

## XXII De Anima

### (a) *Material beginnings*

The *psuchê* or animator is that part or feature of an animate being which endows it with life; and since the primary signs of life are cognition and mobility, the *psuchê* is the source of knowledge and the source of locomotion. That gives a formal or functional account of *psuchê*; but it leaves us to ask what the psychic nature consists in: what sort of thing is it that provides us with life? is it the same sort of thing in men, in animals and in plants? where (if anywhere) is it located in the body? is it separable from the body?

To those questions the early Presocratics had, by and large, no interesting answers. The doxography regularly deals with the question: What is *psuchê* made of?

Anaximenes and Anaximander and Anaxagoras and Archelaus said that the nature of *psuchê* is airy (398: Aëtius, 12 A 29; cf. 13 B 2; Philoponus, 13 A 23).<sup>1</sup>

Parmenides and Hippiasus and Heraclitus [say that the *psuchê*] is fiery (399: Aëtius, 18 A 9).

And a fragment of Epicharmus indicates that the fiery soul was familiar enough outside professional scientific circles (23 B 48). Water and earth, the other two canonical elements, had fewer backers; but Hippo went for water (Hippolytus, 38 A 3), and late stories give souls of earth and water to Xenophanes (Macrobius, 21 A 50).<sup>2</sup> In the physics ascribed by Diogenes to Zeno, 'soul is a mixture of [the hot, the cold, the dry and the wet], with none of them having dominance' (IX. 29=29 A 1). The doxographers do not usually expand upon these unilluminating *dicta*.

Heraclitus at least had a little more to say. His views, painfully obscure to us, were mildly sceptical and unpretentious:

You would not find in your journey the limits of soul, even if you travelled the whole road—so deep is its account (133:22 B 45=67 M).

The crude report of Aëtius that Heraclitean souls are fiery appears in Aristotle as the suggestion that the soul is an 'exhalation' (*anathumiasis*: An 405a24=A 15). The suggestion is repeated in the doxography (e.g., Aëtius, A 15; Arius Didymus, ad B 12), and it connects readily with B 36=66 M:

For souls it is death to become water, for water it is death to become earth, from earth water comes to be, from water soul (400).

If souls are warm, moist exhalations, it is plausible to think both that they come from water (like steam from a kettle or mist from a morning lake), and also that they perish on becoming water (as the steam disappears when condensed). Three further fragments are enigmatic. Perhaps

A dry soul is wisest and best (**401 : B 118=68 M**)

because it is furthest from watery death. I do not know why

Souls smell in Hades (**402: B 98=72 M**),<sup>3</sup>

or what Heraclitus meant when he said that the soul was

A *logos* increasing itself (**403: B 115=112 M**).

A late source contains the following report:

Thus the vital heat proceeding from the sun gives life to all things that live. Subscribing to that opinion, Heraclitus gives a fine simile comparing the soul to a spider and the body to a spider's web. 'As a spider', he says, 'standing in the middle of its web is aware the instant a fly breaks any one of its threads and runs there swiftly as though lamenting the breaking of the thread; so a man's soul when any part of his body is hurt hastily goes there as though intolerant of the hurt to a body to which it is strongly and harmoniously conjoined' (**404: B 67a=115 M**).

The authenticity of this charming report is dubious; but it may contain some genuine echoes of Heraclitean thought. I imagine that the simile is intended to explain a puzzle about pain: pain is a mental affection yet it derives from a bodily harm; how can that be? Heraclitus answers that the *psuchê* is immediately aware of bodily damage, runs to the scene of the harm, and grieves over it: psychic grief over corporeal damage is pain; and we suffer pain because our souls are immediately sensitive and sympathetic to our bodily condition. Even if **404** is Heraclitean at bottom, it cannot be pressed too hard: it appears to reveal the *psuchê* as a living, sensitive, independent substance, localized in some central part of the body but capable of moving about within its corporeal dwelling. It may be that Heraclitus had just such a picture in mind; but **404** is only a picturesque analogy, designed to explain a single psychic phenomenon.

If the spider is idiosyncratically Heraclitean, the notion of *anathumiasis* suggests a way of finding a common and intelligible element in the early accounts of the *psuchê*. The parallel between a warm, moist 'exhalation' and our warm, moist breath is evident; and it is a commonplace of classical scholarship that the word '*psuchê*' originally denoted a 'breath-soul'. We live just as long as we breathe; and the conjecture that our life-giving part is breath, or a breath-like stuff, is easy. The antiquity of the view is attested by Aristotle, who reports that in 'the so-called Orphic verses' it is said that 'the soul enters from the universe as we breathe, and is carried about by the winds' (*An*

410b29=1 **B 11**); and it is referred to by Plato in the *Phaedo* (70A, 77D). Diogenes ascribes the view to Xenophanes (IX. 19=21 **A 1**); and Aëtius says, plausibly, that when Anaximenes refers to the *psuchê* as ‘our air’ he uses ‘air’ synonymously with ‘breath’ (26:13 **B 2**). The *psucuê* is variously specified as air, fire or water; but those rival specifications have a common core: breath is airy, moist fire; or hot, wet air; or warm, airy water.

The ‘breath-soul’ is doubtless a ‘primitive’ notion; but it has a grounding in solid scientific fact: we live by breathing; our *psuchai*, therefore, are breathlike. Moreover, the ‘breath-soul’ seems to explain with admirable neatness the twin functions of any *psuchê*, cognition and locomotion:

Diogenes [of Apollo nia], like certain others too, [said that the *psuchê*] is air, thinking that this is the finest of all things and a principle. And that explains why the *psuchê* knows and moves things: in so far as it is primary, and the rest come from it, it knows; in so far as it is finest, it is motive (405: Aristotle, *An* 405a21–5=64 **A 20**).

