VIII
The Principles of Human Knowledge

(a) *The origins of scepticism*

The sceptical philosophers of Hellenistic Greece held that no one at all could know anything at all; and with commendable consistency they proceeded to deny that they themselves knew even that distressing fact. Their splendid doctrine, or antidoctrine, had, they believed, been adumbrated in the epistemological reflexions of the early Presocratics; for although scepticism had not flourished until the late fifth century, Parmenides' predecessors had reflected, at least casually, on epistemological matters, and some of them had emitted pronouncements of a sceptical tone. And that, after all, is hardly surprising: the first philosophers had propounded theories of unprecedented scope and presumption. Their utterances must have aroused wonder and amazement; and wonder, as Aristotle observes, is the father of thought. Having wondered that the Milesians knew so much, men might wonder how they knew so much; and having wondered how, it was but a short step to wondering whether they knew quite everything that they professed:

> all ignorance toboggans into know
> and trudges up to ignorance again.

The uphill trudge is the natural successor to the heady slide.

At all events, the early Presocratics did, I believe, invent epistemology or the science of knowledge; and they brought a form of scepticism to birth. We may start from Alcmeon of Croton. According to Diogenes Laertius, Alcmeon's treatise *Concerning Nature* opened as follows:

> Alcmeon of Croton, son of Peirithous, said this to Brotinus and to Leon and to Bathyllus: concerning things unseen the gods possess clear understanding *(saphêneia);* but in so far as men may guess […I say as follows…] **(119:24 B1)**.

The text of the fragment is controversial:[1] on any account **119** is sceptical in tone; but different versions give radically different sorts of scepticism.

With the text I adopt, Alcmeon is no Pyrrhonian; he does not absolutely deny the possibility of knowledge and the rationality of belief. First, he ascribes knowledge, even of 'things unseen', to the gods; only men are deprived of knowledge: it is the human candle whose illuminatory powers are feeble. Second, it is only 'things unseen' which escape human knowledge: what we see, Alcmeon implies, we can indeed know. Alcmeon is thus closer to the urbane scepticism of Locke than to the hyperbolical doubt

of Pyrrho and his followers. And that, perhaps, is to the good; for while Pyrrho's views are ostentatiously incredible, Lockean scepticism is both plausible enough to be persuasive and sufficiently removed from our unreflective thoughts to be disconcerting.

Lockean scepticism was endemic in the Greek mind. Its *locus classicus* is in the second book of the Iliad, where the poet seeks help from the Muses:

> for you
> Are goddesses, are present here, are wise, and all things know,
> We only trust the voice of fame, know nothing….

There are numerous imitations and parallels;[2] and the melancholy sentiment is of a piece with that 'modest assessment of the importance of mankind in the universe'[3] which is characteristic of early Greek writings. Such effusions express a mournful emotion rather than enunciate a philosophical belief; and we might be tempted to regard Alcmeon's sceptical proem as no more than a bow to a Greek convention: a decent modesty is expected of a man who is about to describe the history and nature of the universe. But Alcmeon has philosophical as well as poetical predecessors; and it is to them that I now turn.

Xenophanes, according to pseudo-Plutarch, 'says that the senses are false, and together with them he also delivers a general attack on reason itself' **(21 A 32)**. Sotion, more briefly, makes him 'the first to say that everything is unknowable' (Diogenes Laertius, IX. 20=**A 1**). Timon, who was of a sceptical turn of mind, evidently found a kindred spirit in Xenophanes; for his poetical dialogues on the history of philosophy are feigned to have occurred between himself and his predecessor (Diogenes Laertius, IX. 111). Sextus places Xenophanes at the head of the sceptical sect (*Pyrrh Hyp* II. 18; *adv Math* VII. 48–52) .[4]

Four of the surviving fragments of Xenophanes' poems bear on epistemological matters; and the longest of them, amounting to no more than four lines, was certainly the chief and perhaps the sole source of his sceptical reputation. It runs thus:

> And the clear truth *(to saphes)* no man has seen nor will anyone
> know, about the gods and concerning everything of which I speak.
> For even if he should actually manage to say something that is the case,
> nevertheless he himself does not know. But for all there is belief
> **(120: B 34)**.[5]

The lines are prefatory in character; and I accept the suggestion that they come from an exordium to Xenophanes' philosophical *oeuvre* (see above, p. 83). Antiquity read **120** in a sceptical fashion: by modern scholars the sense of the fragment is hotly disputed.

