

XXIV

The Bounds of Knowledge

(a) *Neo-Ionian empiricism*

Eleatic scepticism was philosophically barren; for it was fundamentally a metaphysical rather than an epistemological thesis, resting wholly upon Eleatic metaphysics and not at all upon any speculation proper to epistemology. Thus once it was believed that the foundations of Elea were undermined, there can have seemed no need to devote critical attention to the superstructure: fragment **191** of Melissus offers no challenge to the philosopher who believes that he has vindicated an Ionian world. That fact, I think, explains why it took a second attack on the possibility of objective knowledge to elicit a neo-Ionian epistemology: Democritus was spurred to thought by Protagoras; Empedocles and Anaxagoras had no such sharp incentive.

For all that, I shall devote a few pages to Empedocles and Anaxagoras. Both men say something of an epistemological nature; and the former is usually misunderstood, the latter usually mispraised.

Sextus made Empedocles a sceptic:

He talks about the fact that the judgment of truth does not reside in the senses in the following way:

For narrow hands are scattered over the limbs;
and many wretched things impede, which blunt the thoughts.
And gathering a poor part of life in their lives,
swift to die, rising like smoke, they fly away,
persuaded only of that which each meets
as they drive everywhere. And who boasts that he has found the
whole?
In this way these things can neither be seen by men, nor heard
nor grasped in their mind [**31 B2.1–8**].

In this way these things can neither be seen by men, nor heard not
grasped in their mind [**31 B 2.1–8**].

And as to the fact that the truth is not utterly unattainable, but is attainable to the extent that human reason reaches, he makes that clear in the next lines, continuing:

But you, since you have come here will learn—more, human wit has not achieved [B 2.8–9]-¹

And in the following lines, having attacked those who pretend to know more, he asserts that what is grasped by each sense is reliable, if reason oversees it—although earlier he has run down their reliability. He says:

But, gods, turn away their madness from my tongue,
 and channel from me a pure spring of holy words;
 and you, much famed white-armed maiden Muse,
 I beg—what things it is right for mortals to hear,
 send me, driving the well-reined chariot of Piety. 5
 Nor will *you* be forced by the flowers of well-repu ted honour
 at the hands of mortals to pluck them at the cost of saying more
 than is holy
 in boldness, and then indeed to sit at the heights of wisdom.
 But come, gaze with every hand, in the way in which each thing
 is
 clear,
 nor hold any sight in greater trust than what comes by hearing,¹⁰
 or resounding hearing above the clarities of the tongue,
 nor in any way from any of the other limbs by which there is a
 way
 for thinking
 take away trust, but think in the way in which each thing is clear
 [B3]² (486).

Empedocles' language is flowery: partly he is indulging in the poetical vocabulary appropriate to an exordium; partly he is hampered by *patrii sermonis egestas*; thus the curious reference to 'hands (*palamai*)' shows only that Empedocles possessed no general term for 'sense-organs'.³ Amid the luxuriant rhetoric, Sextus discerned his own dear bloom of scepticism—and then contrary evidence of a naive trust in the senses.

Yet B 2 is hardly a sceptical fragment: lines 1–7 attack pretensions to knowledge; but they do not make a general assault on human cognitive powers. Lines 1–6 observe merely that ordinary men, flitting from one experience to the next, do not gain the knowledge that their 'narrow hands' can supply them with: '*in this way*' truth is not to be apprehended. (Fragment 68 D of Archilochus is plainly alluded to in line 5.) Sextus' interpretation is doubly false: B 2 is not sceptical; nor does it attack, specifically, the *senses*; for ordinary men, as line 8 indicates, are no better at using their minds than their perceptive faculties. The contrast in B 2 is not between sense and reason but between benighted mortals and Pausanias: by following Empedocles' advice, Pausanias will

‘find the whole’, or achieve a synoptic appreciation of natural phenomena.⁴ In short, **B 2** offers a systematic science in place of the partial and disorderly beliefs of unscientific men.

The first eight lines of **B 3** also contain a contrast; and again, the contrast is between types of thinker, not between the senses and reason. Empedocles piously requests a ‘holy’ knowledge and dissociates himself from the ‘madness’ of some anonymous students. There is nothing more in these lines than the familiar deprecation of superhumanly ambitious aspirations.

Thus **B 2** and **B 3** show that Empedocles was no sceptic of sense-perception. All the senses, if appropriately used and systematically deployed, yield trustworthy evidence; and the path to scientific knowledge runs through their separate provinces. That, no doubt, is true enough; and it was worth saying to men who had read Melissus or Parmenides and were prepared to reject perception wholesale. Yet it does not amount to anything like an epistemology; it is a statement, not an argued case; and it offers no objection to any critic of perception.

Nor did Anaxagoras pursue those matters. Sextus reports a statement of Diotimus:

Diotimus said that according to him [sc. Democritus] there are three criteria: for grasping what is unclear (*ta adêla*), the phenomena—for the phenomena are the sight of what is unclear, as Anaxagoras, whom Democritus praises for this, says...(487:76 A 3=59B21a).

Opsis tôn adêlôn ta phainomena, ‘the phenomena are the sight of what is unclear’; we can come to know what we cannot perceive (*ta adêla* by way of the things we do perceive (*ta phainomena*). That celebrated *mot* has seemed to some scholars to contain a significant contribution to epistemology and scientific methodology: in it Anaxagoras explains and justifies the procedure of analogy and induction which his scientific predecessors had been unselfconsciously using. Anaxagoras is not, indeed, the only ancient to have formulated the general principle (it can be found in Herodotus (II.33) and in the Hippocratic corpus (*vet med* 22; *vict* I.12)); but he was probably the first to do so, and his formulation was certainly the most elegant.⁵

The earlier Ionians had used analogy; and their methods had been adopted by Empedocles and the medical writers. Things unclear and unfamiliar—either by reason of their celestial distance from us or by virtue of their microscopical size—could be illuminated and made intelligible by a sort of extrapolation and extension from the middle-sized data that surround us on earth; and the microscopic features thus apprehended could be offered in explanation of the observed phenomena. That methodology was no doubt welcomed and embellished by Anaxagoras; after all, his whole physics, though founded on empirical observations, goes far beyond the limits of perception in its effort to account for the phenomena. The *adêla* are revealed by *taphainomena*—and then advanced in their explanation.

We can, I suppose, guess at some of the particular applications of his ‘method’ that Anaxagoras made; but the fragments and the doxography give little or no solid evidence. Here, for what it is worth, is the sole report that has any near connexion with
487:

The fine scientist Anaxagoras, attacking the senses for their weakness, says: 'by their feebleness we cannot judge the truth'. And he gives as evidence of their unreliability the gradual change of colours; for if we take two colours, black and white, and then pour one into the other, drop by drop, our sight will not be able to discriminate the gradual changes, even though they subsist in nature (**488**: Sextus, **59 B 21**).

There are some natural distinctions too fine for our gross senses; some things we cannot discriminate. Yet we can, for all that, know that they are distinct: common observation tells us that if we mix a pint of black paint with a gallon of white, the result is grey; and further observations indicate that the darkness of the grey is proportional to the amount of black added to the original white gallon. A gentle generalization, by way of **487**, allows us to infer that each drop of black, when added to the white, changes its hue to a slightly darker grey, even though these little changes are individually unobservable.

The example is not, perhaps, of great importance; nor is it wholly convincing: why, for example, does Anaxagoras suppose that colour is an intrinsic property of things, existing independently of any observer? Does it make sense to talk of real but indiscriminable differences in colour? Again, why suppose that the colours are *continua*? why does every drop of black turn the mixture a shade greyer? why not suppose (as Aristotle did) a finite number of real shades, and chromatic quantum jumps from one shade of grey to the next? But these are niggling objections; and the grand principle of **487** does not suffer by criticism of its minor application in **488**.

