποιότητες – refer only to secondary qualities? The only strong reason to think so would be a lingering sense that this is what Democritus means. Now Democritus himself does not use any of these words in the relevant fragments that we possess, so the question is what our secondary sources mean when they use these terms. The prevailing usages, however, tend to point toward a very broad construal of these terms. Commonly, τὰ αἰσθητὰ are contrasted with the objects of intellect (τὰ νοητὰ), so that anything individual – Socrates, my left foot – counts as an object of sense (see, e. g., *Metaph.* III 4, 999b1–4.; *Tim.* 37bc). In *De anima* II.6, Aristotle contrasts these sorts of incidental sense objects (αἰσθητὰ κατὰ συμβεβηκός) with those sense objects that are sensible per se (αἰσθητὰ καθ’ αὐτά) inasmuch as they themselves affect the senses. These last are then divided into the common sensibles (κοινὰ αἰσθητὰ) and the proper sensibles (ἴδια αἰσθητὰ), which correspond to our primary and secondary qualities.¹² In drawing these distinctions, Aristotle seems (quite

¹¹ See Sextus again, *Adv. Math.* VIII.184 (T182c): “Democritus says that no αἰσθητὰ exist, but our apprehensions of them are empty states of the senses, and in the external world there is nothing sweet, bitter, hot, cold, white, black, or anything else that appears to everyone, for these are names for our states.” See also Diogenes’ gloss of β: “Democritus, getting rid of the qualities (ποιότητας), where he says ‘By convention [...]’” (IX.72; B117/T179b).

¹² In Pasnau 2006 I argue that this correspondence is not accidental, and that the distinction between primary and secondary qualities – properly understood – has its roots in this Aristotelian distinction.

characteristically) to be offering a rational reconstruction of the ordinary Greek usage of αἰσθητά. This suggests that we might read that term in any of these three ways, in a given passage. So how are we to understand it here, in connection with Democritus?

Conceivably, Democritean antirealism might extend even to the incidental sensibles, and so encompass all atomic aggregates; I will discuss this possibility in the final section of the paper. But it seems much more plausible for now to take αἰσθητά in a narrower sense, as synonymous with φαινόμενα and ποιότητες, both of which clearly pick out some or all of Aristotle's per se sensibles, or what we call sensible qualities. Now there are passages where τὰ αἰσθητά refers just to the proper sensibles (= secondary qualities). Aristotle, for instance, tells us that it is these that are sensible in the strictest sense (418a25), and accordingly he takes the central topic of his brief treatise on αἰσθητά (*De sensu et sensibilibus*) to be the proper sensibles. But Theophrastus, in his treatise on that topic, pays equal attention to primary qualities such as hard–soft, heavy–light, and rough–smooth (*De sensibus* 61–62, 83). And Sextus himself regularly uses φαινόμενα and ποιότητες to cover the primary qualities. Thus the smoothness of an apple counts as one of its qualities (*Outlines* I.94), and details of shape and motion are numbered among a thing's appearances (*Outlines* I.118–21).

The testimony of Theophrastus' *De sensibus* (A135/T113) is unfortunately less than clear. After raising the question of the nature and character of each of the αἰσθητά, he praises Democritus and Plato for going into the question most fully, and reports that "Plato does not deprive αἰσθητά of their own nature, whereas Democritus makes them all states of sense" (59–60). (This tells us something about the nature of Democritean antirealism, an issue to which I will return.) Theophrastus then goes on to explain how Democritus did not give a uniform account of all αἰσθητά, but explained some by the shape of their atoms, some by the size, and some by atomic order and arrangement. He then illustrates this procedure with the examples of heavy–light and hard–soft (60–62). So far, this all fits perfectly with the account I am proposing. Not only is Democritus said to be an antirealist regarding all αἰσθητά, but we are also told explicitly that at least some primary qualities fall into that class. The trouble comes with what he says next:

(η) None of the other αἰσθητά has any nature of its own, but all are states of a sense that is undergoing the alteration that results in an appearance (63).

This looks to be offered in contrast with the cases of heavy–light and hard–soft, as if Theophrastus is now telling us – contrary to what he had earlier said – that Democritus' antirealism applies only to these further αἰσθητά. Then, after discussing (only) three further αἰσθητά – heat, flavor, and color – he makes a series of criticisms of Democritus' position, focusing in particular on the objection that Democritus should treat all αἰσθητά equally, either in realistic physical terms or as subjective sensory states. Instead, "as it is, he ascribes a nature to hard and soft, heavy and light, which seem to be spoken of no less relatively (πρὸς ἑμᾶς), but none of hot and cold and the rest" (71). It is hard to know how to take all this.¹³ On one hand, Theophrastus would

¹³ Baeumker 1890, 92n-94n, discusses at length the apparent contradictions in Theophrastus' discussion at this point.

have us conclude that Democritus does discriminate (albeit without justification) between two kinds of αἰσθητά. This by itself might go some way toward ascribing to him a primary–secondary distinction – though as always the lists of αἰσθητά are puzzlingly incomplete. But Theophrastus himself undermines the notion that Democritus intends any such a distinction, when he tells us from the start that Democritus intends to treat all αἰσθητά in non-realist terms (59–60, as quoted above). This suggests that Theophrastus’ objection is rooted not in an explicit distinction drawn by Democritus, but in an implicit tension that Theophrastus is doing his best to bring out.