First, it has been argued on philological grounds that **120** has nothing whatever to do with scepticism. Xenophanes, the argument goes, asserts not that no one *knows*, but that no man has *seen*, the truth about the gods; and the phrase which I have translated 'nor will anyone know' *(oude tis estai eidôs)* is more properly rendered by 'nor will anyone see'—for the verb *eidenai*, of which *eidôs* is the participle, is originally a verb of perception. **120** does not, then, advocate scepticism: it states that on certain subjects *perceptual* knowledge is unattainable, thereby implying that a non-perceptual form of

knowledge is appropriate there, a perceptual form elsewhere. **120** classifies knowledge, it does not attack knowledge; and Xenophanes the sceptic slopes off into the populous limbo of historical fantasy.

The argument has, I think, now been conclusively refuted. Careful research does indeed show that, etymologically, *eidenai* is a perceptual verb; but further extensive researches have incontrovertibly shown that even in Homer the verb bears the general sense of 'know', and that this sense was normal by Xenophanes' time: in Xenophanes, as in classical texts, *eidenai* simply means 'know'.[6] Moreover, *eidôs* in line 2 contrasts with *dokos* in line 4; and since *dokos* can only mean 'belief', *eidôs* will naturally be translated by means of the verb 'to know'. Thus, **120** does after all enunciate some sort of sceptical thesis: it asserts that no man has known or will know certain things.

Second, we may ask whether Xenophanes' scepticism is, like Alcmeon's, a thesis about the capacities of human cognition. That question is easily answered. **120** talks explicitly of men; **B 18** and **B 36,** which I shall shortly quote, imply that the gods have knowledge which men lack; and Arius Didymus explicitly says that, according to Xenophanes, 'god knows the truth, but for all there is belief' **(A 24):** the second clause comes from **120;** and it is a happy suggestion that the first clause, which is metrical, is also a quotation from Xenophanes.[7]

Third, what is the scope of Xenophanes' scepticism? Is he denying all knowledge to men, or only certain areas of knowledge? **120** specifies the scope by the phrase 'about the gods and concerning everything of which I speak'. If, as I believe, **120** prefaced a scientific poem in the Milesian tradition, then Xenophanes means to say that knowledge about things divine and knowledge about natural science lie beyond our human grasp.

That interpretation is confirmed by a passage from a justly celebrated treatise in the Hippocratic *corpus:* the treatise is *On Ancient Medicine,* and it was probably composed towards the end of the fifth century. Alcmeon specified the scope of his scepticism by the phrase 'the things unseen *(ta athêêta)*'; the Hippocratic treatise takes up Alcmeon's notion, if not his phrase, to pillory those pretentious disciplines which deal with 'what is invisible and puzzled over *(ta aphanea te kai aporeomena)*'. The pretentious scientists are men who study 'the things in the air *(ta meteôra)* and the things underground'. Those words pick out the main areas of early scientific interest;[8] and an attack on the students of *ta aphanea* is an attack on the pretensions of Ionian science. The stars are visible, and the rocky substance of the earth is not unseen; for all that, the early scientists could be said to apply their minds to *ta aphanea* and *ta athêêta* inasmuch as their astronomical and geological theories advanced far beyond the bounds of perception.

On Ancient Medicine criticizes its scientific opponents in the following terms:

> If one should state and declare how these things are, it would be clear neither to the speaker himself nor to his hearers whether they were true or not; for there is nothing by referring to which one can know the clear truth *(to saphes)* (**121:** § 1).