The objections to **487** are of a larger and more abstract order: the methodological principle there enunciated is hopelessly vague and entirely unjustified. It is vague in that it offers no criteria for the admissibility of analogical argument: what comparisons are scientifically fruitful and what are not? It is unjustified because it makes no attempt to exhibit itself as a rational principle: why, after all, think that *pbainomena* guide us to the *adêla*? Why not approach the *adêla*, as many Presocratics did, by way of abstract reasoning? Or why embrace, promiscuously, 'the' *phainomena*? Why not single out some senses above others, or some observers over others? I do not deny that from **487** we can construct some theory that is interesting and even true: my point is simply that **487** does not, in itself, contain any such theory. It is a *bon mot*, an aphorism neatly summing up the general spirit and optimistic hope of Ionian science; it is not a piece of serious philosophizing.

Anaxagoras is also said to have been a sceptic; before leaving him for epistemologically more interesting pastures I shall review the evidence for that assertion. There are two fragments and half a dozen bits of doxography to examine. The fragments can be dismissed instantly: **488**, to which Sextus characteristically gives a sceptical interpretation, states only that some distinctions in nature are too fine for our unaided senses to perceive; and **208** (see above, p. 330), while excepting one area from the range of our knowledge, does not remotely suggest a general scepticism.

Cicero idiotically enrolls Anaxagoras among those who say that 'nothing can be apprehended, nothing perceived, nothing known' (**A 95**); and Aëtius echoes him (**A 95**). Sextus reports that

We oppose what is grasped by the mind (*ta noumena*) to what is grasped by the senses (*taphainomena*), as Anaxagoras opposed the fact that snow is white by saying that snow is frozen water, water is black, therefore snow too is black (**489: A 97**).

The argument, which is referred to more than once (Cicero, **A 97**; Scholiast to Homer, **A 98**; Scholiast to Gregory, **B 10**), seems to Sextus to have a sceptical moral: either mind trumps perception, or each faculty neutralizes the other. But it is more plausible to connect the argument with the Anaxagorean doctrine that ‘Everything is in everything’: snow seems purely white; yet reason assures us that there is darkness in it; for snow is frozen water, and water is black. The black in the water cannot be destroyed; it must, therefore, reside somehow in the white snow.

Finally, there is an anecdote in the *Metaphysics*:

A remark of Anaxagoras to some of his friends is preserved: Existent things will be for them such as they take them to be (**490: 1009b25=A 28**).

I leave the reader to make what he will of that.

(b) *Protagoras; man the measure*

Protagoras, the first of the Sophists, hailed from Abdera. Our sources make him a ‘hearer’ of Democritus, his fellow-citizen (e.g., Diogenes Laertius, IX. 50=**80 A 1**); there is no particular reason to doubt the story and there are visible links between various aspects of Democritean and Protagorean thought. According to Plutarch, Democritus attacked Protagoras’ views on knowledge (**68 A 156**); and for that reason I shall consider Protagoras’ epistemology before that of Democritus.

Of all things a measure is man—of the things that are, that they are; of the things that are not, that they are not (**491:80 B 1**).⁶

That notorious statement, which Plato, Sextus, and Diogenes all quote, opened Protagoras’ tract on *Truth* or *Knockouts* (*Alêtheia* or *Kataballontes*: Diogenes Laertius, IX. 51=**A 1**; Sextus, *ad B 1*). The Germans compendiously refer to the statement as the *Homomensurasatz*; and I shall adopt their convenient and portentous name, sometimes abbreviating it to a humble *H*.

The *Homomemurasatz* has only one uncontroversial feature: opacity. Protagoras’ words are surely transmitted; but their sense is a matter of dispute. The *Satz*, as befits an exordium, is grand and allusive rather than clear and prosaic. Fortunately, we possess a detailed ancient interpretation: Plato, in the *Theaetetus*, offers a reading which, though fanciful in detail, is, I think, correct in its central contention. That central contention reads as follows:

Doesn't he mean something like this: 'As each thing seems (*phainetai*) to me, so it is for me; and as to you, so again for you—and you and I are men'? (492: 152A=ad B 1).

The same gloss is repeated in the *Cratylus* (385E=A 13); and its main point is almost universally accepted: in saying that 'of all things (*chrêmatôn*) a measure (*metron*) is man', Protagoras means that what *seems* to be, *is*. Set a man against a thing and he will provide a measure or accurate assessment of it; for it is as he takes it to be. Man is a measure: seeming is being. That is the philosophical core of the *Homomensurasatz*.

The core remains vague; and to clarify it we must come more closely to grips with the wording of the fragment. First, 'man': Socrates objects that Protagoras might just as well have said 'pig' or 'jackal' (*Theaetetus* 161C=A 1); and that suggests that 'man' here is used generically: whatever seems to mankind, is. The suggestion is apparently supported by Sextus:

Thus according to him man (*ho anthrôpos*) becomes the criterion of the things that are; for everything that seems to men (*tois anthrôpois*), actually is; and what seems to no man, is not (493: A 14).

Mankind, not the individual man, is the measure of things. Plato, however, does not intend that interpretation: his paraphrase of 491 explicitly refers to individual men, to you and me. Sextus in his introduction to 491 takes the same view; and so does Aristotle (*Met* 1062b12–15=A 19). There is, to be sure, no independent check on that interpretation; and it may be that in accepting it we accept a Platonic travesty not a Protagorean original. But almost all the evidence favours individual men, little speaks for mankind; and we should, therefore, interpret 'Man is the measure...' as 'Each individual man is the measure...'.⁷

After 'man', 'measure'. Following Plato, I have taken '*a* is a measure of *b*' to mean '*b* is as it seems (*phainetai*) to *a* to be'. How are we to understand '*phainetai* here? *Phainesthai* in Greek, like 'seem' in English, is ambiguous: it has a judgmental and a phenomenological sense. 'It seems to me that...' often means, roughly, 'I incline to believe that...'; and 'He seems to me to have been misled' means 'I judge that he has been misled'. But '*a* seems F' also has a different sort of sense, roughly equivalent to '*a* presents itself as F to the senses'; thus 'Your face seems yellow' means 'Your face is yellow to the sight', and 'The trumpet seems flat' means 'The trumpet is flat to my ear'. Judgmental seeming and phenomenological seeming are distinct: your face seems yellow phenomenologically but not judgmentally—I do not judge it to be yellow; he seems guilty judgmentally but not phenomenologically—his boyish face radiates innocence. Is Protagoras' seeming judgmental or phenomenological?

Plato explicitly gives a phenomenological interpretation: 'and "it seems (*phainetai*)" means "he perceives (*aisthanetai*)"'?—It does' (*Theaetetus* 152A=ad B 1). Some of the doxographers follow Plato (cf. Hermias, A 16; Eusebius, 70 B 1); but Sextus talks of 'everything which *phainetai* or *dokei* to anyone' (ad B 1) and '*dokei*' means 'it seems' in the judgmental sense only. Aristotle, too, uses *dokei* in the same context (*Met* 1007b21=A 19); and there is evidence that the judgmental account is earlier even than Plato.

No one can say that all *phantasia* is true, because of the *peritropê*, as Democritus and Plato taught us in their attack on Protagoras; for if every *phantasia* is true, then even the proposition that not every *phantasia* is true, being itself subject of *phantasia*, will be true, and thus it will turn out false that every *phantasia* is true (494: Sextus, A 15=68 A 114).

The *peritropê*, or about-turn, is suffered by the *Homomensurasatz* because it is self-refuting. The argument requires that 'every *phantasia* is true' be interpreted by way of the judgmental sense of *phainesthai*; thus, 'If *phainetai* to *x* that *P*, then it is true that *P*' must be written as:

(H1) For any proposition *P*, and any man, *x*, if *x* judges that *P*, then it is true that *P*.

From (H1) it follows at once that:

(1) For any man *x*, if *x* judges that not-*H*, then it is true that not-*H*. But many men reject the *Homomensurasatz*, or judge that not-*H*. It follows that it is true that not-*H*, and hence that—*H* itself is false. Thus the *Homomensurasatz* suffers an about-turn: it marches to its own ruin.