Even if the testimony of Theophrastus could be made to yield some basis for a primary–secondary distinction in Democritus, that evidence would be overwhelmed by a further consideration, strongly attested to in all our sources, including the fragments. Defenders of a primary–secondary distinction seek to cast suspicion on one class of sensory impressions in order to shore up another class. Thus Descartes thinks that we can avoid error in sensation provided we recognize “the wide gap between our knowledge of those features of bodies that we clearly perceive [the primary qualities], [...] and our knowledge of those features that must be referred to the senses [the secondary qualities]” (*Principles of Philosophy* I.69). Democritus, in contrast, seeks to raise doubts about the value of sensation in general. Our best evidence of this comes from Sextus, according to whom “Democritus overthrew all sensible reality” (*Adv. math.* VIII.355; T182d). Elsewhere, Sextus supplies us with a series of important fragments, beginning with (α) and then adding the following (B6–11; T179):

- (θ) In fact we know nothing firm, but what changes according to the condition of the body and of the things that enter it and come up against it.
- (ι) That in reality we do not know what kind of thing each thing is or is not has been shown many times.
- (κ) By this principle man must know that he is removed from reality.
- (λ) This argument too shows that in reality we know nothing about anything, but each person’s opinion is something that flows in.
- (μ) Yet it will be clear that to know what kind of thing each thing is in reality is impossible.
- (ν) There are two forms of judgment, genuine and bastard. To the bastard form belong all these, sight, hearing, smell, taste, touch. The form that is genuine, but separate from this one, is when the bastard form can no longer see in the direction of greater smallness nor hear or smell or taste or perceive by touch other things in the direction of greater fineness.¹⁴

¹⁴ My translation of (ν) follows the construal of Sedley 1992, 40–42. The substance of the passage is not in doubt, on any construal.

Each of these fragments undermines any putative distinction between those sense objects that are objective and those that are subjective. According to these passages, all of sensible reality is subjective, and our alleged knowledge at this level should be rejected across the board. If there were certain αἰσθητά that did belong among τὰ ἐτεῖα, existing objectively, apart from our sensations, then Democritus could hardly insist that we are entirely “removed from reality” (κ), or that the five senses should be wholly rejected as a “bastard” form of judgment (ν). In that case, our senses would at least get some things right, and the key to knowledge would be to distinguish those αἰσθητά that exist by convention from those that exist in reality. There is, however, not the slightest evidence that Democritus wishes to draw any such distinction. For him, all sensible qualities are equally subjective and unreal.

It is not entirely clear whether Democritus’ skepticism is global, or extends only to the immediate dictates of sensation, unrefined by any theoretical judgment.¹⁵ In any case, the evidence is fairly clear that if knowledge is possible at all, this will be so only if we have the ability to grasp the reality that lies beneath the level of appearances. Man “is removed from reality” (κ) because we have no (direct) access to the atomic level. The senses yield only bastard judgments because there is a point at which they “can no longer see anything smaller” (ν). Diogenes Laertius supplies another fragment that makes the same point. Immediately after reporting (β), he quotes Democritus again:

(ε) In reality we know nothing, for truth is in the depths (B117/T179b).

Whether or not Democritus should be taken literally here, as insisting that we have no knowledge even of things at the atomic level, he clearly must be taken as denying that anything at the sensible, macro level can count as knowledge. Nothing at that level can count as knowledge, the passage indicates, because nothing there exists ἐτεῖα, in reality. Democritus’ antirealism therefore extends to all αἰσθητά, secondary and primary. Or, if you like, for Democritus, all αἰσθητά are secondary qualities.

3. *Antirealism*

So far, we have found no support for a primary–secondary distinction either in Democritus’ claims about the character of atoms or in his

¹⁵ For a skeptical reading, see Barnes 1982, 553–64; against that, see McKim 1984; Morel 1996, pt. 2; Salem 1996, 149–86; Taylor 1999, 216–22; and Curd 2001.

claims about the character of sensible qualities. I now want to consider in more detail the nature and scope of Democritean antirealism. Up until now, I have been speaking of *antirealism* in only the most bland sense, as a way of referring to Democritus' claim that, in contrast to the reality of atoms and void, there is something unreal ("conventional") about sensible qualities. It is very far from clear what this antirealism amounts to, and in the end the correct interpretation is probably underdetermined by the evidence. Here I will consider two possible interpretations, one moderate and one radical. Although it is not clear which one is preferable, it is quite clear that neither yields the distinction between primary and secondary qualities.