The connexions between this passage and **120** are close; I think they are too close to be coincidental, and I suggest that in *Ancient Medicine* we find an early and favourable exegesis of Xenophanes' fragment. Thus in **120** Xenophanes advocated a limited, and

not a general scepticism: it is theology and natural science, not knowledge in general, that must elude our human grasp.[9]

Three further fragments bear on the question. **B 18** reads thus:

> Not from the beginning did the gods show everything to mortals;
> but in time by inquiring they find things out better **(122)**.

The fragment is complemented by **B 36:**

> Whatever they have revealed to mortals to be seen…**(123)**.

122 shows that 'they' in **123** refers to the gods; and **123** in turn indicates that **122** should be glossed as follows: 'The gods did not reveal everything to men at once; but their few revelations, aided by patient inquiry, will lead to progress.' It is a plausible inference from the two fragments that Xenophanes does allow some knowledge to men: patient inquiry will increase the small stock of god-given knowledge. Finally, **B 35;**

> Let these things be believed *(dedoxasthô)* as being similar to what is true
> **(124)**.

Belief and verisimilitude, not knowledge and truth, mark the goal of man's cognitive journey. The reference of 'these things' is determined by **120:** as **120** formed part of a prologue to Xenophanes' *oeuvre*, so **124** comes from its epilogue; and as the scepticism of **120** is limited to theology and science, so too is the injunction of **124**.

The conclusion, that Xenophanes advocated a limited and not a general scepticism, is again confirmed by *Ancient Medicine*. Immediately after his echo of **120,** the author announces that in the art of medicine knowledge is not only attainable, but has, to some extent, been attained; and that, he says, was achieved 'by inquiring for a long time' (§2). That surely is an echo of **122;** indeed, it is possible that Xenophanes himself mentioned medicine as a potential field for knowledge and progress; and it is probable that doctor Alcmeon did so.

Xenophanes did not merely assert a scepticism; he argued for it. The second couplet of **120** begins with an inferential particle:

> For *(gar)* even if he should actually manage to say something that is the case,
> nevertheless he himself does not know.

The reference to saying is, I take it, insignificant: and the antecedent of the couplet glosses as: 'even if *a* truly believes that *P*…'. Pretty clearly, Xenophanes is implying that knowledge consists of true belief and something more; the implication was developed in Plato's *Theaetetus;* and it has stood as a central problem in modern epistemology. Knowledge is more than true belief; but what must be added to true belief to attain knowledge? and how can the addition be secured?

Xenophanes' answer to those questions has been sought in **120**. Sextus glosses the consequent of the second couplet as follows:'…a does not know that *a* truly believes

that *P*'.[10] So construed, **120** argues thus: '*a* does not know that *P;* for even if *a* truly believes that *P*, he cannot know that he does'. The principle behind the argument is:

(1) If *a* knows that *P*, then *a* knows that *a* truly believes that *P*. The principle has some initial attractions: it suggests, on the one hand, a thesis about knowing that one knows that has been much canvassed in recent philosophical literature, and on the other hand, it hints at the danger of an infinite regress of the type Plato was so concerned to avoid.

A closer inspection proves (1) less attractive. If '*a* knows that *a* truly believes that *P*' is equivalent to '*a* knows that *a* believes that *P* and *a* knows that *P* is true', then (1) is equivalent to:

(2) If *a* knows that P, then *a* knows that *a* believes that *P* and *a* knows that *P* is true;

and (2) is equivalent to:

(3) If *a* knows that *P*, then *a* knows that *a* believes that *P*.

Now even if (3) is true, as on some interpretations of 'know' perhaps it is, it is not a proposition with any seriously sceptical implications. In the context of Xenophanes' argument, it implies that the additional element required to turn true belief into knowledge is the knowledge that you hold the belief in question. And such knowledge is surely not peculiarly elusive: of all things, our own beliefs are most accessible to us.