I shall return to the *peritropê* in a later section. My reason for quoting it here is to show first that Democritus accepted the orthodox paraphrase of *H* in terms of *phanesthai*; and second, that he interpreted *phainesthai* in its judgmental and not in its phenomenological sense.

According to Sextus, Plato as well as Democritus used the *peritropê* against Protagoras; and Sextus was right (cf. *Theaetetus* 171A). Use of the *peritropê* implies a judgmental *phainetai*; and in his allusions to *H* Plato sometimes explicitly uses the purely judgment *dokei* (e.g., *Theretus* 161C). Moreover, much of the argument against Protagoreanism which Plato develop in the *Theaetetus* implicitly assume *dokeki* rather than *aisthanetai*. The phenomenological interpretation given at *Theaetetus* 152A is thus not consistently adhered to by Plato.

The weight of the evidence tells, I think for a judgmental interpretation.⁸ The contrary evidence probably all derives from *Theaetetus* 152A; and we may guess that Plato's concern there with the thesis that 'knowledge is perception' encouraged him to give a temporary and unhistorical phenomenological interpretation to Protagoras' *Satz*. At all events, I propose to follow the judgmental view.

Many scholars write as though the dispute between phenomenological and judgmental *phainetai* was only one of scope: is *H* restricted to matters of perception, or does it extend to all judgments? That is mistaken: phenomenological or Φ -seeming, and judgmental or Ψ -seeming, differ not in range but in kind. Ψ -seeming turns *H* into a thesis about the judgments, beliefs or opinions of men—all such judgments are true. Φ -seeming turns *H* into a thesis about perceptual seemings: whatever strikes the senses as such and such, is such and such. An example of Aristotle's brings out the difference: a man, looking at the sun, may judge that the sun is several thousand miles across; yet the sun may *look* to him about a foot in diameter (cf. *An* 428b3). If we interpret *H* by way of Ψ -seeming we shall give truth to the man's judgment, not to the content of his sense experience; if we interpret it by seeming, we shall give truth to the experiential content, not to the judgment.

So much for 'man' and 'measure'. Next, 'of the things that are (*tôn on tôn*), that they are (*has es tin*)'. What does '*esti*' mean here? Some scholars say 'exist'. The

Homomensurasatz can then be tied to the coat-tails of Elea: if anyone judges that a thing exists, then it does exist, for judgment involves thought, and thought requires existent objects. The interpretation has a superficial attraction: and it is perhaps supported by Hermias, A 16; but I do not see how *einai* can be taken existentially in the second, negative, clause of the *Satz*.

Plato takes *einai* to be predicative: 'of the things that are, that they are' means 'of whatever is (*F*), that it is (*F*)'. And having glossed *H* in terms of 'such' and 'so', Plato illustrates it thus:

Sometimes when the same wind blows, one of us shivers and the other doesn't; or one of us mildly, the other violently.—Yes indeed—Then shall we say that the wind is in itself cold or not cold? (495: *Theaetetus* 152B=B 1).

The wind is one of 'the things that are'; and what it 'is' is cold. Plato's predicative interpretation is tacitly adopted by Aristotle (e.g., *Met* 1007b20=A 19) and by Sextus (e.g., A 14); and I have no hesitation in following them.

Thus 'man is a measure...of the things that are, that they are ...' means that if a man judges an object to be *F*, then it is *F*. Man is also a measure 'of the things that are not, that they are not': analogy suggests the meaning that if a man judges an object not to be *F*, then it is not *F*. And that interpretation is clearly implied by Aristotle:

If the man seems to someone not to be a trireme, then he is not a trireme (496: *Met* 1007b21=A 19). Sextus has a different gloss: 'Everything that seems to men, actually is; and what seems to no man, is not' (493: A 14). If no one judges that a thing is *F*, then it is not *F*. Protagoras may have embraced that thesis; but he does not state it in *H*.

Things⁹ are *F* or not *F* just in so far as some man 'measures' them, or judges them to be so. The *Homomensurasatz*, then, invites the following formulation:

(H2) For any man, *x*, and object, *O*, if *x* judges that *O* is *F*, then *O* is *F*; and if *x* judges that *O* is not *F*, then *O* is not *F*.

The *Homomensurasatz* is outrageous: was Protagoras' *Truth* an exercise in irony? or a virtuoso display of cleverness? Did the *Satz* aspire merely to shock and to excite? Or was *Truth* serious, and the *Satz* an effort to enlighten and instruct, to surmount some philosophical hurdle? I think that the *Satz* is the keystone of a systematic and sophisticated epistemology, and that it represents one part of an original, and not uninteresting, contribution to philosophy. I shall try to make that view plausible by a somewhat circuitous argumentative route.

(c) *Knowledge and relativity*

[Protagoras] was the first to say that there are two *logoi* about everything, opposite to one another (497: Diogenes Laertius, IX. 51=A 1=B 6a; cf. Clement, A 20).

Logoi here are arguments, or perhaps, more generally, reasons; for Seneca enlarged upon Diogenes' report:

Protagoras says that on every issue it is possible for it to be argued (*disputari*) with equal force (*ex aequo*) on both sides (498: A 20).

For any proposition *P* there is an argument for *P* and an argument of equal strength for not-*P*. If you claim that the argument for *P* is in fact stronger, Protagoras will fulfil his wicked promise 'to make the weaker argument stronger' (Aristotle, *Rhet* 1402a23=B 6b). All sticks are straight: show me a warped lath, and I will bend it straight. All arguments are equal: show Protagoras a feeble reason and he will strengthen it to par. In all things there is an intellectual equilibrium; for any thesis there is an equipollence of argument *pro* and *contra*.

Such paired and equipollent arguments were, it seems, a stock-in-trade of Protagoras' sophistry; and his two books of *Antilogies* (cf. Diogenes Laertius, IX. 55=A 1) doubtless contained a selection of them. Alas, none has survived, and the *agôn* between Just and Unjust Logos in Aristophanes' *Clouds*, which scholars deem a parody of Protagorean sophistry, is too much of a caricature and too unclever to permit any safe inference about the nature or plausibility of its probable patterns.

For all that, it is not difficult to guess at the areas in which Protagoras hunted for his equipollences. First, ethical argument, in which he is known to have had an interest, must have been a rich quarry. By the second half of the fifth century the differences in moral belief from one culture and age to another were familiar enough; and a Protagorean equipollence would be suggested by them, and corroborated by the actual ease with which ethical argumentation reaches an *impasse*. The *Dissoi Logoi* provides copious illustration. Second, there are the deliverances of the senses: the *Theaetetus* illustrates the *Homomensurasatz* by an example which may well have been taken from Protagoras' own treatise. The wind makes me shiver and leaves you unmoved: is it cold?—Yes; it makes me shiver. No: you do not twitch. That is a simple example: the rich treasury of cases illustrating the relativity of sense perception began to be stocked in Protagoras' time; and we need not doubt that he found material there with which to support his equipollence thesis.

Such examples suggest a generalization: any predication can be supported by argument, and attacked by argument of precisely equal weight. Protagoras was a clever man; and a little ingenuity would enable him to give some initial plausibility to his general thesis even in areas where it seemed wholly inapplicable. Surely mathematics provides innumerable examples of sound argumentation for a theorem where no

countervailing considerations can be adduced? But Protagoras, we are told, ‘refuted the geometers’ (Aristotle, *Met* 998a4 =**B 7**). ‘The facts are unknowable and the language unpleasing, as Protagoras says of mathematics’ (Philodemus, **B 7a**: Diels-Kranz II.425). The details of Protagoras’ ‘refutation’ of the geometers are unknown; but they can be guessed at. ‘The circle does not touch the ruler at a point’ (*Met* loc. cit.):¹⁰ geometry is about physical objects; if it does not apply to physical objects it is an empty game and not a science; if it does apply, then the geometers’ proofs are subject to empirical checks. Take any *a priori* argument, say for the theorem that the angles of a triangle sum to 180°. Draw and measure a triangle: you will get a result differing from 180°. Any *a priori logos* can be matched by an equipollent *logos* based on empirical observation. Thus even among the apparent certainties of mathematics the Principle of Equipollence holds sway.