The Atomists’ account of the *psuchê* is comparable to earlier doctrines, though it is, of course, expressed within the terms of their new-fangled physics. One quotation will suffice:

Of these [shapes] the spherical form the *psuchê*; for such *rhusmoi* are especially able to pass through everything and to move other things while moving themselves—for they suppose that the *psuchê* is that which provides animals with motion. And that is why breath is the determinant of life; for as the surrounding matter compresses the bodies and squeezes out those shapes which provide animals with life because they themselves are never at rest, help comes from outside when other such [atoms] enter in breathing; for they actually prevent those inhering in the animals from being separated out, by restricting the compressing and fixing body; and animals live as long as they can do this (406: Aristotle, *An*404a5–16=67 **A 28**).

Since spherical atoms account for the perceptible quality of heat, the Atomists can also say that the *psuchê* is ‘a sort of fire, and hot’ (*An* 404a1=67 **A 28**).<sup>4</sup> The atomist soul is hot breath: the thesis is explained in characteristically Abderite terms, but it is essentially traditional.

To the modern ear, attuned to a Christian or Cartesian notion of soul, one feature of these Presocratic accounts is striking: they are all thoroughly and uncompromisingly materialistic. The *psuchê* is made of some ordinary physical stuff: the matter of body is the matter of soul. A *psuchê* may be thin and ethereal; but it is for all that material: its thinness is the thinness of fire or air, not the insubstantiality of an unextended Cartesian spirit.

That conclusion is sometimes resisted: ‘The concept of an immaterial being was not invented until the fourth century BC; and the contrast between materialism and dualism, between a physicalist and a Cartesian account of mind or soul, is a creature of modern

philosophy. It is an impertinent anachronism to apply those modern categories to Presocratic philosophy: Anaximenes' assertion that the soul is air is not a materialist thesis—nor, of course, is it non-materialist; the terms are simply inapplicable. 'It is worth stating what a miserable bit of argumentation that is. If our modern categories of materialism and dualism are well-defined, then *any* intelligible theory of the soul is either materialistic or dualistic, whenever it may have been framed. Of course, Presocratic theories may be too crude, or too vague, or too confused, to be categorized; but in that case they are too crude, or too vague, or too confused, to be understood and interpreted. If intelligible, they fall into one or other of our categories. (The distinction between valid and invalid arguments was discovered by Aristotle; for all that, we do not regard it as anachronistic to judge Presocratic reasoning by modern canons of validity.)

'But at least the Presocratics were only materialists *faute de mieux*: they adopted a materialistic stance because no other occurred to them; had they been offered spiritual substance they would gladly have accepted it.' That is a judgment difficult to assess; yet I am inclined to reject it. The materialism of the early Presocratics was, so far as our evidence goes, implicit: they do not expressly say that the *psuhê* is a body like any other body. But the A to mists made materialism explicit: Democritus' account of thought is, according to Theophrastus, 'reasonable for one who makes the *psuchê* a body' (*Sens* §58=68 A 135; cf. Aëtius, A 102); and if Aristotle can say that fire, the stuff of Democritean souls, is 'the most incorporeal (*asômatos*) of the elements' (*An* 405a6=68 A 101), he means only that the *psuchê* is very fine or rare (cf. Philoponus, 68 A 101); '*asômatos*' is used loosely, as we might use 'insubstantial'.<sup>5</sup> We possess no original text from Democritus announcing the corporeality of the soul; but the Peripatetic insistence on it indicates some fairly explicit avowal, and it was, after all, no recondite implication of Atomist psychology.

The Atomists were self-conscious materialists in psychology; and their thesis was original, if at all, only in the explicitness with which it was held. Perhaps the Atomists insisted on materialism because they had found some immaterialist psychology to object to? did materialism become explicit only because an alternative theory had arisen? Many scholars believe that the Pythagorean doctrines of metempsychosis and immortality require an immaterial soul. Yet if the Pythagoreans were profoundly concerned about the cultivation and fate of their souls, they apparently remained reticent about the nature of *psuchê*. Pythagoras is credited with a lecture *On the Soul* (Diogenes Laertius, VIII.7=14 A 19), and so is Archytas (47 B 9); but neither ascription is believed by scholars. A late source ascribes to 'Hippo of Metapontum' (i.e. Hippasus?) the judgment that

The soul is one thing, the body quite another; when the body is at rest, the soul thrives, when the body is blind, it sees; when the body is dead, it lives (407: Claudianus, 18 A 10).

The same Claudianus ascribes a similar view to Philolaus (44 B 22), from whom Clement quotes the following words:

The old theologians and seers also bear witness that as a punishment the soul is yoked to the body and is buried in it as in a tomb (408:44 B 14).

That evidence will bear little weight. Claudianus is confused, and is probably relying upon some late Pythagorean forgery;<sup>6</sup> and Clement's report is hard to reconcile with the rest of what we learn about Philolaus' psychology.<sup>7</sup> In any case, none of the three reports strictly implies an incorporeal soul: each is concerned to distinguish the *psuchê* from the human body; and such a distinction does not entail that the *psuchê* is not itself bodily. A *psuchê* distinct from the body it inhabits may be corporeal: human prisoners are distinct from their physical jails, but they are physical substances. Moreover, Aristotle says that

Some of them [sc. the Pythagoreans] said that the motes in the air are a soul, or that what moves them are. It was said of them because they are seen to be continually moving even in a complete absence of wind (**409: An 404a17–9=58 B 40**).<sup>8</sup>

That little analogy does not yield a 'theory of the *psuchê*'; but it does suggest a fairly crudely materialistic notion of soul.