In short, Sextus' interpretation imputes the following argument to Xenophanes: 'we cannot aspire to knowledge of theology and science, for such knowledge presupposes knowledge of our own beliefs'. Such an argument is feeble, and I therefore incline to reject the Sextan interpretation. For a simpler interpretation is possible: the consequent of the couplet reads simply '*a* does not know that *P*'; and **120** argues thus: 'you cannot know that *P* for though you may attain true belief, that is not knowledge'. The argument turns on the fact that knowledge is not just true belief. It immediately raises the question of why the additional component in knowledge, whatever it may be, is so hard to come by; but it does not answer the question or even identify the extra component. For that we must look beyond the confines of **120,** and reconsider some of the fragments of Xenophanes' theology.

The gods are commonly supposed to be anthropomorphic **(63: B 14),** yet a little imagination will indicate that cows and horses, had they the wit to conceive of gods at all, would make them theriomorphic **(73: B 15);** and observation shows that:

> Each group of men paints the shape of the gods in a fashion similar to themselves—as Xenophanes says, the Ethiopians draw them dark and snub-nosed, the Thracians red-haired and blue-eyed (**125:** Clement, **B 16**).[11]

With these fragments we should compare **B 38;**

> If god had not made golden honey, men would say that figs are much sweeter **(126)**.

There is, I think, an epistemological moral here: our beliefs—or many of them—are explicable in terms of our circumstances; they do not, therefore, amount to knowledge.

Let me expand upon that. A Thracian believes that the gods are red-haired. His belief is explicable in a way which has no connexion with the actual nature of the gods: because the Thracian is himself red-haired, he believes the gods to be red-heads too. The causal hypothesis is supported by the findings of comparative anthropology; for everywhere men's gods are themselves writ large. The hypothesis does not show the Thracian's belief to be false; but it does show it to fall short of knowledge. Again, an Athenian nurtured on honey from Hymettus holds that figs are only moderately sweet. His belief is explicable in a way which has no connexion with the intrinsic nature of the figs: because the Athenian has had a taste of honey, he believes figs to be mildly sweet. The causal hypothesis is supported by the findings of comparative sociology; for men's gustatory judgments vary according to their gustatory experience. The hypothesis does not show the Athenian's belief to be false; but it does show it to fall short of knowledge. And in general, for a very large and important class of beliefs, if *a* believes that *P*, then there is some causal hypothesis, quite unconnected with the content of his belief, which explains why he believes that *P*. 'For all there is belief: some lucky men may 'actually manage to say something that is the case'; but for all that, 'the clear truth no man has seen, nor will anyone know'.

It is important to see what Xenophanes is not saying here. First, he is not commenting on the disreputable origins of most of our beliefs: many of my beliefs about Roman history were first fixed in my mind by the novels of Robert Graves and Peter Green; yet for all that, some at least of my beliefs have been turned into knowledge. Thin opinions, illicitly imbibed, may later be transformed by an intellec tual digestion into red-blooded knowledge. Xenophanes does not deny that. Second, Xenophanes is not objecting to causal explanations of knowledge as such. My present belief that Caesar was murdered on the Ides of March is, I suppose, causally explicable by reference to my avid reading and memorizing of the accounts of his death in various ancient texts. It does not follow—nor does Xenophanes imply that it does—that my belief falls short of knowledge.

Rather, Xenophanes' point is that many of my beliefs are explicable by a causal hypothesis which has no direct connexion with the content of those beliefs. I believe that *P*, and *P* is true: yet there is a causal chain explaining my belief which was neither originated nor at any stage supplemented by the fact that *P*. And that is why my belief is not knowledge.

Xenophanes' thesis requires a more careful statement and a lengthier consideration than I can give it here. I am confident, however, that the philosophical part of it is true: *if* my belief that *P* was caused by events having no suitable connexion with the fact that *P*, then I do not know that *P*. The non-philosophical part of Xenophanes' thesis, that very many of our beliefs do have defective causal antecedents of that sort, cannot be assessed in general terms: to test it, we must take believers and their beliefs piecemeal. I shall, however, indulge myself to the extent of offering an unsupported judgment that here too Xenophanes is probably right.