To understand the nature of Democritean antirealism, it is helpful to begin with his arguments for it. First, there is the argument from sensory variation, attested to by Aristotle (see π below), Theophrastus, and Sextus. According to Sextus,

(o) The philosophy of Democritus is also said to be akin to skepticism, since he appears to make use of the same material as we do; for from the fact that honey appears sweet to some and bitter to others they say that Democritus concludes that it is neither sweet nor bitter, and therefore pronounces the skeptical formula οὐ μᾶλλον (*Outlines of Pyrrhonism* I.213–14; T178a).

As Sextus goes on to explain, this is antirealism rather than skepticism. The claim is not that we do not know whether honey is sweet or bitter, but that it is in fact neither. Since objects appear to have very different sensible qualities to different observers, and since there is no good basis for saying which perceiver gets it right,¹⁶ we should conclude that taste and other αἰσθητά are not in the external world at all, but instead are in the perceiver. We have already seen Theophrastus ascribe this sort of view to Democritus, by describing αἰσθητά as sensory states (η). Theophrastus immediately goes on to offer as "evidence" (σημεῖον) for Democritus' claim the fact that things do not taste the same to all animals: what tastes sweet to us tastes bitter to other animals, and so on for the other αἰσθητά (63). As usual, it is not clear how to complete the list.



¹⁶ Although this premise remains tacit in (o), Democritus elsewhere is made to state it explicitly. Theophrastus, for instance, ascribes to him the premises (i) "that things appear differently to those who have different dispositions, and (ii) that none has more truth than any other" (*De sensibus* 69). Moreover, Aristotle seems to have Democritus in mind as someone who rejected the idea that the perspective of the majority is the true: "they think that the truth should not be determined by the large or small number of those who hold a belief" (*Metaph.* IV 5, 1009b2–3).

But surely the phenomenon of sensory variation offers no support for the thought that Democritus is making a point about secondary qualities. If Berkeley showed anything, he showed that such arguments can readily be extended to all the sensible qualities. And though one might well object to reading Democritus in light of Berkeley, this is no less objectionable than the usual practice of reading him in light of Galileo, Descartes, and Locke.

The argument from sensory variation calls into question the objectivity of sensible qualities, and hence points toward some form of antirealism. It leaves entirely open, however, the exact form of antirealism to be adopted. One might conclude (i) that sensible qualities exist only in the mind (that is, in the body of the perceiver), or (ii) that they do not exist at all, or (iii) that they exist in the world but only in virtue of being perceived. There is at least some evidence for ascribing each of these views to Democritus. At one point, Aristotle suggests the second of these, when he remarks, “Democritus says there is no such thing as color [...]” – but he then immediately spoils that remark by adding that, for Democritus, “things are colored by the position [of their atoms]” (*GC* I 2, 316a1; A123/T49). Elsewhere, Aristotle suggests the third form of antirealism, describing earlier scientists as holding the view that “there is no black or white without sight, nor flavor without tasting” (*De an.* III 2, 426a20–22). This might be read as meaning that sensible qualities exist only in the perceiver, or else that they exist in external bodies, but only when they are perceived to exist. Or it might suggest the more sophisticated view that we now associate with Boyle and Locke, according to which sensible qualities are powers in objects to produce sensations in us. Galen points toward something like this last interpretation in (ε) above, when he says that for Democritus “all the sensible qualities are brought into being relative to us who perceive them, by the combination of atoms.”

None of the passages just quoted expressly maintain the first form of antirealism, according to which sensible qualities exist only in the perceiver. Nevertheless, that interpretation strikes me as the best attested of all, in virtue of the explicit ascription of it to Democritus in Theophrastus’ careful and detailed discussion (see η above).¹⁷

¹⁷ Sextus too, as quoted in note 11 above, describes Democritus as treating the names of sensible qualities as names for our sensory states. Even so, I would not claim that this interpretation can be maintained with too much confidence. Theophrastus, for instance, is hardly consistent. At one point he describes the theory in terms much like Galen’s in (ε): “shape is intrinsic (καθ’ αὐτό), but sweet

Hence, though the details are certainly open to challenge, the view we have arrived at holds that what is real are atoms and the void, as well as the aggregates formed from groups of atoms arranged in patterns. This is not what we perceive, however, which is why the senses yield only bastard judgment (ν). We perceive sensible qualities, but these are mere “states of sense” (η); thus, “none of them appear in reality but only in belief” (ζ). The phenomenon of sensory variation teaches us that such antirealism is the only defensible option. Accordingly “we know nothing firm” (θ), a conclusion that holds because Democritean antirealism extends to all sensible qualities, primary and secondary.