If the Principle is to fit into Protagoras’ epistemology it must be stated in a slightly more restricted form than the one Seneca gives. I take it to assert that for any object *O* and apparently objective predicate *F*, any reason for judging that *O* is *F* can be matched by an equally strong reason for judging that *O* is not *F*. The point of this formulation, and the sense of ‘apparently objective predicate’, will emerge shortly.

The wind blows cold on the shorn lamb and warm on its woolly brother: ‘should we say that the wind is in itself cold or not cold, or shall we be persuaded by Protagoras that it is cold for the shiverer and not for the other?’ (*Theaetetus* 152B=**B 1**). If we have equal reason to believe *P* and *Q*, we cannot rationally accept *P* and reject *Q*, or vice versa. That fundamental axiom of rationality, coupled with the Principle of Equipollence, forbids us to accept ‘*O* is *F*’ and reject ‘*O* is not *F*’, and also to reject ‘*O* is *F*’ and accept ‘*O* is not *F*’. Equipollence of argument requires equality of assent.

Three courses are open. First, we might reject both ‘*O* is *F*’ and ‘*O* is not *F*’. But it is paradoxical to *reject* ‘*O* is *F*’ when we have good arguments in its favour. Second, we might retreat to a forlorn scepticism: no doubt just one of ‘*O* is *F*’ and ‘*O* is not *F*’ is true, but we cannot possibly know which. But again, it is paradoxical to withhold assent from propositions for whose truth we have excellent evidence: if the wind feels cold to me, what more could I wish for by way of evidence that it is cold? Third, we can embrace both ‘*O* is *F*’ and ‘*O* is not *F*’. That is the Protagorean path.

Surely, though, that is a ‘path beyond all tidings’? Even if the Principle of Equipollence is true, we can hardly follow Protagoras’ argument and deny the Law of Contradiction. Now just such a denial is in any case demanded by the *Homomemurasatz*: nothing prevents men from making opposite judgments; if I judge that the wine is corked and you deem it excellent, you contradict me. But according to (H2) both our judgments are true. Aristotle puts the point clearly enough: ‘but if this is the case [i.e. given *H*], it follows that the same thing is and is not—is bad and good, and the rest of the so-called opposing phrases; because often this seems fine to *these* men and the opposite to *those*, and what seems to each is the measure’ (*Met* 1062b15–9=**A 19**). The Principle of Equipollence may have encouraged Protagoras to embrace both ‘*O* is *F*’ and ‘*O* is not *F*’; but such intellectual troilism is in any case forced upon him by his *Homomensurasatz*.

Did Protagoras, then, knowingly and cheerfully deny the Law of Contradiction? According to Diogenes,

He was the first to advance the thesis (*logos*) of Antisthenes which attempts to prove that it is not possible to contradict (*antilegein*), as Plato says in the *Euthydemus* (499: Diogenes Laertius, IX. 53= A1).

Plato says:

And *this* thesis [sc. that it is not possible to contradict] I have often heard from many people, always with astonishment. The Protagoreans used it vigorously, and it was used even earlier; but it always seems quite astonishing to me and to upturn (*anatrepein*) both other theses and also its own self (500: 286BC=A 19).¹¹

Plato takes the thesis that 'it is not possible to contradict' to be a denial of the Law of Contradiction; and it is therefore liable to 'upturn itself. This self-*anatrepein* is surely equivalent to *peritropê*: having attacked *H* by *peritropê*, Plato now uses the same manoeuvre against the further Protagorean thesis, that *antilegein* is impossible. 'Call the thesis *A*. Let Protagoras assert *A*. Then Plato maintains not-*A*. But according to *A* not-*P* does not contradict *P*; hence not-*A* is compatible with *A*. Hence, for all Protagoras has said, not-*A* is the case: hence *A* is not the case.' That, at least, is the best I can do for Plato; and it is not good enough. The fundamental misapprehension is, I think, the assumption that Protagoras 'denies the Law of Contradiction' in rejecting the possibility of contradiction: to say that contradiction is impossible is not to assert that a proposition and its contradictory may both be true at the same time; it is to assert the perfectly distinct thesis that you cannot contradict me.

Suppose I judge that *O* is *F* and you that *O* is not *F*. Then, according to Protagoras, I have not yet contradicted you; and if we are not *antilegontes*, the truth of what I say is compatible with the truth of what you say. Thus the denial of *antilegein*, far from opening Protagoras to a peculiarly damning charge of inconsistency, is actually designed to protect him from that charge: the clouds of contradiction which lour over *H* and over the Principle of Equipollence are evaporated by the thesis that 'it is not possible to contradict'.

'But that is a hollow victory: Protagoras' thesis is false; for you and I patently do contradict one another: what more obvious contradiction could one desire than "*O* is *F* and *O* is not *F*"? Mere *fiat* cannot abolish contradiction: "*O* is not *F*" contradicts "*O* as *F*", whatever Protagoras may choose to ordain.'

It is an elementary truth that not every pair of sentences of the form '*O* is *F* and '*O* is not *F*' express contradictory propositions. Of the many exceptions one is peculiarly apposite here: I may say 'The Marx Brothers make me laugh'; you may say, 'The Marx Brothers do not make me laugh'. In a loose sense you have contradicted me; but the loose sense of 'contradict' is not the technical logical one: the truth of what you say is not incompatible with the truth of what I say. The reason for the compatibility is plain: in my sentence, 'me' refers to me; in yours, 'me' refers to you; we are talking about different people, not saying opposing things about one man.

Let us call 'subjective' any sentences containing a word which refers to whoever utters the sentence and whose reference therefore varies from one utterance of the sentence to another. (I, 'me', 'the speaker', etc. will make sentences subjective in this

sense.) And let non-subjective sentences be called 'objective'. Consider, now, the sentence: 'The Marx Brothers are funny'. That is an objective sentence, none of its words refers to whoever utters it. (If the Marx Brothers chorus it, 'the Marx Brothers' refers to the sentence's utterers; but 'the Marx Brothers' does not refer to whoever utters the sentence.) But it is not wildly implausible to suggest that '...is funny' means '...amuses me'; so that 'The Marx Brothers are funny' is synonymous with the subjective sentence: 'The Marx Brothers amuse me'. If an objective sentence has a subjective synonym, I call it crypto-subjective. English contains many crypto-subjective sentences: 'Condor Flake is nauseating' (it makes me sick); 'Aristotle is fascinating' (he interests me); 'Rock-climbing is terrifying' (it frightens me); 'Irish politics are boring' (I find them tedious).

Many philosophers claim that crypto-subjective sentences are more common than we like to believe. Ethics provides the most familiar case: '...is good' has been analysed as '...is approved of by me', '...excites moral feelings in my breast', and so on. Protagoras, I think, was the first philosopher to plough that furrow, and he ploughed it deep. He suggested that *all* objective predications are in fact crypto-subjective: every sentence of the form '*O* is *F*' is synonymous with some relational sentence '*O* is *R* to *S*', where '*S*' refers to whoever utters '*O* is *R* to *S*'.

That is an ancient interpretation: Sextus says that Protagoras 'introduces the relative (*topros ti*)' (A 14), adding that this is because 'he posits only what seems to each person' (ibid.). Again: 'everything which *phainetai* or *dokei* to anyone thereby is so—relative to him (*ad B 1*). And the interpretation is Plato's: 'as each thing seems to me, so it is for me' (*Theaetetus* 15 1E=B 1).