Men's beliefs do not amount to knowledge because they have unsatisfactory causes. The conclusion suggests that true belief will amount to knowledge if its causal antecedents are reputable. The extant fragments give no clue to Xenophanes' canons of respectability, if indeed he ever formulated any. He implies, if my interpretation is correct, that in some areas at least knowledge is attainable by men; and it is therefore

reasonable to ask what features of those favoured areas make them open to human cognition, and to require of Xenophanes, if not a general account of causal respectability, at least an indication of certain cases in which the causal chain leading to belief has the strength and direction to turn that belief into an item of knowledge.

(b) *The foundations of empirical knowledge*

The key is again to be found in *Ancient Medicine:*

> You will find no measure or number or balance by referring to which you will know with certainty—except perception (**127:** § 9).

An elaboration of that blunt assertion will produce an empiricist theory of knowledge. The first attempt to sketch such a theory is to be found in the writings of the early Presocratics.

Heraclitus certainly had the makings of a cynic; and some see him as a sceptic. He denounces the claims to knowledge made by his great predecessors, Hesiod, Hecataeus, Pythagoras, and even Xenophanes;[12] and he regularly rails at the folly of mankind:

> Most men do not understand what they meet with, nor when they learn do they gain knowledge—but they seem to themselves to do so **(128:22 B 17=3 M)**.
>
> What understanding or intelligence have they got? They put their faith in folk-singers, and they use the multitude as a teacher, not knowing that 'the many are bad and few are good' **(129: B 104= 101 M)**.[13]

Again, there are several fragments of a relativist bent, reminiscent of Xenophanes' comment on the sweetness of honey:

> Disease made health sweet; famine, satiety; exhaustion, rest **(130: B 111=44 M)**.
>
> A man is held foolish by a spirit, as a child is by a man **(131: B 79 =92 M)**.

And several fragments suggest scepticism more directly:

> Nature likes to hide itself **(59: B 123=8 M)**.
>
> Human character has no insights *(gnômai),* divine character does **(132: B 78=90 M)**.

If you seek knowledge, you will be like gold-diggers who 'dig over much earth and find little' **(B 22=10 M);** and if you had the temerity to study psychology,

> you would not find in your journey the limits of the *psuchê,* even if you travelled the whole road—so deep is its account *(logos)* **(133: B 45=67 M)**.

A narrow inspection, however, does not support that interpretation of Heraclitus: the scornful attacks on other men's pretensions and on the ignorance of the multitude do not suggest scepticism but the reverse; for the attacker claims a superiority. The relativistic fragments served a metaphysical rather than an epistemological purpose (see above, p. 74). The sceptical fragments, with the exception of **132,** are designed only to stress the important platitude that knowledge is not easily won; and **132** may carry a moral rather than an epistemological message.

Certain optimistic philosophers have embraced a doctrine of Manifest Truth. According to Spinoza: 'Truth at once reveals itself and also what is false, because truth is made clear through truth—that is, through itself—and through it also is falsity made clear; but falsity is never revealed and made manifest through itself. Hence anyone who is in possession of the truth cannot doubt that he possesses it, while one who is sunk in falsity or in error can well suppose that he has got at the truth' (*Short Treatise on God, Man and his Well-Being*, ch. 15).[14] That curious and confused view would certainly have been rejected by Heraclitus: truth does not 'reveal itself'—it lies hidden at the bottom of the well, and only an accomplished workman will have skill enough to draw it up. To say that is to be a realist, not a sceptic.

A difficult fragment has indeed been read as an explicit rejection of Xenophanean scepticism:

> For the most trustworthy man *(ho dokimôtatos)* knows how to guard one from what seems to be the case *(ta dokeonta)*. And indeed justice will catch up with the inventors and purveyors of lies (**134: B 28=20 M+19 M**—see above, p.133).

According to Xenophanes, we must be content with belief *(dokos);* according to Heraclitus, a clever man *(dokimôtatos)* can preserve us from *dokeonta* and lead us to genuine knowledge.[15] Whether or not that is the right reading of **134,** its import is undeniably Heraclitean.