This interpretation allow us to make at least some sense of the passage from Aristotle that indicates Democritus’ commitment to the argument from sensory variation.

(π) Further, to many of the other animals the same things appear opposite from the way they appear to us, and to each individual things do not always seem the same, as far as the senses are concerned. So which of these is true or false is unclear; for this is no more true than that, but they are alike. This is why Democritus said that either nothing is true, or it is unclear to us. And in general because they suppose that intelligence is sensation, and the latter is alteration, they say that what appears to sense is necessarily true. For it is from those assumptions that Empedocles and Democritus and pretty well all the others are committed to such views (*Metaph.* IV 5, 1009b7–17; A112/T177).

Given that Aristotle is our most proximate source for information about Democritus, it is highly desirable to account for this passage. But the described consequences of sensory variation are hard to understand. A first consequence is “that either nothing is true, or it is unclear to us”. Given Democritus’ extensive accounts of the atomic level (attested to by Aristotle himself, in detail), he can scarcely accept the sort of radical antirealism that would hold that *nothing* is true. But if his antirealism extended only to the secondary qualities, it would hardly be even *prima facie* correct to say that nothing is true. So again

and αἰσθητά in general are relative and dependent upon other things (πρὸς ἄλλο καὶ ἐν ἄλλοις)” (Theophrastus, *De sensibus* 69). This most naturally suggests option (iii) from the main text (a view defended in Barnes 1982, 375–76). Elsewhere, Theophrastus seems to ascribe a reductive physicalist account to Democritus: “The first question is whether one should ascribe flavors to states of the senses, or, as Democritus does, to the shapes of which they are composed” (*On the Causes of Plants* VI.1.2; A119/T125).

we are pushed toward the view that the phenomenal level as a whole is unreal, and that reality is “unclear” because imperceptible.¹⁸

The second consequence Aristotle draws is more puzzling still. On the basis of sensory variation, and the further doctrine that “intelligence is sensation, and the latter is alteration”, Democritus is said to conclude that “what appears to sense is necessarily true”. It is very hard to square the first part of this with the rest of what we know about Democritus. According to (v), there is a genuine form of judgment beyond the bastard judgment of the senses. If that is not intelligence, it is hard to see what it could be. Perhaps Democritus here means only that, for ordinary human beings, what counts as intelligence is sensation. Even if that guess is correct, it seems entirely wrong to draw the conclusion that “what appears to sense is necessarily true”. On the contrary, we would expect him to conclude that what appears to sense is necessarily false.¹⁹ Nevertheless, we have quite good evidence that Democritus did draw the former conclusion: Aristotle ascribes it to him again at *GC* 315b8 (T42a), and Philoponus describes a further passage where, again according to Aristotle,

(ρ) Democritus said straight out that truth and appearance are identical, and that there is no difference between the truth and what appears to the senses, but what appears and seems so to each individual is true, as Protagoras also said (*Comm. de an.* 71.25–28; A113/T183a).

Again, the reference to Protagoras seems quite wrong, since Plutarch and Sextus both tell us that Democritus expressly argued against this sort of Protagorean relativism (B156/T178c; A114/T181).

The appearance of conflict disappears, however, once we ascribe to Democritus the correct sort of antirealism. He is not a perfectly general antirealist of the Protagorean sort, who believes that man is the measure of *all things*. Democritean antirealism (on the view being set out now – but see below) applies only to the phenomenal level. Now one form of phenomenal antirealism would hold that there are no phenomenal truths: no color, taste, perceptible size or shape, etc. As we have seen already, however, this is not Democritus’ view. He does not

¹⁸ Taylor 1999, 221, points out that “it is unclear to us” might naturally be taken to mean that it is unclear to us which sensory impression is true. This, he points out, is inconsistent with the previous claim that “this is no more true than that, but they are alike.” Taylor thus concludes, in keeping with my reading here, that “it is unclear” means that *the underlying truth is unclear*.

¹⁹ Thus Taylor 1999, 222, remarks that “it would surely have been less misleading” for him to say that all appearances are false.

eliminate sensible qualities, but identifies them with sensory states (η). So inasmuch as we are interested in the phenomenal level, it is correct to say that the truth is in appearances (ρ). Indeed, we can say further that “what appears to sense is necessarily true” (π). For what appears to sense are the sensible qualities. Since these just are sensory states, there is no way for the senses to be mistaken about them. Hence Democritean antirealism entails sensory infallibility, within the domain of sensible qualities. Obviously, however, this line of argument requires an anti-realism that extends to both primary and secondary qualities.