There is, however, at least one other Pythagorean theory to be described; and that, in many scholars' opinion, will be a more probable target for Democritean attack than the minor *dicta* that I have just quoted. I hold the target back for a section.

#### (b) Empedoclean psychology

Leucippus and Democritus say that perceptions and thinkings are alterations (*heteroiôseis*) of the body (**410: Aëtius, 67 A 30**).

Democritus 'places perceiving in changing (*alloiousthai*)' (Theophrastus, *Sens* §49=**68 A 135**): we perceive a poker or think of a theorem if our bodies, or certain parts of them, alter in certain ways. Alteration is a matter of atomic locomotion, so that mental events will occur when certain types of atoms clash in certain ways; that is how Aristotle can say that

Democritus and most of the *phusiologoi* who speak of perception do something quite absurd; for they make all objects of perception objects of touch (**411: Sens 442a29–30=68 A 119**).

As an illustration, take the atomist account of seeing. It is founded on the hypothesis of images (*eidôla*) or, in Democritus' language, *deikelai*; and *adeikelon* is 'an effluence (*aporrhoia*) similar in kind to the objects [from which it flows]' (**B 123**). The full theory is somewhat complicated; here is Theophrastus' account of it:

He has seeing occur by reflexion, but he gives an idiosyncratic account of this; for the reflexion does not occur immediately in the pupil, but the air between sight and the object of sight is given an impression as it is

compressed by the object seen and the seer; for from everything there is always some effluence issuing. Then this [air], being solid and different in colour [from the eyes], is reflected in the moist eyes; and the thick part [of the eye] does not receive it, but the moist part lets it through (**412: Sens §50= A 135**).

Thus an observer, *a*, sees an object, *b*, in the following fashion: ‘effluences’, or thin atomic films similar in form to their begetter, leave *b* continuously; the passage of the effluences compresses a volume of air against the eye of *a*, and impresses it with the form of *b*. That airy impression then causes a reflection of *b* in certain receptive portions of *a*’s eyes. And thus *a* sees *b*.<sup>9</sup>

The theory of sight was generalized to explain the phenomena of reflexion (Aëtius, **67 A 31**) and of dreaming (Plutarch, **68 A 77**; Aëtius, **68 A 136**). As it stands it contains nothing specifically atomistic; but it is a thoroughly materialist account. It has no room for any dubiously physical operations or entities, like imaging and mental images; there are physical operations of effluxion, compression and reflexion, and physical entities—nothing else. No doubt reflexion and effluxion were ultimately explained in terms of atomic motions; but that apart, the Democritean account of perception is highly unoriginal. Theophrastus explains his views on sight and hearing, and notes the few novelties they include; he adds:

On sight and hearing this is what he says; the other senses he accounts for in a way pretty similar to most people (**413: Sens §57 =68 A 135**).

The evidence we possess bears out Theophrastus’ judgment. Of Democritus’ predecessors the most interesting is Empedocles, the earliest (from whom Empedocles probably borrowed) Alcmeon of Croton.

Alcmeon is said to have dissected an eye (**24 A 10**); and he believed, presumably on experimental evidence, that ‘all the senses are connected in some way to the brain’ (Theophrastus, *Sens* §26= **A 5**). He gave a purely physical account of the senses; e.g.:

We hear by our ears because there is a vacuum in them; for this echoes (it makes a sound by being hollow), and the air echoes back (**414: ibid., §25=A 5; cf. Aëtius, A 6**).

The text of Theophrastus is corrupt;<sup>10</sup> but the general lines of Alcmeon’s account are clear: we hear external sounds by virtue of the physical properties of certain echoing parts of our ear. That account can hardly be complete, though it is all that Theophrastus offers us: it does not mention the brain, but implies, as it stands, that hearing is a function merely of the ear. For a fuller treatment of Alcmeonic psychology we must turn to Empedocles.

Like Alcmeon, Empedocles was a doctor (e.g., Satyrus, *apud* Diogenes Laertius, VIII. 58= **31 A 1**; Galen, **A 3**); and he is said to have written a medical treatise (Suda, **A 2**). To his pupil Pausanias, the addressee of *Concerning Nature*, he says:

You will learn what medicines there are for evils, and a remedy against old age (**415: B111. 1–2**);

and in the *Katharmoi* he claims that crowds followed him about,

...some wanting prophecies, some for sicknesses of every sort asked to hear a healing word, long ravaged by harsh pains (**416: B 112.10–2**).

These boasts were the seeds of the later legend, of which the celebrated story of Empedocles on Etna is only the final dramatic scene.<sup>11</sup> And the medical theories and practices by means of which Empedocles tried, apparently with success, to give substance to his words had a significant influence on later medical men.

From doctors we expect physiology; and Empedocles does not disappoint us. Plato gives a brief account of his general theory of perception:

Do you agree with Empedocles that existing things give off a sort of effluence (*aporrhoiā*)?

Certainly.

And that they have pores into which and through which the effluences travel?

Yes. And of the effluences some fit some of the pores while others are too small or too big?

That is right.

And there's something you call sight?

There is.

From this, then, 'grasp what I say to you' as Pindar puts it: colour is an effluence of things which is fitted to (*summetros*) sight and perceptible (**417: Meno 76C=A 92**).