The path to preservation requires a sturdy independence: we must not behave like 'children of parents', accepting what we are told on the mere authority of the teller **(B 74=89 M);** and if

> Eyes are more certain witnesses than ears **(135: B 101a=6 M),**

that is partly because our ears bring us hearsay evidence and are responsible to a greater extent than our eyes for the inculcation of second-hand opinions. We are not to accept things even on the authority of Heraclitus himself: we must listen not to him but to what he says **(35: B 50=26 M);** and his *logos* is to be accepted for its intrinsic merits, not on the say-so of its first discoverer. Diogenes says of Heraclitus that 'he studied at no one's feet, but he says that he searched for himself and learned everything by himself' (IX. 5=**A 1**). A knower must be able to say, with Heraclitus,

> I searched for myself **(136: B 101=15 M)**.[16]

The fragments indicate that Heraclitus was true to his own prescription: 'he learned at the feet of no philosopher but was educated by nature and by industry' (Suda, **A 1a**).

It is to this context, I suspect, that two celebrated fragments on 'polymathy', or the learning of many things, belong. The fragments read thus:

> Polymathy does not teach understanding *(nous)*—otherwise it would have taught Hesiod and Pythagoras, and again Xenophanes and Hecataeus **(137: B 40=16 M)**.
>
> Pythagoras, son of Mnesarchus, practised inquiry most of all men, and excerpting those writings he claimed for himself wisdom—polymathy, malpractice **(138: B 129=17 M)**.[17]

A vulgar Baconianism holds that science advances by first amassing countless pieces of particular information and then inferring a universal law: understanding, on this view, is the product of polymathy; and it is tempting to regard Heraclitus' dismissal of polymathy as a deliciously modern protest against a precocious form of Baconianism.

I doubt that interpretation. It seems to me that it is the second and not the first half of the word 'polymathy' which arouses Heraclitus' scorn. Pythagoras' fault is not that he learned a lot, but that he stole his thoughts from others: he claimed wisdom, when he had indulged only in malpractice and polymathy. *Manthanein* means 'to learn', and in particular 'to learn from another'; and polymaths are men who have acquired a large stock of opinions from other men. Learning and discovery are opposed.[18] Learners have not 'sought for themselves'; and it is for that reason that, however much they may have learned, they cannot lay claim to understanding or knowledge. John Locke urged that testimony, or the word of other men, could support a probable opinion but could never sustain knowledge. Keats expressed the same view in another terminology:

> knowledge dwells
> In heads replete with thoughts of other men; Wisdom in minds attentive to their own.

Heraclitus, I suggest, is the originator of that epistemological tradition.

And like Locke, Heraclitus was an empiricist; indeed, our evidence suggests that he was not only an empiricist but a sensationalist: knowledge must be built on experience, and specifically on sense-experience.

> The things we learn of by sight and hearing, those do I prefer **(139: B55=5M)**.[19]
>
> If all things became smoke, the nostrils would discern them **(140: B7=78 M)**.

In our familiar world, eyes and ears give the basis for knowledge; and even in a radically different world the appropriate senses would be our only ultimate guide. An ill-attested fragment says that according to Heraclitus the sun has 'the breadth of a

human foot' **(B 3=57 M)**. Some scholars take this to make the banal assertion that the sun looks about a foot across; others find in it a metaphorical expression of some psychological theory.[20] But if the fragment is not a mere forgery, we must take it to mean what it says: it is a crude piece of astronomy, and it evinces a strict and severe sensationalism. Our eyes tell how big the sun is; and they are the best witnesses we could have.[21]

A further fragment remarks that

> We must be knowers of very many things **(141: B 35=7 M)**.

There is, of course, no incompatibility between that prescription and Heraclitus' rejection of 'polymathy';[22] and **141** immediately suggests the second stage in the classical empiricist recipe for attaining knowledge: the senses give us particular information; frequent and diverse inquiry amasses an organized quantity of such information; it only remains to transmute that mass of dross into the gold of knowledge.