This interpretation explains many of the key texts. It is, however, a highly unstable view, enough so that we should think hard before ascribing it to him. One source of instability is that the antirealism threatens to extend almost without limit, encompassing everything about which human beings make judgments. Thus Theophrastus criticizes the argument from sensory variation by observing that there are variations in judgment regarding almost everything:

(σ) If there is no nature of the objects of sense because they do not appear the same to everyone, it is clear that there will be no nature of animals or other bodies, for there is not agreement in judgment on those either (70).

Thus, far from being limited to the secondary qualities, it is hard to see how to limit Democritean relativism even to the perceptible qualities. To avoid these sorts of consequences, Democritus needs to stress the objectivity that holds at the level of atoms and atomic aggregates. But considerable danger lies in that direction. As Theophrastus observes, Democritus faces a fundamental difficulty in combining his sensory antirealism with his atomic realism, inasmuch as “he makes $\alpha\iota\sigma\theta\eta\tau\acute{\alpha}$ out to be states of the sense but distinguishes them with respect to their own nature” (61; cf. 71). Democritus wants to distinguish between $\tau\acute{\alpha}$ $\alpha\iota\sigma\theta\eta\tau\acute{\alpha}$ themselves and their physical causes. But if there is a story to be told about what features of the external world cause which sensory impressions, then why not go ahead and *identify* the sensible qualities with those extra-mental features? The problem here is most obvious in the case of the primary qualities: given that atoms take on a certain structure and thereby cause our sensations of shape and size, why not say that those macro atomic structures just are shapes and sizes? But there is no primary–secondary asymmetry here, inasmuch as the very same point might be made about the secondary qualities. Sweet tastes, for instance, result from round atoms that are not too large. So why not go ahead and *identify* sweetness with atoms of that shape and size? (Color physicalists say something analogous today.)

The argument from sensory variation offers no help at this point. Even if we can explain how an aggregate of mostly round atoms causes different sensations in differently constituted observers, there still seems to be an objective fact about which shape predominates in a certain stuff. Sweet things are those that are predominantly round at the atomic level. According to Theophrastus, Democritus himself explains his theory in this way:

(τ) None of the shapes is found pure and unmixed with others, but in everything there is many, and the same things contain smooth, rough, round, sharp, and the rest. The shape that occurs most frequently among the constituents is the one that determines how the thing is perceived and what properties it has, though that also depends on the disposition of whatever observer it comes into contact with (67).

The doctrine carefully leaves room for sensory variation, by allowing that “in everything there is many”²⁰, but nevertheless moves dangerously in the direction of realism with respect to sensible qualities. Since Democritus does not want all-out Protagorean relativism, he seems left with the result that for a given body it will be an objective fact that a certain shape predominates. Such facts point back toward realism regarding sensible qualities.

At this point Democritus seems to need a further argument to support his antirealism. In fact, he does have another line of argument, one based on Eleatic strictures against generation and change. According to Aristotle, both Leucippus and Democritus took as a fundamental premise the doctrine that “many cannot come to be from one nor one from many, but everything is generated by their combination and interlocking” (*De caelo* III 4, 303a5–7 [67A15/T54a]). To say that atomic combinations do not produce something that is truly one implies that no thing that is truly new comes into existence, which would be to say that there is no true generation in such a case. Aristotle elsewhere makes this more explicit:

(υ) From these elements Democritus generates the visible and perceptible bodies [...]. [E]ntanglement makes them touch and be near one another, but does not really generate any single nature from them; for it would be quite absurd for two or more things ever to become one (*On Democritus* [= Simplicius, *Comm. de caelo* 294–95] A37/T44a).²¹

²⁰ There is room for doubt regarding whether Democritus explains sensory variation in terms of the variety of atoms within any sensible thing. Although commentators regularly adopt that reading, Ganson 1998, 76–81, raises some difficulties for this view.

²¹ See also Aristotle, *Metaph.* VII 13, 1039a9–11 (A42/T44b) and *GC* I 8, 325a24–b5 (67A7/T48a). For discussion of the Eleatic influence on atomism, see Curd 1998,

The implication is that all generation and corruption is merely apparent. Now suppose that this line of argument gets extended from substantial change to all forms of change. Once the Eleatic argument is extended this widely, the appearance of change needs some sort of explanation: hence Democritus embraces antirealism at the level of appearances, to defuse the appearance of real change. David Furley takes this to be the fundamental basis of Democritean antirealism:

The reason why Democritus denied the objectivity of sensible properties other than shape, size and weight is to be found in his inheritance from Eleatic philosophy – particularly perhaps the argument of Melissus fr. 8. If we believe, Melissus argued, that there are real distinctions between hard and soft, black and white, it is because our senses tell us so. But the senses also tell us that what is white *becomes* black, and what is soft *becomes* hard. ‘But if there is a change, then what *is* has perished and what *is not* has come to be’ (fr. 8.6). Hence, on the Eleatic principle that what *is not* cannot enter into a rational discussion, change must be eliminated, and therefore also differences of quality.²²

This form of argument applies quite generally to all perceptible qualities. Although Furley would exclude sensible shape, size, and weight, the argument itself allows for no such exceptions. Melissus himself expressly includes the primary quality of solidity, and it seems evident that all the other primary qualities belong here as well. Since there is no becoming, and since everything sensible is in a constant state of becoming, nothing sensible can be allowed to exist in reality.

This Eleatic argument gives Democritus a further way to bolster the distinction between phenomenal antirealism and atomic realism. What is real are the unaffected, unchanging atoms and the void. What is unreal are the changing appearances. But the argument is so powerful that it pushes Democritus toward a form of antirealism much more radical than we have been considering. Just as the argument from sensory variation seemed to extend well beyond sensible qualities (σ), so too does the Eleatic argument. For of course not only do sensible qualities appear to change, but so does everything in nature. Hence if the Eleatic argument gives us reason to deny the reality of sensible qualities, it also seems to give us reason to deny the reality of sensible bodies and all their properties.

At this point we might reconsider Plutarch’s version of the famous fragment, which he takes from the Epicurean philosopher Colotes:

180–216; Guthrie 1965, 389–92; Salem 1996, 43–47; Taylor 1999, 160f.; Wardy 1988.

²² Furley 1993, 93.

(δ) By convention there is color, and by convention sweet, and by convention the compound, but in reality atoms and void.

Comparison with the other fragments (αβγ) makes it doubtful that “compound” (σύγκρισιν) is Democritus’ own word.²³ Even so, we are now in a position to see why it might seem an apt statement of the theory. If we take seriously the Eleatic strictures on becoming, then the list of τὰ νόμῳ would extend not only to the secondary and primary sensible qualities, but to everything composite. Plutarch goes on to make it clear that he understands the fragment in just this way. First, he reports Colotes as offering the criticism that “someone who abides by this theory and applies it would not consider that he is a man or that he is alive” (T206). Then he gives his own account of Democritus:

(φ) Everything consists of the atoms, which he calls “forms”, and there is nothing else. For there is no coming to be from what is not, and nothing could come to be from what is, since, because of their solidity, the atoms neither are affected nor change. Hence no color comes into being from colorless things, nor any nature or soul from things that can neither affect nor be affected (A57/T206).

The passage supports the suggestion that Eleatic principles lie behind Democritean antirealism. But the passage likewise supports the thought that those principles would have pushed Democritus toward a very radical form of antirealism, according to which only what is unaffected and unchangeable exists in reality. That leaves us with atoms and the void.

Is it at all plausible to ascribe to Democritus this sort of radical antirealism, on which all that exists in reality are atoms and the void? These are, of course, exactly the things that Democritus says are real. And though scholars seem to have generally supposed that this is just a partial list of τὰ ἔτερον, it is reasonable to wonder whether Democritus might mean just what he says – that in reality there are atoms and void, *nothing more*. Given that the well-attested Eleatic motivation for the theory clearly yields that result, we should take seriously the possibility of moving away from the more moderate but unstable interpretation first discussed toward this more radical form of antirealism.

Now it might be objected that, if the first theory is unstable, this second theory is positively indefensible. We have seen how moderate Democritean antirealism accounts for the unreal sensible realm in terms of atomic aggregates and sensory states. On this new radical proposal,

²³ Especially since the word seems anachronistic. See Furley 1993, 76n-77n, and Taylor 1999, 151n-52n.

there would be no atomic aggregates. This yields an immediate benefit, in that the theory no longer faces the objection, formulated by Theophrastus, that αἰσθητὰ can be understood objectively in terms of the features of atomic aggregates (see τ above). That complaint applies only to someone whose antirealism goes halfway, rejecting some sorts of composites but accepting others. Radical Democritean antirealism would face no such challenge. Still, this advantages comes at a price. Radical antirealism denies the reality of all atomic aggregates, including sensory states.²⁴ So although there is no danger, on this account, of αἰσθητὰ being understood in objective, external terms, there also seems no prospect for their being understood as Democritus seems to have intended, in subjective, mind-dependent terms.²⁵