I suggested that, according to Protagoras, '*O* is *F*' is synonymous with '*O* is *R* to *S*'. Plato's words suggest a more specific formulation: '*O* is *F*' is synonymous with '*O* is *F* for *S*': 'the wind is cold' means 'the wind is cold for the speaker'. Plato's formulation has one great advantage: it enables us to provide, in any given case, the overtly subjective counterpart of a crypto-subjective judgment. It has one disadvantage: 'Cold for me', 'funny forme' and the like are artificial and unnatural predicates. The disadvantage is easily overcome: 'The Marx Brothers amuse me' can be replaced without change of sense by, say, 'The Marx Brothers are funny to my way of thinking' or 'I find the Marx Brothers funny'. We may reasonably take 'the Marx Brothers are funny' to be elliptical for one of those synonyms of 'The Marx Brothers amuse me'; and the artificial sentence 'The Marx Brothers are funny for me' is an intelligible, if inelegant, way of expressing the thought captured by those natural synonyms.

The generalization is plain: every apparently objective predicate '*F*' is to be taken as elliptical for '*F* to—'s way of thinking' or '*F* for—'. Protagoras suggests that '*O* is *F*' always means '*O* is *F* for *S*'.

How does that suggestion, which I shall call the Relativity Thesis, bear upon the other Protagorean theories I have endeavoured to express? First, Equipollence: that Principle maintains that any apparently objective predication is precisely as well or as badly supported as its negation. Protagoras should, I think, say this: for any sentence '*O* is *F*', there are judges *a* and *b* such that *a* has just as good grounds for judging that *O* is *F* as *b* has for judging that *O* is not *F*. Hence we must be prepared to countenance '*O* is *F* and *O* is not *F*'. The thesis that Contradiction is Impossible now relieves the discomfort of that conclusion: '*O* is *F*' does not contradict '*O* is not *F*'; for

contradiction is impossible. The Relativity Thesis then explains the impossibility of contradiction: ‘ O is F ’ expresses the fact that O is F for a , and ‘ O is not F ’ expresses the compatible fact that O is not F for b .

Finally, that happy result not only frees the *Homomensurasatz* from the taint of contradiction, but actually provides it with a proof. For suppose that someone judges that O is F ; say:

(1) a judges that O is F .

By the Relativity Thesis, that amounts to:

(2) a judges that O is F for S .

Now since in the present case S is a , we may express (2) by:

(3) a judges that O is F for a ;

or in other words:

(4) a judges that O is F in a ’s judgment.

Now from (4) we can surely infer:

(5) O is F in a ’s judgment,

for how could a possibly misjudge the contents of his own judgments? But (5) expresses the content of the judgment ascribed to a by (1). Hence we infer:

(6) If a judges that O is F , then a judges truly.

Finally, generalizing, we get:

(H3) For any proposition P and man x : if x judges that P , then x judges truly.

And that is a version of the *Homomensurasatz*. (The differences between (H1), (H2), and (H3) are not entirely trivial; but there is not space to explore them adequately.)

Such is Protagoras’ epistemology: surprisingly little of it is known to us at first-hand, and the second-hand doxography is thin: *Truth*, despite the extrinsic interest Plato bestowed on it, was destined to almost total oblivion. Yet the few remains allow us, I think, to reconstruct an original concatenation of thoughts. Protagoras was an epistemologist of some ingenuity. Keen to categorize, scholars have assigned to him a variety of modern isms: the ascriptions are not anachronistic in any vicious sense; but neither are they particularly illuminating. Protagoras was certainly a relativist, a subjectivist and an idealist; equally, he was not a sceptic in the philosophical sense, and to that extent can be called an objectivist. But those labels are old, tired, and multivocal; we shall grasp Protagoras’ ideas by studying his four central contentions: the Principle of Equipollence, the thesis that Contradiction is Impossible, the Relativity Thesis, the *Homomensurasatz*; labelling those doctrines as isms may be a helpful (or a misleading) mnemonic device—it is nothing more.

Protagoras’ epistemology is a *tour de force*: is that all? It seems to me plausible to represent it as an attempt to come to grips with the rigorous requirements of empiricism. From this point of view, the Relativity Thesis is of fundamental importance: if, as common sense seems to suggest, all our concepts are ultimately taken from experience and all our judgments are ultimately based upon experience, then some relativity may seem inevitable; for the experience on which *my* knowledge rests can only be *my* experience. If my cognitive beginnings are tied to my own experiences, how can I ever escape from myself? And if I cannot escape from myself, is not Protagoreanism the only possible epistemology? My complex judgments are only functions of my primitive judgments; and my primitive judgments are reports of my own experiences. If I say, primitively, ‘the wind is cold’ or ‘the grass is green’ or ‘the tobacco is tart’, my

sentences have an objective air; but since those primitive reports report my experiences they are crypto-subjective; they say how things are *for me*.

Modern empiricists start from the self-centred position; and a constant item in empiricist thought has been the attempt to found genuinely objective judgments on these subjective foundations. Protagoras did not make the attempt; instead he trod the lonely path of idealism, and it led him to an idiosyncratic epistemology. It would be idle to pretend that his views constitute a full and clear version of extreme empiricism; and inane to urge that they give a competent and satisfactory account of human knowledge. But I am more concerned to applaud Protagoras for trying than to hiss him for his failings; and in any event, a serious assessment of Protagoreanism would require a lengthy study of the foundations of knowledge. In order to compensate a little for my cowardly refusal to offer such an assessment, I shall end by looking again at the Democritean *peritropê*: after all, the *peritropê* is an ingenious objection; and if it works, Protagoras' main thesis is shown up as logically intolerable.

The relevant portion of text 494 reads thus: '...if every *phantasia* is true, then even the proposition that not every *phantasia* is true... will be true; and thus it will turn out false that every *phantasia* is true.' Assume that (H3) is true. Now it is indisputable that:

(7) Some men have judged that *H* is false.

From (H3) we infer:

(8) If anyone judges that *H* is false, he judges truly.

And from (7) and (8) it surely follows that:

(9) *H* is false.

Thus if (H3) is true, it is false; and therefore—by the *Lex Clavia* (above, p. 277)—(H3) is false. The *peritropê* or about-turn is a species of self-refutation.

How does that argument fare? I shall not consider it in any detail; rather, I shall simply list three lines of argument which any defender of Protagoras might expect to develop. I do not know if any of the lines is successful; but I think that each is worth exploration.

First, then, Protagoras might simply deny the applicability of the *peritropê*: its use involves an *ignoratio elenchi*. For (he might say) sentence (H3) is not an adequate representation of the *Homomensurasatz*: it ignores the fact, plainly set down in (H2), that *H* is a thesis about objects and properties, about judgments of the form '*O* is *F*'. Now *H* itself is patently not of the form '*O* is *F*', and neither is the negation of *H*. The sentence '*H* is false', which appears as a component of (7), does indeed appear to be of the required form; but a short course of reading in modern philosophy will convince any Protagorean that that appearance is deceptive. '*H* is false' does not predicate anything of *H*; it is simply a ponderous way of expressing the negation of *H*. And since the negation of *H* is not of the form '*O* is *F*', neither is '*H* is false'. Thus *H* does not refute itself; for it is a thesis about propositions of the type '*O* is *F*', a type to which it does not itself belong.

Second, Protagoras might question the inference from (7) and (8) to (9). The inference certainly seems to be valid; for if *a* judges that *P*, and *a* judges truly, it surely follows that *P*. To say that he judges truly is simply to say that what he judges is true, i.e. that *P* is true; and if we can infer '*P* is true', we can surely infer the simpler '*P*'? Now all that is, I think, almost indisputable, given our ordinary understanding of true judgment. But it is not clear that Protagoras will, or ought to, grant us that ordinary

understanding. (Suppose that *a* judges truly that *O* is *F*: can I infer that *O* is *F*? No, given the Relativity Thesis; for if I infer that *O* is *F*, I judge that *O* is *F* for me; and that conclusion cannot be warranted by the premiss that *a* judges truly that *O* is *F*.)

Third, Protagoras might allow that (9) is indeed validly inferred from (H3); but he might question the significance of the inference for *H*. After all, he will suggest, the predicate ‘...is false’, like any other objective predicate, is crypto-subjective; and (9), the conclusion of the *peritropê*, is of course elliptical for:

(10) *H* is false for *S*.