How is the transmutation to occur? Some scholars find a hint in **B 107=13 M:**

> Bad witnesses for men are the eyes and ears of those who have barbarous *psuchai* **(142)**.

Sextus, who reports the fragment, takes it to 'refute perception' **(A 16);** but he misconstrues the Greek. The fragment should rather be compared with **128** ('Most men do not understand what they meet with…') and with **61: B 56=21 M** ('Men are deceived with regard to knowledge of what is evident…'): the truth is not manifest; only a practised eye will discern what is presented to it; the senses need direction by a mind that is not 'barbarous'.

Can we press the notion of a 'barbarous mind' into epistemological service? The Greeks used the word *'barbaros'* to denominate, rudely, foreigners. Etymologically it is connected with the idea of twittering or babbling: *barbaroi* are men who cannot talk intelligibly. (I do not know if *barbaros* means 'foreign' or 'non-Greek'; the lexicons offer both translations as if they were synonymous.) It is usually, and plausibly, supposed that 'barbarous minds' belong to men with some sort of linguistic deficiency; yet what deficiency can Heraclitus have in mind in **142**?

Heraclitus is hardly advancing the chauvinist thesis that non-Greek speakers cannot attain knowledge; nor is he anticipating those delightful Frenchmen of the seventeenth century who held that the ancient tongues were peculiarly appropriate to the expression of scientific and metaphysical truth. Again, Heraclitus is hardly expressing the insight that scientific knowledge is available only to men who can speak a language; for **142** tilts against the ignorant masses and Heraclitus will hardly have supposed that the majority of his contemporaries were literally incapable of speech.

Some scholars connect **142** with Heraclitus' alleged interest in the subtle metaphysical implications of some linguistic turns; and they suggest that the fragment means that 'your senses will deceive you if you do not have an accurate understanding of your own language'[23]—such understanding being the key to the Heraclitean thesis of the Unity of Opposites. But Heraclitus' main 'metaphysical' tenets derive not from a consideration of language but from a contemplation of the evidence of the senses.

Heraclitus, as I read him, was not *un homme entre les choses et les mots*: he had, no doubt, a lively interest in language, and a keen nose for a pun; but language and a deep study of linguistic modes did not guide him in his philosophical endeavours, and he has no reason to require linguistic study from others.

I incline, therefore, to a more metaphorical reading of *'barbaros'* in **142:** barbarous *psuchai* are ignorant, uncomprehending *psuchai;* they are characteristic of men who have no intellectual grasp of things, men who, in a neighbouring metaphor, cannot read the great Book of Nature. For 'the phenomena of Nature', as Berkeley quaintly observed, 'form not only a magnificent spectacle, but also a most coherent, entertaining, and instructive Discourse…. This Language or Discourse is studied with different attention, and interpreted with different degrees of skill. But so far as men have studied and remarked its rules, and can interpret aright, so far they may be said to be knowing in nature. A beast is like a man who hears a strange tongue but understands nothing' (*Siris* §254).

It is a pleasant metaphor; but it is a metaphor. And it is not clear what literal point lies behind it. Perhaps Heraclitus is merely insisting on the need for attentive and selective observation: in order to see that the road to Thebes is the road from Thebes, that the course of the carding-roller is straight and crooked, that the river is constantly changing its waters, and all the other detailed facts which are scientifically significant, no ordinary or casual inspection is sufficient; unless you are well-acquainted with the ways of nature, her secrets and their significance will elude you. No doubt that is true and important; but it does not answer the question of how our many observations are to be turned into universal knowledge. The remaining fragments of Heraclitus' book do not shed any further light on the question: either Heraclitus ignored it, or fate has deprived us of his answer.

Another source supplements that deficiency. In the *Phaedo* Socrates recounts his early infatuation with natural philosophy; one of the questions that entranced him concerned the nature of thought:

> And is it blood with which we think? or air? or fire? Or is it none of these, but does the brain rather supply the senses of hearing and seeing and smelling, and memory and belief come from them, and then, when memory and belief come to rest, in this way knowledge comes about? (**143:**96B=**24 A 11**).