Theophrastus continues Plato's dialogue in plain prose:

Empedocles speaks in the same way about all [the senses] and says that we perceive by things fitting (*enharmottein*) into the pores of each [sense]. That is why [the senses] cannot discriminate one another's objects; for the pores of some are too broad and of others too narrow relative to the percept, so that some slip through without touching and others cannot enter at all (**418: Sens §7= A 86**).

The surviving fragments do not mention pores (*poroi*),<sup>12</sup> but they do contain a reference to *aporrhoiāi*:

...knowing that there are effluences of everything which has come into being (**419: B 89**);

and a corrupt text refers thus to the activities of hounds on the chase:

Searching out with their nostrils the particles (*kermata*) of animal limbs...which their feet have left behind in the soft grass (**420: B101**).

The hounds snuffle up the effluences of their quarry and thus track it down. Empedocles' *aporrhoi* are plainly the fathers of Democritean *deikela*; but they should not be identified with them: first, *aporrhoi* come to all the senses, *deikela* only to the eyes; second, nothing indicates that Empedoclean *aporrhoi* are likenesses of their origins: the *aporrhoi* for sight is light (Philoponus, **A 57**) or perhaps colour (Theophrastus, *Sens* §7=**A 86**).

The details of Empedocles' theory are uncertain and in some places controversial. A long fragment, **B 84**, describes the eye. Many scholars attempt to extract a theory of vision from it, but in fact the fragment means only to describe the structure of the eye. The doxography on vision is confusing rather than clarifying.<sup>13</sup> Here is Theophrastus' account of the other four senses:

Hearing comes about from internal sounds; for when the air is moved by the noise, it echoes inside. For the ear is like a bell (?) of equal echoes (?)—he calls it a 'fleshy shoot'; and when the air is moved it strikes against the solid parts and makes an echo. Smelling comes about by breathing. That is why those creatures smell best whose breathing motion is most violent. Most smell flows from (*aporrhēin*) the finest and lightest things. About taste and touch he says nothing in particular, neither how nor by what means they come about, but only the general thesis that perception occurs by things fitting (*enharmottein*) the pores (**420: Sens** §9=**A 86**).

Streams of effluent flow from all bodies; their waters differ in outline and magnitude, some representing colours, some sounds, some smells, and so forth. When the streams strike against sentient creatures most of them are diverted; but some hit an appropriate sense organ, equipped with *summetroi* pores into which they can fit (*enharmottein*). Colour streams hit the eyes and fit the eye pores; and that is how we can see colours; sound streams fit the ears, and we hear; colour streams are asymmetrical with the ears, sound streams with the eyes—so we neither see sounds nor hear colours. Perception is thus a purely physical occurrence: Empedocles' theory is expressed, crudely but firmly, in the language of physical science; and to that extent he is at one with the Atomists, and indeed with all Presocratic psychological speculation. Any such materialist theory lays itself open to an obvious objection; Theophrastus brings it against Empedocles, and repeats it for Anaxagoras and Diogenes (whose theories are only uninteresting variants on the Empedoclean tradition). Thus: 'one might wonder...first, how inanimate objects differ from the rest with regard to perception; for things fit into the pores of inanimate objects too' (*Sens* § 12=**A 86**; cf §36=**59 A 92**; §46=**64 A 19**). If perception is just a matter of effluences fitting pores, why is the phenomenon so rare? In general, if perception is a purely physical interaction, why is it that only select physical objects perceive?

Some scholars reply boldly: perception, on Empedocles' theory, is widespread, if not universal; for he himself says that:

Thus, then, everything has breathing and smellings (**422: B 102**).

And he ascribes understanding, which presupposes perception, to all things:

Thus by the will of chance everything possesses thought (**333: B 103**).

For know that everything possesses sense and a portion of thought (**423: B 110.10**).

But that reply is no good. First, the texts it cites give uncertain support: the word 'everything' in **422** and **333** has no context; and it may well have referred only to animate things (the two fragments probably come from Empedocles' zoogony). **B 110** is a difficult fragment: I shall argue later that line 10, read in its context, does not after all say that 'everything has thought' (below, p. 485).<sup>14</sup>

Second, even if Empedocles did ascribe perception to everything, that will not help him against Theophrastus' criticism. For not every fitting of effluences into pores is a case of perception. No one recognizes that more clearly than Empedocles himself: *aporrhoiai* and *poroi* are not only employed in the elucidation of perception; they account for the phenomena of reflexion (**B 109a**; Aëtius, **A 88**); for some aspects of breathing (Aristotle, *Resp* 473b1; cf. **B 100**); for magnetism (Alexander, **A 89**); for chemical mixture (**B 91, B 92**); and for the way in which certain trees lose their leaves in autumn (Plutarch, *ad B 77*).<sup>15</sup> Far from being a distinguishing mark of perception, the fitting of effluences into pores is a common feature of natural phenomena: *aporrhoiai* and *poroi* are general principles of physics, not special principles of psychology.

According to Theophrastus, perception in Empedocles comes about 'by likes' (*Sens* §1=A **86**; cf. §10); and Theophrastus asserts that

He assigns knowledge to these two things, similarity and touch; that is why he uses the word 'fit (*harmottein*)'. So that if the less should touch the greater, there will be perception (**424: §15**).

The point is supported by a fragment:

For by earth we see earth, by water water; by air bright air, and by fire brilliant fire; love by love, and strife by horrid strife (**425: B 109**).