Falsity—and truth—is, like everything else, a relative and subjective manner. No doubt *H* is false for some men. But that hardly refutes *H*; for *H* remains true; true, that is to say, for other men; and in particular, true for Protagoras. ‘But then *nothing* can be refuted, and all judgments are equally true or false.’—‘Not exactly: some judgments may have more backers than others, and be truer; and some judgments may have a far better property than truth: they may be advantageous to believe.’

(d) ‘*Isonomia*’

According to Plutarch, Democritus attacked Protagoras’ epistemological stance (68 B 156); and we know that he applauded Anaxagoras’ empiricist aphorism (Diotimus, 76 A 3). Yet the fragmentary reports of his attitude to human knowledge, its scope and limits, indicate both that he developed the Protagorean Principle of Equipollence, and also that he toyed with a Pyrrhonian scepticism. Democritus’ epistemology is perplexing, paradoxical, and perhaps inconsistent; and Democritus himself was ruefully aware of the fact (B 125). Our evidence is, again, a tangled skein; and I do not know how best to unravel it. But here at least there is reason to think that the tangles are original, and not due to the accidents of history.

I begin with what I have called the *Ou Mallon* Principle (it was later called the Principle of *Isonomia*, or Balance).¹² ‘*Mallon... ê...*’ means ‘Rather...than...’; and ‘*ou*’ (for which ‘*me*’, ‘*ouden*’, and ‘*mêden*’ are common substitutes) is simply the negation sign. Thus ‘*Ou mallon P ê Q*’ means ‘Not rather *P* than *Q*’. Properly speaking, ‘Not rather *P* than *Q*’ is compatible with ‘*Q* rather than *P*’; but in Greek idiom *ou mallon* appears to ascribe an equal status to *P* and to *Q*, so that ‘*ou mallon P ê Q*’ marks a sort of indifference, equipollence, or equivalence between *P* and *Q*.

According to Sextus, ‘*ou mallon*’ was a constant refrain (*epiphthegma*) in the Abderite song (*Pyrr Hyp* I.213). And we have already heard the refrain thrice. First, in 238 (above, p. 363):

If the region outside the heavens is unlimited, so too, it seems, are body and the worlds; for why should it be here rather than here (*entautha mallon ê entautha*) in the void?

Second, in 236 (above, p. 361):

...the unlimited quantity of the shapes among [the atoms] because nothing is rather such than such (*ouden mallon toiouton ê toiouton*).

And third, in **297** (above, p. 402):

The thing exists no more than (*ou mallon*) the nothing.

The first argument is ascribed to Democritus. The second is given to Leucippus in **236**; but Simplicius attributes it to Democritus too (**68 A 38**). **297** is a Democritean fragment: its argument is given to Leucippus by Aristotle (*Met* 985b8=**67 A 6**) and by Simplicius (**67 A 7**).

Aristotle reports a fourth occurrence of the refrain. Our senses, he observes, are at odds with one another in a variety of familiar ways; and the variations in our sense experience may well lead us to conclude that

which of them is true or false is unclear; for the ones are no more (*ouden mallon*) true than the others but to a similar degree; that is why Democritus says that either none is true or it is unclear to us (**501: Met** 1009b9–12=**68 A 112**).

Nausiphanes, pupil of Democritus and teacher of Epicurus, said much the same:

Of the things which seem to be, none is rather than is not (**502: Seneca, 75 B 4**).

Seneca's Latin phrase '*nihil magis*' translates the Greek '*ouden mallon*'.

That last application of the *Ou Mallon* Principle perhaps suggests an epistemological interpretation of the 'equivalence' involved in *ou mallon*. One perceptual judgment is 'no more true' than another just in so far as the *evidence* for each judgment is equally good; '*ou mallon P ê Q*' will be true, then, just in case any evidence in favour of *P* is matched by evidence in favour of *Q*, and vice versa. Let us abbreviate '*ou mallon P ê Q*' to '*E (P, Q)*', where '*E*' may be imagined to stand for 'equivalent' or 'equipollent'. Then Protagoras' Principle of Equipollence can be written compendiously as:

(1) For any proposition *P*, *E (P, not-P)*.

And in **501** and **502** we may discern a restricted version of (1). If *S* is any sensible property (redness, roughness, roundness), then Democritus and Nausiphanes hold:

(2) For any object *x*, *E(x has S, x does not have S)*.

Consider Protagoras' sentence, 'The wind is cold'. Democritus, I imagine, thought that the only evidence I could have for the truth of that sentence must consist in the fact that the wind seems cold to me or makes me shiver. But what seems cold to me, seems warm to you; so my evidence for thinking that the wind is cold is balanced by your evidence for asserting that it is not. Hence *E* (the wind is cold, the wind is not cold). I ignore the incautious assumptions made in that argument in order to concentrate on its logical form. Let *R (P)* abbreviate 'there is sufficient evidence to believe that *P*'; and let '*P*' here stand for 'the wind is cold'. Then my shivering testimony gives

Democritus:

(3) *R (P)*,

and your stoical report allows him to hold:

(4) *E (P, not-P)*.

But it seems to be true that:

(5) It is impossible that both P and not- P :

Now that triad of propositions, (3)-(5), is not formally inconsistent; but an inconsistency can be derived if it is enlarged by two additions:

(6) If $R(P)$ and $R(Q)$, then $R(P$ and $Q)$.

(7) If it is impossible that P , then not- $R(P)$.

For (3) and (4) yield:

(8) R (not- P).

And (3), (8) and (6) give;

(9) $R(P$ and not- $P)$.

But (5) and (7) give:

(10) not- $R(P$ and not- $P)$.

That schematic argument represents the background both to Protagoras and to Democritus: both men accepted (4); and they would doubtless have accepted (6) and (7). (6) is evidently true; (7) is, I think, false as it stands; for we can have sufficient reason for believing false mathematical propositions. But some suitable modification of (7) will surmount that difficulty: we surely cannot have sufficient reason to believe overt impossibilities. Protagoras, accepting (3), rejected (5) and safeguarded his reputation for consistency by reinterpreting ' P ' by way of his Relativity Thesis. What did Democritus do?

According to Aristotle, 'he says that either none is true or it is unclear to us' (501). Did Democritus give that disjunctive conclusion, or did he rather plump for one of the disjuncts? Some scholars argue as follows: 'Presumably Democritus holds that not both P and not- P ; for he will not reject (5) and the Principle of Contradiction. Consequently, he must either reject both P and not- P , or else come to the sceptical conclusion that we cannot tell which of P and not- P is true. Now Democritus cannot have been prepared to countenance "neither P nor not- P " but not "both P and not- P "; for those two propositions are logically equivalent. And it is charitable to infer that Democritus in fact mentioned the first of Aristotle's disjuncts only as an evident impossibility, and intended to commit himself to the second, sceptical disjunct.'¹³

If that is true, it is strange. According to Sextus,

[Protagoras] says that the explanations (*logoi*) of all the appearances lie in the matter, so that the matter is capable in itself of being everything which it seems to anyone (503:80 A 14).

Sextus' account is an implausible interpretation rather than a report; but the account might well have been given by Democritus. For according to the Atomists,

The truth is in the appearing (504: Aristotle, *GC* 315b8= 67 A 9).¹⁴

That is to say, all the diverse phenomena are explicable in terms of the atomic structure of matter: their *logoi* 'lie in the matter'. Thus if the wind feels cold to me, that is because certain constituents in the air react in certain ways with some of my constituent atoms; and its feeling warm to you is explained by the different reaction that occurs between the air's atoms and yours. Protagoras accepts (5) and gives a relativistic

interpretation to 'cold'. We might expect Democritus to have done exactly the same: temperature is not an intrinsic property of atoms or atomic conglomerates, and P , scientifically construed, is after all compatible with not- P .