Socrates is referring to Presocratic theories: Empedocles has us think with blood; Anaximenes, and Diogenes of Apollonia, with air; Heraclitus with fire. Who, then, propounded the more complicated theory which Socrates mentions after these brief accounts? and what exactly does that theory state?

According to Theophrastus, Alcmeon says that

> Man differs from the other animals because he alone has understanding *(sunesis),* while the others perceive but do not understand (**l44**: Sens§25=**24 A 5**).

Alcmeon was singular among Presocratics in making such a sharp distinction between perceiving and understanding, sensation and knowledge; and the author of Socrates' theory made just such a distinction. Again, Alcmeon gave a detailed physiological account of perception. In it he argued that 'all the senses are in some way connected to the brain' (Theophrastus, *Sens* §26=**A 5**). The theory in the *Phaedo* contains precisely that thesis. Those two facts make it plausible to ascribe Socrates' theory to Alcmeon. Plato, as we know, was acquainted with Alcmeon's work, and apparently fond of it; it is no surprise that a theory of Alcmeon's should be accorded some little pre-eminence in the short intellectual biography of Socrates.[24]

What, precisely, was Alcmeon's theory? It is the first statement of a view familiar to us from Aristotle's *Metaphysics* (A1) and *Posterior Analytics* (B19); and those passages are the twin origins of modern empiricism. The theory presupposes that full-blooded 'scientific' knowledge is expressible in universal propositions of the form 'Every *F* is *G*'. And it offers a causal explanation of how such knowledge is possible: I perceive an *F* which is *G;* opine that this *F* is *G;* and store that opinion in my memory. As time passes, I perceive many more Fs which are *G;* and store many more opinions in my memory. At this stage, according to Aristotle, I have 'experience' *empeiria,* but not yet knowledge. Knowledge comes about when these various memories 'come to rest' (*êremein: Phaedo* 96B; *APst* 100a6) and somehow coalesce into a universal proposition. In the *Metaphysics* Aristotle illustrates his theory, in tacit tribute to Alcmeon, by a medical example: I observe that hellebore helps Socrates when he is feverish, and that it helps Callias when he is feverish, and so on in many cases, until those multitudinous particular opinions, collected in my memory, unite into the knowledge that all feverish men are helped by hellebore.

Universal knowledge is thus possible. If I believe that all *F*s are *G* then my belief amounts to knowledge, provided that it was acquired in the way the theory specifies; and a careful attention will ensure that, in some cases at least, the proper path to acquisition is narrowly followed. I suppose that this theory was roughed out by Heraclitus in answer to Xenophanean scepticism; and that it was first formulated in something like its Aristotelian guise by Alcmeon.

How successful was the theory? Xenophanes, if my interpretation is right, required beliefs to have a respectable causal ancestry if they were to amount to knowledge; Heraclitus and Alcmeon attempted to specify an ancestry which could command respect. If their specification were accepted, then we could say that some at least of Heraclitus' major claims were preserved from Xenophanean criticism; for his major thesis—the elements of his *logos*—were, I argued earlier, intended to have their basis in perception.

Yet Alcmeon and the Hippocratic author, empiricists both, still maintained a Xenophanean scepticism. They must have felt, for reasons which we cannot now divine, that Heraclitus' bold theories simply outflew his modest epistemology. They played Locke to Heraclitus' Boyle: empiricism was the only hope for scientific endeavour; yet it did not permit those profound searchings into the very nature of things which Heraclitus desired to justify. I doubt if this critical attitude to Heraclitus is wholly correct; but to discuss its credentials would be both tedious and speculative. In any case, such considerations may well seem petty. Later philosophers would question this early empiricism in a far more severe fashion. The theory has us pass from a host of

particular opinions to a universal belief; but that inductive move, as a later age insisted, is of dubious validity; and an empiricism which ignores sceptical doubts about perception and induction is a weak theory. But it would be absurd to disparage Alcmeon for ignoring problems which no one had yet raised, and to deny him the signal credit of sketching out the first rough draft of an empiricist epistemology.