For sight to occur, an *aporrhoia* must enter *aporos* in the eye; and it must 'fit' (*harmottein*): i.e., it must be of the right shape and size to fill the pore (it must 'touch'), and it must also be homogeneous with the walls of the pore (it must be 'like'). Thus I shall see red if a red *aporrhoia* (a ray of red light, perhaps) fits snugly into a red-edged pore in my eye. The lesser red touches the greater; and I perceive.

Will the 'likeness' principle thus eke out the theory of pores and defend Empedocles from Theophrastus? Hardly: how can auditory *aporrhoiai* be 'like' the ears they enter? or why suppose that the iron filings attracted by the magnet are 'unlike' it? Theophrastus reports that

In general, likeness in his theory is done away with and commensurateness alone is enough. For he says that the sense organs do not perceive one another's objects because they have incommensurate pores; and whether the effluent is like or unlike he does not determine (426: *Sens* §15=A 86).

The 'like by like' principle is vague; it solves nothing; it was not seriously used by Empedocles. (425 fits a different context: see below, pp. 484–8.)

But Empedocles' theory is not dead yet: Theophrastus may show that it is not enough to talk of *aporrhoiai* and *poroi*, but he does not show that no modification can defend the theory. Empedocles' *aporrhoia* in the case of vision is light, his *poroi* are rods and cones: modern physiologists can doubtless tell us how the impact of light on rods and cones differs from its impact on the glass of a mirror or from the impact of air on the breathing passages; and they will thereby complete Empedocles' account and establish it as a full theory of visual perception.

'But surely such an account can only aspire to the status of a physiological description: it cannot tell us what perception really is; it cannot touch on the properly psychological side of sight, hearing and the rest. Physiology of perception is interesting enough; but it is no substitute for philosophy of perception.' Empedocles had no means of anticipating that objection; and he might well have been puzzled by it: what facts remain unaccounted for by the physical account? What opening or need is there for philosophy? 'There are illusions, hallucinations, after-images and other paraperceptual occurrences.' But surely the physical theory can be extended to account for them? 'Perception has a subjective or experiential side; and physiological theorizing necessarily ignores the felt qualities of sensation; it accounts only for what happens in our bodies, not for what we experience ourselves.' But *is* there an 'experiential' side to perception, distinct from the 'physical' side? What are its characteristics? and why cannot an Empedoclean account explain experience too?

There are modern materialists, of a sophisticated sort, who are at bottom Empedocleans; and it is by no means evident that their Empedoclean efforts to give a purely physiological account of the subjective elements in perception are unsound. In tacitly rejecting any non-physiological 'philosophy' of perception Empedocles is curiously modern.

If perception is materialistic, what of thought, that supremely Cartesian operation? According to Aristotle,

The old thinkers said that perception and thought were the same; thus Empedocles said:

For men's wit is increased by reference to what is present [=B 106];

and elsewhere:

To the extent that they become different, to that extent always does thinking present different things to them [=B 108].<sup>16</sup>

(427: *An* 427a21–5; cf. *Met* 1009b17–20.)

Theophrastus qualifies Aristotle's judgment and offers a new text:

He speaks in the same way about thought and ignorance; for thought is by likes and ignorance by unlikes, thought being either the same as or similar to perception. For having enumerated the way in which we recognize each thing by itself, he adds at the end that:

From these are all things fitted and formed, and by these they think and feel pleasure and pain [=B 107]

That is why we think especially with the blood; for in this of all parts are the elements especially mixed (428: *Sens* §10=A 86).

Before his quotation of B 107 Theophrastus summarizes 425: clearly 425 immediately preceded B 107 in Empedocles' poem, and 'these' in B 107.1 refers to the four 'roots' (together with Love and Strife) which are 'enumerated' in 425.<sup>17</sup> Theophrastus' final sentence is also a paraphrase of a surviving fragment:

...(?) turned (?) in seas of surging blood; and there especially is what men call thought—for the blood about the heart is thought for men (429: B 105).<sup>18</sup>

In B 105-B 109 we have the passages upon which the Peripatetics based their account of Empedocles' theory of thought. Some modern scholars think that the Peripatetics should have attended also to B 110:

For if you establish them (*sphē*) in your stout mind and guard them kindly with pure exercises, they will indeed all remain with you throughout your life, and you will gain many others from these; for they themselves increase

each in its kind, as is the nature of each. 5 But if you reach for different things such as among men there are, innumerable, evil, which blunt the mind, they will at once abandon you as their time is accomplished, desiring to come to their own dear kind; for know that they all have sense and a portion of thought (430; cf. 423).

The interpretation of the fragment turns on the identity of 'them (*sphē*)' in the first line. Some scholars make 'them' the elements, and are then able to construe 430 as an account of thought.<sup>19</sup> But '*sphē*' in line 1 contrasts with 'many others' in line 4, and with the 'different things, ...innumerable, evil' of lines 6–7: the elements have nothing to contrast with, for they embrace all the things that there are. Moreover, 'they' may 'abandon' Pausanias (line 8); but the elements could never do that.

Accordingly, we must find a different identity for *sphē*; and the orthodox view is that *sphē* are the axioms of Empedoclean physics. 430 then reads thus: 'Remember my words and keep them fresh in your mind; then you will possess not only them but also the consequences and implications to which they will lead you. But if you attend to other foolish philosophies, my thoughts will leave you; for they have more sense than to dwell in a mind given to un-Empedoclean views.' That construe is not easy: it takes

lines 6–10 as a highly coloured statement of a fairly mundane possibility. But it is the best we can do in the absence of a larger context; and it removes **430** from the theory of perception and thought. (It also shows that line 10 does not commit Empedocles to the view that ‘everything has thought’: ‘*panta*’ means not ‘everything’ but ‘all [my words]’.)