Perhaps, then, Democritus does want to conclude that 'none is true', that neither P nor not- P . The grass looks green to you, brown to me: which colour is it really? Neither: for colours exist only *nomôi*, nothing is intrinsically coloured. The wine tastes corked to me, clear to you: it is neither, for savours exist *nomôi*. But not all qualities exist only *nomôi*: shape is real; and so are size and motion. If the wind seems a light breeze to you and a gale to me, at most one of us can be right; for the wind, or the atomic conglomerate which forms it, really does have an intrinsic velocity.

I conclude that Aristotle means what he says: Democritus asserted a disjunction: 'Either both P and not- P are false (if P involves a *nomôi* quality),¹⁵ or else we cannot know which, if either, of P and not- P is true (if P involves an *eteêi* quality).' Thus Democritus differs from Protagoras at two points: first, he admits scepticism in certain cases;¹⁶ second, he refuses to relativize sensible qualities.¹⁷ The former difference is more significant than the latter.

The details of that argument should not obscure its essential structure: whatever may be thought about Democritus' attitude to sensible qualities, his use of the *Ou Mallon* Principle displays a subtle and conscious appreciation of a central feature of the notion of rational belief: if $E(P, Q)$, then it is unreasonable to accept one and reject the other of P and Q .

So far, '*ou mallon*' has shown itself as a destructive weapon. Its more interesting applications are constructive; and I shall now turn to them. Suppose that for some pair of propositions, P and Q , we have:

(11) $R(P)$.

(12) $E(P, Q)$.

(13) Possibly both P and Q .

That triad threatens no inconsistency; and indeed, given (11), we should believe that P ; and given (12), that Q . Consider, then, the application of *ou mallon* to the problem of atomic shapes. There is an infinity of possible shapes, S_1, S_2, \dots . Let P_i represent the proposition that there are atoms of shape S_i ; then the infinite conjunction of the P_i s is a logical possibility. But we have (let us grant) sufficient reason to believe that there are atoms; and since every atom has some shape, we have reason to believe that there are atoms of some shape. But we have no reason to believe in, say, spherical atoms rather than in, say, cubic atoms; hence all the P_i s are rationally on a par; hence we have reason to believe that there are atoms of every shape.

The argument is confused. The Abderites need the following two premisses:

(14) There is some atomic shape, S_i , such that $R(P_i)$.

(15) $E(P_1, P_2, \dots)$.

But they have not established a title to (14); for the argument I assigned to them yields only:

(16) R (there is some shape S_i such that P_i).

But (16) does not imply (14). Indeed, the Atomists have no reason for believing in atoms of any particular shape; they may be saddled with the contradictory of (14), viz.:

(17) For no atomic shape, S_i , $R(P_i)$. And even though (17) yields (15), that will not, so far as I can see, give them their desired conclusion, that there are atoms of every shape.

The second constructive use of *ou mallon* fares no better. Let ' P ' now represent 'there are atoms'; ' Q ', 'there is void'. And suppose (what again was not uncontroversial) that (13) is true. The Abderites then require both (12) and also either $R(P)$ or $R(Q)$. No doubt they claimed $R(P)$. Yet how are they entitled to $E(P, Q)$? No Atomist text gives any grounds for holding $E(P, Q)$, nor can I invent any.

Perhaps this interpretation construes *ou mallon* in too narrowly epistemological a fashion: a broader interpretation may be thought to serve the two positive applications better. First, let ' $E(P, Q)$ ' represent not epistemological, but what we might call nomological equivalence: 'Necessarily, P if and only if Q '. Then it might seem that the existence of atoms and the existence of void are mutually implicative; there cannot physically be atoms unless there is void, and vice versa. Thus ' $E(P, Q)$ ' yields 'if P , necessarily Q '; and that, with $R(P)$, does lead to $R(Q)$. The inference is, I think, again a valid one; but again I do not think that the Atomists are entitled to $E(P, Q)$. Nor will this version of *ou mallon* apply to the case of atomic shapes.

Second, let ' $E(P, Q)$ ' embrace what I may call explanatory equivalence: 'For any R , P because R if and only if Q because R '. Consider again the atomic shapes. We have granted the Atomists' proposition (16). Now a generous interpretation of text **309** (Leucippus, **67 B 2**), will give us:

(18) For any proposition P : if P , then there is some proposition Q such that P because Q .

We may now infer to:

(19) R (there is some Q , and some atomic shape S_i , such that P_i because Q).

And then, given (15) and the explanatory reading of ' E ', we may conclude to:

(20) R (for any atomic shape S_i , P_i).

It is reasonable to believe in an infinity of atomic shapes.

The inferential apparatus here is interestingly complex; and I am inclined to think that it is valid. But, again, $E(P_1, P_2, \dots)$ still seems a groundless hypothesis: why on earth suppose that all atomic shapes are explanatorily equivalent? Plato would urge that some shapes are physically and theologically superior to others; a modern atomist, if he allowed his atoms shape at all, would prefer a single atomic shape, and probably deny the need to explain why that shape alone should exist.

I shall not pursue these matters further. In conclusion, I say first, that the epistemological *Ou Mallon* Principle is a sound and important principle of reasoning; second, that certain other *Ou Mallon* Principles, which the Atomists may possibly have confused with it, are equally interesting, though more in need of elucidation; and thirdly, that the few verses of the *ou mallon* song which we possess are less melodious than the refrain which punctuated them.

(e) *Democritean scepticism*

Metrodorus of Chios, a pupil of Democritus (e.g., Clement, **70 A 1**) who held solidly to the main tenets of atomism (e.g., Theophrastus, **A 3**), purveys an extreme scepticism

which foreshadows, in its ingenious comprehensiveness, the most extravagant claims of Pyrrho: at the beginning of his book *Concerning Nature* Metrodorus said:

None of us knows anything, not even that very fact whether we know or do not know; nor do we know what not to know and to know are, nor, in general, whether anything is or is not (**505: B 1**).¹⁸

Of Metrodorus' book little else survives and nothing tells us what his scepticism rested upon, or why he wrote *Concerning Nature* at all. His scepticism, however, like his atomism, was inherited. For according to Democritus,

In reality (*eteêi*) we know nothing; for truth is in a pit (**506:68 B 117**).

Our main source for Democritus' scepticism is Sextus; and I quote the chief Democritean fragments in their Sextan setting:

Democritus sometimes does away with what appears to the senses.... In the *Buttresses*, though he had promised to ascribe the power of conviction to the senses, he is none the less found condemning them; for he says:

We in actuality grasp nothing firm, but what changes (*metapipton*) in accordance with the contact (*diathigên*)¹⁹ between our body and the things which enter into it and the things which strike against it [=B 9].

And again he says:

Now that in reality (*eteêi*) we do not grasp of what sort each thing is or is not, has been made clear in many ways [=B 10]

And in *Concerning Forms* he says:

A man must know by this rule that he is separated from reality (*eteê*) [=B 6].

And again:

This argument too makes it clear that in reality (*eteêt*) we know nothing about anything; but belief (*doxis*) for each group of men is a reshaping (*epirhusmiê*) [=B 7].

And again:

Yet it will be clear that to know what sort each thing is in reality (*eteêt*) is inaccessible [=B 8].

In those passages he pretty well destroys apprehension in its entirety, even if he explicitly attacks only the senses. But in the *Canons* he says that there are two kinds of knowing (*gnôseis*), one via the senses, one via the intellect (*dianoia*); he calls the one via the intellect 'legitimate (*gnêsiê*)', ascribing to it reliability for the judgment of truth, and he names that via the senses 'bastard (*skotiê*)', denying it inerrancy in the discrimination of what is true.

These are his words:

Of knowledge (*gnôêmê*) there are two forms, the one legitimate, the other bastard; and to the bastard belong all these: sight, hearing, smell, taste, touch. And the other is legitimate, and separated from that.

Then, preferring the legitimate to the bastard, he continues:

When the bastard can no longer see anything smaller, or hear, or smell, or taste, or perceive by touch, † but more fine † [=B 11].

Thus according to him too, reason, which he calls legitimate knowledge, is a criterion (507: *adv Math VII*. 135–9).