The difficulties involved in defending this radical form of antirealism should not be underestimated – but we should be clear about exactly what those difficulties are. The most obvious objection is that radical antirealism would make it pointless or even meaningless for Democritus to discuss at length, as he does, the ways in which atomic aggregates explain various psychological and natural phenomena. This objection can be resisted, however. An antirealist about a given realm of discourse need not conclude that such discourse is literally meaningless, and certainly need not think that such discourse serves no purpose. The discourse might still have meaning *by convention*, for instance, and might have various practical advantages. An account of phenomena in terms of atomic aggregates might, for instance, help to predict future changes in the phenomena, or show us how to bring about changes to the phenomena.²⁶ So even if the atomic aggregates are no more real than various sensory phenomena, we might have reasons to explain the one in terms of the other. The same is true for Democritus' identification of sensible qualities with sensory states (η). Indeed, his principal reason for making that identification – the argument from sensory variation (σπ) – is compatible with radical antirealism. For even if sensory states are themselves unreal, there might still be significant advantages to understanding sensible qualities in such a way as to account for the phenomenon of sensory variation. Moving sensible qualities into the mind would not put them on the side of the real, but it might make for a superior convention.

Even so, one might still think it bad enough that Democritus's reductive accounts no longer come out true, inasmuch as the atomic aggregates he describes are them-

²⁴ “Of course, these [sensory states] too, like everything else, are ascribed to the shapes [of the atoms]” (Theophrastus, *De sensibus* 64).

²⁵ Taylor 1999, 152n, offers this reason for rejecting the radical interpretation, as does O’Keefe 1997, 122. For an extended defense of the radical interpretation, see Wardy 1988. Barnes 1982, 443–47 also favors a radical reading of Democritus, as does Sedley 1988, 298f.

²⁶ Wardy 1988, 144, suggests, in a similar spirit, that such accounts might serve “to engage the attention of possible converts”.

selves merely conventional, not real. We have it from both Sextus and Galen that ἐτεῖν should be understood as meaning *in truth*. Hence to say that only atoms and the void exist ἐτεῖν is to say that only these things exist in truth, which evidently entails that claims about anything beyond the atomic level simply fail to be true. We would say those things by convention, out of custom, but they would strictly all be false.²⁷ This is a consequence the moderate Democritean antirealist must also accept, but only in a limited domain. According to that theory, all claims that extramental objects have sensible qualities are literally false. As implausible as that may seem, at least there are ways of reinterpreting such claims so as to make them come out true. To say that the house is blue, for instance, might be reinterpreted as the true claim that I am having a blue sensation of the house. On the present interpretation, in contrast, there is no way to make any such claims come out true, on any level. Claims about sensible qualities cannot be truly maintained at the level of mental states, because claims about mental states are themselves not true. Hence, on this view, there are strictly speaking no colors, no sounds, no sensible shapes, and so on. We conventionally speak as if such things exist, but they do not. The only true propositions concern the unchanging atoms and their intrinsic, unchanging properties. But if there are no true claims about how these atoms combine to form macro-level aggregates, then there is no way to talk truly about the world we are acquainted with. There would be, in short, no truths about the world on the human scale (except for true negative propositions, like the truth that there are no such truths). And since human beings themselves are of course included in that macro world, there would be no truths about human beings.

The radical antirealist can deny even these consequences, however, at least on one interpretation. To see how this can be so, we need to draw a distinction between two ways of understanding the theory. On any version, the radical antirealist insists that only atoms and void exist. But atoms possess certain qualities, such as size and shape. So size and shape, at the atomic level, are also real. What about location? Here we face a choice. If we allow atoms to have location, then we seem to run up against the Eleatic strictures on becoming. These strictures could be honored in the case of size and shape, because those atomic qualities are immutable. Change in location seems to violate Eleatic principles – so if Democritean antirealism is motivated by such considerations, it must either deny that atoms have location or insist that their location is immutable. Neither of these options seems at all attractive. First, it is hard even to make sense of the idea that atoms lack location entirely. This would make the theory bizarre at its very foundations in a way that seems unacceptable. Second, on either option, it looks as if there is no way at all to explain change – the world would be frozen in place in a way that might have satisfied the Eleatics but that is entirely contrary to the spirit of Democritean atomism.

²⁷ See Sextus at (ζ): “That is to say [glossing α], the objects of sense are conventionally considered and believed to exist, but in reality they do not exist, but only atoms and void”. On the link between *in reality* and *in truth*, see Sextus, *Outlines* I.213–14 (T178a); Galen, *On the Elements* I.2 (A49/T179d).