What, then, was Empedocles’ analysis of thought? Aristotle’s statement that ‘thinking and perceiving are the same’ should not be taken *au pied de la lettre*: he argues only that thinking, in Empedocles’ view, is, like perception, a physical process; he does not mean that thinking is exactly the same process as perception. Similarly, Theophrastus is concerned only to point out that the ‘like by like’ principle applies, in Empedoclean doctrine, to thought no less than to perception; and there is again no question of a strict identity between the two processes. ‘The blood about the heart is thought for men’ (**429**. 3): Empedocles does not say that it is the blood which thinks; nor does he say that the heart, or the heart’s blood, is the *sole* organ or instrument of thought; the heart is of pre-eminent importance, but it is only the place where ‘especially’ we think.<sup>20</sup> Heart’s blood is a peculiarly fine mixture of the elements; since, as **B 107** implies and **425** makes explicit, each of the elements is an organ or instrument of thought, then heart’s blood is a peculiarly fine cognitive medium.

At this point I shall turn to discuss a Parmenidean fragment. The quatrain is of interest in its own right; and it is relevant here as it expresses, in a fuller and reasoned form, the theory of thought that Empedocles hints at. The lines run thus:

For as on each occasion is the mixture of the much-wandering limbs,  
 so does the mind stand in men. For the same as what it thinks of is the  
 nature of the limbs for men, for each and for all; for what preponderates  
 is thought (**431:28616**).

The text of lines 1–2,<sup>21</sup> and the syntax of lines 2–4, are highly controversial; and my interpretation will inevitably be uncertain.

Theophrastus quotes the lines to show that ‘he treats perceiving and thinking as the same’ (*Sens* §3=**28 A 46**; cf. Aristotle, *Met* 1009b12–25, also quoting **431**). Again, all that he means is that thinking, like perceiving, is treated as a physical change; and we need make no more of it. Equally, we may put aside a question that has troubled some critics: how, they ask, can Parmenides maintain the theory of **431** and still say what he does about the objects of thought in **148–9**? The answer is simple: **431** appears in the Way of Opinion; it represents Mortal Thoughts, not Eleatic doctrine.

What does Parmenides mean by ‘limbs (*melea*)’? Some gloss the word by ‘sense-organs’. ‘Men’, as Archilochus had observed, ‘think the things they come across’:<sup>22</sup> the first couplet of **431** means that we only think of the things we meet with in perception, thus precociously formulating the Aristotelian doctrine, *nil in intellectu nisi prius in sensu*. And since the ‘limbs’ are ‘much-wandering’, Parmenides is in effect offering a criticism of any epistemology built upon that doctrine: if the doctrine is correct, all our thoughts are based ultimately on our misleading and mischievous senses.<sup>23</sup> In **B 106** Empedocles presents the same Aristotelian theory: ‘men’s wit is increased by reference to what is present’; i.e., if the senses have presented something to a man, then, and only then, is he capable of thinking of it. But Empedocles drops the Parmenidean criticism.

That may be a correct interpretation of Empedocles, but it will not fit Parmenides. First, it must read into **431** not the Aristotelian doctrine, but the far stronger and wholly absurd thesis that we think only of the things we are actually perceiving ('Our thought on any occasion is given by the contents of our sense-organs on that occasion'). Second, it ascribes an impossible sense to *'melea'*: 'limbs' is not naturally taken as 'sense-organs'; and the word nowhere else bears anything like that meaning.<sup>24</sup> If *melea* are not sense-organs, then there is no empiricist epistemology glanced at in **431**; nor, indeed, is there any theory of perception at all in the fragment: **431** offers an account not of perception but of thought.

The crucial sentence of **431** occupies lines 2b–3; in Greek it runs: *to gar auto estin hoper phroneei meleôn phusis anthrôpoisin*. The sentence is multiply ambiguous. *Melea*, 'limbs', may be glossed either by 'body' or by 'elements': the body is the sum and organization of the limbs; the elemental stuffs are the limbs of the universe.<sup>25</sup> *To...auto* may mean either 'the same thing' or 'that very thing'. *Hoper* may be either subject or object of *phroneei*. The last sentence of the fragment is also ambiguous: *to gar pleon esti noëma*. The traditional reading (cf. Theophrastus *Sens* §3=28 A 46) takes *to...pleon* to mean 'the more', i.e. 'that which predominates'. Many modern scholars prefer 'the full'; and it has been proposed, ingeniously, to separate *to* from *pleon*: 'For that is full thought'.<sup>26</sup>

Permutation of those different readings yields a mass of conflicting construes of the fragment. More than one can be given a sort of plausibility; and none has any clear claim to superiority. I shall simply present the view I incline towards, leaving the reader to construct his own reading for himself. Thus I take *melea* to refer to the elements; I read *to...auto* as 'the same thing'; I make *hoper* object of *phroneei*; and I construe *to pleon*, with Theophrastus, as 'the preponderating [element]'. Lines 1–2 then paraphrase thus: 'The state of a man's thoughts at any time is determined by the elemental mixture [in his body].' The crucial sentence reads: The nature of the elements is the same as what they think of; and since 'the nature of the elements' is merely a paraphrase for 'the elements', the sentence purveys the same thought as Empedocles, **425**: by means of element *E1* you can think only of *E1*. Finally, the last sentence means: 'the element predominating in a man's body is what he thinks with'.<sup>27</sup> The three sentences that make up **431** are linked by *gar* ('for'); but it is not easy to give that particle its proper force. Perhaps the argument is this: 'Given, first, that by *E1* a man can think only of *E1*, and, second, that if *E1* predominates in a man, then he thinks with it; it follows that what a man thinks of at any time is determined by the elemental predominance, and thus by the elemental mixture, in his body.'