Fragments B 7 and B 10 show that Democritus' scepticism was not merely a glum asseveration of intellectual impotence, but the melancholy conclusion of a set of arguments. Two of Democritus' arguments can, I think, be reconstructed.

First, there is *doxis epirhusmiê* of B 7. I suppose that '*doxis epirhusmiê*' means 'belief is a rearrangement of our constituent atoms', i.e. 'coming to believe that *P* is having certain parts (e.g., cerebral parts) of one's atomic substructure rearranged' (cf. Theophrastus, *Sens* §58=A 135).²⁰ Belief, then, cannot ever amount to knowledge, because it is never anything more than an atomic rearrangement. I guess that Democritus is supposing, if only tacitly, that knowledge is essentially reasoned belief: opinion not arrived at by rational considerations cannot qualify as knowledge. But if every belief is simply a cerebral alteration (caused, no doubt, by our changing relation with other atomic conglomerates), then no belief can be rational. To put it crudely, causally determined cerebral mutations cannot be identical with rationally accepted beliefs.

The argument has connexions with Xenophanes (above, p. 142); but it is less subtle and less persuasive than Xenophanes' argument. According to Xenophanes, certain types of causal chain prevent a caused belief from counting as knowledge; according to Democritus, any belief, being the physical result of a causal chain, is disqualified from knowledge. Democritus, I think, is simply wrong: my belief that *P* may constitute knowledge even if it is itself a physical state (a state of my nervous system) and even if it stands at the end of a causal chain (as surely it does). Roughly speaking, the belief is knowledge if the physical state which embodies it was caused, mediately or immediately by the fact that *P* (i.e., if it is true that because *P* I believe that *P*); and the belief is rational if the physical state which embodies it was caused by certain other beliefs (i.e., if because I believe that *Q* I believe that *P*, where *Q* in fact gives good grounds for *P*). If a causal theory of knowledge can be worked out in detail, then Democritus' argument for scepticism in B 7 must be rejected.

Second, there is B 9. Sextus evidently thinks that Democritus means 'perceive' by 'grasp (*sunienai*)'; and he may be right. But Democritus is not simply 'condemning' the senses: he is offering an argument. The point, I think, is this: cognitive processes are interactions between observers and objects of observation; the processes, atomically construed, consist in the impingement of atoms from the object on the body of the observer. Now any such process involves a change in the object; for it loses at least those atoms which impinge upon the observer. Consequently, we can never know the state of any object; for any attempt to discover it thereby changes it. We grasp nothing 'firm'; for our very grip disturbs. Knowledge alters the known; and therefore knowledge is impossible.

According to modern physical theory, we discover the position and characteristics of an object by way of some physical interaction with it: in the simplest case, I see where the cat is by shining a torch on it and receiving the reflected rays. What goes for cats goes for sub-atomic particles; to tell where a particle is I must fire a ray at it and receive it on the rebound. But sub-atomic particles are delicate things, and when a ray hits them they are shaken; thus the reflected ray will not give me the information I want. It cannot tell me where the particle is and how it is travelling; for the impact, without which I can know nothing of the particle, will change the particle's trajectory. (That is meant as a kindergarten version of the reasoning behind Heisenberg's Indeterminacy Principle; science for the infant is usually bad science, but I hope that the point of my parallel is not wholly blunted by my puerile exposition.)

Atomic structures cannot be known; for the process of acquiring knowledge necessarily distorts those structures. The quest for knowledge is like the search for the end of the rainbow: we can never discover the pot of gold; for our journey towards the rainbow's end in itself moves the rainbow to a different and ever distant location.

The argument that I have dredged from **B 9** is not *a priori*: it depends on Democritean physics and psychology. I guess that it may present a plausible deduction from those Atomist theories, though I doubt if there is enough evidence for us to test its validity. In any case, there is no philosophical way of attacking it: it fails if the physics and psychology are false (and I assume that they are).

Metrodorus of Chios said that no one knows anything: the things we believe we know we do not strictly (*akribôs*) know; nor should we attend to our senses. For everything is by belief (**508**: Epiphanius, **70 A 23**).

Leucippus insists that we have belief, but no more (Epiphanius, **67 A 33**); and in many of the fragments I have quoted, Democritus denies that we have genuine knowledge. Many sceptical philosophers seem to be making what is little more than a verbal point: we do not, strictly speaking, *know* anything, but we can, of course, have reasonable beliefs. Such thinkers set the canons of knowledge artificially high: knowledge must be certain, or infallible, or necessary, or indubitable, or whatever. If the canons are set high, then knowledge is indeed beyond us; but ordinary men are quite happy with relaxed canons, and those sceptics who allow reasonable belief in fact allow precisely the thing that ordinary men call knowledge.

The Atomists, however, do not even allow reasonable belief: their arguments against knowledge, in so far as we know them, are equally arguments against reasonable belief. We have beliefs: that is an incontestable empirical fact. Our beliefs do not amount to knowledge: that is the argument of the Abderites. Yet our beliefs are not even reasonable: being atomically caused, they are not founded on reason; and the physics of the cognitive processes assures us that no impressions of external reality are accurate. If there is no room for knowledge, by the same token there is no room for reasoned belief: 'everything is by belief—but that, far from being a consolation, is only a cause for despair. The urbane scepticism of Locke allows a decent wattage to the human candle: our light extends as far as we need, but not as far as we like to boast. Abderite scepticism is Pyrrhonian: the light of the mind is an *ignis fatuus*.

That conclusion did not please Democritus; indeed, as Sextus observes, his fragments do not exhibit consistency. Fragment **B 11** tails off into corruption; but the general sense of Democritus' remarks is clear enough: 'the bastard way of knowing (*skotiê gnôsis*)' will not carry us to the finest or ultimate constituents of stuff; for that, 'the legitimate way of knowing (*gnêsiê gnôsis*)' is needed. That coheres with Democritus' approval of the Anaxagorean slogan: *opsis tôn adêlôn ta phainomena*—what the senses cannot apprehend must be grasped by the intellect. There seems, then, to be an empiricist Democritus rising in revolt against the sceptic.

And perhaps the sceptical fragments have been misread: the Heisenbergian argument, after all, at most shows that we cannot directly apprehend the atomic elements of things; it does not show that we may make no inferences from perceptible things to their elemental structure. **B 9** and **B 10** consistently say that we cannot 'grasp' things in their reality; but that only means that atoms are not open to perceptual knowledge.²¹ Thus we may find a positive epistemology for Democritus: 'All knowledge rests on perception: and perception will not, directly, yield knowledge of what exists *eteêi*. But by perception we may come to know about what is *nomôi*, and intellectual attention to those sensual pronouncements will enable us to procure an inferential knowledge of genuine reality.'

Alas, that happy picture is mistaken. The *doxis epirhusmiê* argument is resolutely sceptical; and **B 6**, **B 7**, **B 8**, and **B 117** leave no room for any knowledge at all. Moreover, Democritus recognized that the empiricist intimations of **B 11** were misleading:

Having slandered the phenomena...he makes the senses address the intellect thus: 'Wretched mind! Do you take your evidence from us and then overthrow us? Our overthrow is your downfall' (**509: B 125**).

In a puckish mood, Russell once observed that naive realism leads us to accept the assertions of modern science; and that modern science then proves realism false. Realism is false if it is true; hence it is false. And if science rests on realism, then it is built upon sand. The parallel with Democritus is plain: the observations of the senses give us a set of facts upon which an atomistic science is reared; the science then proves the irrationality of all belief and the unreliability of the senses. If the senses are to be trusted, they are not to be trusted; hence they are not to be trusted. And if atomism rests upon the senses, then atomism is ill founded.

Did the mind answer the senses? Had Democritus any solution to the problem which **509** candidly poses? There is no evidence that he had; and I am inclined to think that he had not. It is, I suppose, a tribute to Democritus' honesty that he acknowledged his plight; but it derogates somewhat from his philosophical reputation that he made no move to escape from the *impasse* he found himself in.