Hence the very most extreme form of radical Democritean antirealism – according to which atoms either lack location or are immobile – is untenable. Does this undermine the attractiveness of the radical interpretation entirely? Only if there is no way to find room within the Eleatic framework for change in location. Here I will not take up that complex question, but note only that it is not utterly implausible to think that locomotion might be a special kind of change, exempt from the Eleatic strictures on becoming.²⁸ If this exception can be made, then the payoff for radical atomism is considerable. Now we can allow true statements to be made not just about individual atoms, but about atomic aggregates. We would be careful not to speak of the aggregate itself as a thing; instead, we would speak conjunctively, of atom₁ at location x_1y_1 and atom₂ at x_2y_2 and so on. Scrupulously conjunctive descriptions of this sort would not commit us to the existence of aggregates as anything real, but would indicate how the fact of many atoms' being arranged in a certain way explains various macro-level phenomena. Truths about human beings and the like would be truths of this form.

Of course, this sort of antirealism remains radical. Chairs do not exist, and human beings do not exist, and the cosmos does not exist. So far as I can see, there is nothing incoherent about such a view. Whether or not the view should be ascribed to Democritus is another matter. Certainly, there are features of Democritus' view that push him in this direction, especially his endorsement of the Eleatic argument (see ν). Moreover, there were those such as Plutarch, following Colotes (see ϕ), who read Democritus as defending radical antirealism. This reading seems to have been accepted generally by the Epicureans. According to the second-century CE inscription made by Diogenes of Oenoanda,

(χ) Democritus made an error unworthy of himself in saying that only the atoms exist in reality, and everything else by convention. According to your theory, Democritus, we shall be unable, not merely to find out the truth, but even to live, avoiding neither fire nor murder [...] (T209c).

If my account is correct, then Diogenes is within his rights to extend Democritean antirealism to “everything else” beyond atoms (and the void). It is easy to see how one might take this view to have the disturbing consequences that Diogenes lists, even if in fact one could “find out the truth” by describing the atomic level in enough detail, and one could continue “to live” by deciding to carry on with one's conven-

²⁸ For some discussion of this issue, see Wardy 1988. His version of radical antirealism defends the purely Eleatic character of Democritean atomism by arguing that arrangement and location are merely relational (130). This strikes me as unworkable, however, on the grounds that a relational account of arrangement would have to be grounded on intrinsic facts about location. The fact that three atoms are in a row, for instance, can be understood relationally, but in such a case the relation rests on nonrelational facts about one atom's being *here*, another *here*, and a third *here*. Minimally, there has to be *something* about the relata that accounts for their spatial relationships, something that changes as those relationships change. For a more general discussion of the difficulties facing Democritus with respect to the movement of atoms, see Morel 1996, 45–66.

tional behavior despite concluding that it has no basis in reality. So Diogenes exaggerates, which serves as a reminder that (χ) is, after all, an unfriendly attack on Democritus rather than a careful interpretation. Hence we should be cautious in putting too much weight on those sources that push Democritus' views toward the most radical and unpalatable extremes.

As with the moderate interpretation, there are texts both in favor of and against the radical reading. Most notably, if we read Democritus as a radical antirealist, it becomes impossible to take literally the claim, due to Aristotle in ($\pi\rho$), that the truth is in appearances. Balanced against this cost is the advantage that the position fits well with many of Democritus' more skeptical pronouncements (θ - ν). For instance, it is hard to see why a moderate antirealist would say that "to know what kind of thing each thing is in reality is impossible" (μ). After all, the whole point of Democritus' philosophy would seem to consist in showing us the reality that underlies appearances. If, however, we accept the radical claim that nothing exists in truth except for atoms and the void, then knowledge will be impossible inasmuch as the only truths to be had will be enormously complex conjunctive statements (and also because there would be no beliefs or believers). This in turn suggests a rather different reading of the perplexing saying, also due to Aristotle, that "either nothing is true, or it is unclear to us" (π). On the present account, it would be very nearly the case that nothing is true, inasmuch as all of our familiar claims about mid-sized objects turn out to be false. As for those remaining truths, at the atomic level, they would indeed be unclear, to the point of being unknowable.²⁹ There would be truths to be known at this level, but they would be so hidden and complex as to be largely inaccessible.

Unfortunately, much the same might be said for the philosophy of Democritus. Given the poverty of our textual sources, and the complexity of those testimonies that have survived, there seems no basis for real confidence in any one interpretation of Democritean antirealism. But it is possible to say with some confidence that our sources offer almost no support for the idea that Democritus was a forerunner of the distinction between primary and secondary qualities.³⁰

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²⁹ This is akin to how Barnes 1982 reads this passage (557) – though he understands the basis of the skepticism very differently. Compare Cicero, *Academica* I.12.44 (T184a): "truth is sunk in the depths [cf. Ξ], everything is subject to opinion and convention, with no place left for truth", and II.23.73 (B165/T184b): "he flatly denies that there is any truth [...]."

³⁰ Many thanks to Todd Ganson, Jon Gibert, Mitzi Lee, Susan Prince, Dave Robb, David Sedley, Eckart Schütrumpf, Chris Shields, and to an anonymous reader for *AGP*.

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