If that interpretation of Parmenides is right, it gives us a little help with Empedocles; for in effect **431** infers Empedocles' **B 108** from his **425**. We think of elements by elements; hence (since thinking is determined by elemental predominance) as we change physically, so do the objects of our thought change. Moreover, Parmenides confirms the decidedly materialistic aspect of Empedocles' theory of thought: to think of *E1* is simply to have *E1* predominant in your body physical constitution to change. Intellectual states are physical states, (or in some selected part of it); and to come to think of *E1* is for your intellectual processes are physical operations. It is entertaining to find a materialist account of thought so self-consciously paraded by a Presocratic; but the account itself is too crude to contemplate, and I hasten on.

(c) *The soul as harmony*

‘The fragments of Empedocles contain only a single occurrence of the word “*psuchê*” (**B 138**), and then it means “life”: the fact is no accident; for, strictly speaking, Empedoclean psychology has no room for a *psuchê*. “Empedocles did not hold that the soul is composed of the elements; but what we call the activity of the soul he explained by the elementary composition of the body; a soul distinct from the body he did not assume”.<sup>28</sup> The view that Empedocles had no soul is now fairly common. It was not held in antiquity: the doxographers are ready enough to use *psuchê* in Empedoclean contexts,<sup>29</sup> and their sunny acceptance of Empedoclean souls suggests that the absence of the term *psuchê* from the fragments should be ascribed to chance. In any case, it seems to me that in **B 138** (‘drawing off his *psuchê* with bronze’—i.e. ‘slitting his throat’) the word *psuchê* does mean ‘soul’.

What was the Empedoclean *psuchê*? In the *Phaedo* Socrates refers anonymously to those who say that ‘blood is that with which we think’ (96B=24 A 11); and he surely has Empedocles’ 429 in mind. According to Hippo, ‘the fact that the semen is not blood refutes those who say that the *psuchê* is blood’ (*An* 405b4=31 A 4): Hippo, too, had Empedocles in mind.<sup>30</sup> The doxographers, however, pass on a slightly different interpretation of 429:

The regent part (*to hêgemonikon*) is neither in the head nor in the chest, but in the blood (**432**: pseudo-Plutarch, A 30; cf. Aëtius, A 97).

Theophrastus, perhaps, disagreed with Plato. And Theophrastus’ master confessed his own puzzlement:

And it is similarly absurd to say that the *psuchê* is the *logos* of the mixing; for the mixing of the elements which produces flesh and that which produces bone do not have the same *logos*. Hence it will follow that one has many *psuchai* throughout the whole body, if everything is composed of mixed elements and the *logos* of the mixing is {*harmonia* and}<sup>31</sup> *psuchê*. And one might also put the following problem to Empedocles: he says that each of them exists by some *logos*; then is the *psuchê* the *logos*, or is it rather as something else<sup>32</sup> that it comes about in the limbs? (**433**: *An* 408a13–21=A 78).

Let us forget about the blood and consider the view that the *psuchê* is a *logos* of the mixing: what does that mean? and was Empedocles in fact committed to it? Aristotle compares this Empedoclean doctrine, to the celebrated theory that ‘the soul is a harmony’: I shall look at the latter theory before returning to Empedocles.

There is another opinion handed down about the *psuchê*.... For they say that it is a sort of harmony; for a harmony is a mixing and composition (*krasis kaisunthesis*) of opposites, and the body is composed of opposites (**434**: *An* 407b27–32=44 A 23).

Many of the wise men say—some that the soul is a harmony, others that it has a harmony (435: Pol 1340b 18–58 B 41).

Our main source for the view is Plato's *Phaedo*:

For, Socrates, I think you are aware that we believe the soul to be something like this: our bodies are, as it were, tensioned and held together by hot and cold and dry and wet and other things of the same kind; and our souls are the mixture and harmony of these things when they have been well mixed in a correct *logos* (436:86 B).

Aristotle leaves the harmony men in comfortable anonymity. The speech in the *Phaedo* is made by Simmias; and the whole discussion is reported by Echecrates, who explicitly says that the harmony theory was familiar to him (88D=53 A 4). Now Echecrates is listed as a Pythagorean (Iamblichus, 53 A 2); and Simmias studied under Philolaus (*Phaedo* 61D). The obvious inference is that the harmony theory was Pythagorean, and, specifically, a doctrine belonging to Philolaus. The importance of *harmonia* in Philolaus' thought adds credibility to the conclusion; and there is external corroboration; three late sources explicitly ascribe the doctrine to the Pythagoreans;<sup>33</sup> and one asserts that:

Pythagoras and Philolaus [say that the soul is] a harmony (437: Macrobius, 44 A 23).

The 'opposites' do not, it is true, figure in what we know of Philolaus' physics; but we have no reason to deny him the Presocratic commonplace that animal bodies are compounds and that their constituents are in some respects 'opposite'. Again, the only genuine Philolaic fragment that explicitly mentions *psuchê* (44 B 13) says nothing of *harmonia*;<sup>34</sup> but that fragment is consistent with the *harmonia* theory, and has no particular reason to advert expressly to it. I conclude that the traditional ascription is correct: Philolaus held that 'the soul is a harmony'.<sup>35</sup>

To say that 'the *psuchê* is a harmony' is to say that a person has a *psuchê* just so long as his physical constituents are harmoniously arranged,<sup>36</sup> thus:

(1) *a* has a *psuchê* if and only if *a*'s physical parts are harmoniously arranged.

The essential point about (1) is this: it makes the *psuchê* non-substantial, a dependent entity, like a mood or a cold, not an independent part of a man, like a brain or a heart. There are filthy moods and bad colds if and only if someone is in a filthy mood or has a bad cold; there are harmonies if and only if something is has a soul. If I say '*a* has a coat', I assert a two-place relation (the harmoniously arranged; and there are souls if and only if something relation of *having*) between a man and his apparel; and the predicate '*...has a coat*' is formed from the relation '*...has—*' and the general term '*coat*'. If I say '*a* has a filthy temper' I do not assert a two-place relation between a man and some other item; and the predicate '*...has a filthy temper*' is not compounded from a relation and a general term. According to (1), '*a* has a *psuchê*' is like '*a* has a temper' and unlike '*a* has a coat'.

The thesis that a *psuchê* is ‘the *logos* of the mixing’ has the same implication; and that is why Aristotle treats the two views together. ‘*Logos*’ in this phrase hovers between ‘proportion’ or ‘ratio’ and ‘definition’; but the difference is trifling, since a mixing is presumably defined by the ratio of the stuffs it mixes. Thus the thesis says that a person has a *psuchê* just so long as his physical constituents are mixed in the right proportion; or:

(2) *a* has a *psuchê* if and only if *a*’s physical parts are correctly mixed. Evidently, the *psuchê* of (2) is non-substantial in exactly the same way as the *psuchê* of (1).

*Psuchê* is essentially defined in functional terms: a *psuchê* is that in virtue of which one lives. Similarly, we might define a temper as that in virtue of which one rants and rages; and a waterproof as that in virtue of which one remains dry in rainstorms. Given these formal definitions, we ask after the nature of the *psuchê*, the temper, the waterproof. Answers of very different types emerge for the two latter questions: a waterproof is a piece of oilskin or canvas or similar material; a temper is a disposition or inclination to act in such and such a way. ‘*a* has a waterproof’ is true if and only if *a* possesses a piece of oilskin or the like: ‘has’ denotes a two-place relation; and the sentence might be symbolized, to bring that feature out, by the formula (*x* is a waterproof and *a* has *x*). ‘*a* has a temper’ is true if and only if *a* is disposed to act in such and such a way: ‘has’ does not denote a two-place relation, and the sentence permits no symbolic formalization that parallels the waterproof formula. The *harmonia* theory and the *logos* theory bring *psuchê* to the side of tempers and separate it from waterproofs. The theories contrast both with run-of-the-mill Presocratic notions, which make the *psuchê* a part of a man’s bodily stuff, and also with the Cartesian account, which makes the soul an incorporeal homuncule temporarily resident in the body.

Theories (1) and (2) are close to one another; the *Phaedo* perhaps conflates them. Aristotle, however, rightly distinguishes between them, and rightly points out the absurdity of (2): there is no one ratio which gives the ‘correct’ elemental mixture for all a man’s physical constituents; different parts require different ratios, and there is no such thing as ‘the *logos* of the mixing’. The objection can be countered by rewriting the *definiens* of (2) as ‘each of *a*’s physical constituents is correctly mixed’. The difference between (1) and (2) now diminishes; and both theories face a common question: What is a ‘harmonious’ arrangement, or a ‘correct’ mixing? What are the canons of harmony, the criteria of correctness?

A lyre is ‘harmoniously’ arranged if it is correctly strung and attuned for playing: its harmony or attunement consists in its aptitude for performance. Similarly, then, a body’s harmony, or correct mix, is one which conduces to its functioning: the arrangement of the bodily parts is harmonious only if the body is capable of performing certain vital functions; and a mixture of bodily constituents is correct only if it is conducive to such performance. Thus (1) and (2) give place to:

(3) *a* has a *psuchê* if and only if *a*’s body is in a state such that *a* is capable of performing the vital functions.

The vital functions will vary from one species of creature to another; no doubt they will include, in the case of man, nutrition, reproduction, perception, locomotion, and thought.

I have deliberately developed the *harmonia* theory in an Aristotelian direction: indeed (3) constitutes as good an account as I can give of Aristotle’s thesis that ‘the

*psuchê* is an *entelecheia* of a potentially living body' (*An* 412a26). Aristotle vigorously rejects the *harmonia* theory, and gives no hint that it approximated to his own view. His hasty dismissal of the theory is a pity; for if, as I incline to think, Aristotle's own view of mind is substantially correct, then it would be pleasant to know more about its first adumbration in the writings of Philolaus: had Aristotle praised the theory, later writers might have prized and preserved it.

(d) *Metempsychosis and immortality*

Philolaus held both a *harmonia* theory of the *psuchê* and a Pythagorean view on metempsychosis and immortality. Most scholars are worried by the conjunction, and some see a difficulty so great that they dissociate psychic harmony from Philolaus. There is, it is true, no direct evidence for transmigration or psychic immortality in Philolaus: scholars point to his alleged prohibition on suicide (*Phaedo* 6 1DE=44 B 15); and to the *mot* that the body is a tomb of the soul. But the prohibition has no bearing on the question; and the *mot* is ascribed to Philolaus by virtue of a misreading of the *Phaedo* (62B=44 B 15).<sup>37</sup> Thus if either *harmonia* or immortality must be denied to Philolaus, I should incline to deny him immortality. Yet such a rejection, in a Pythagorean, would have been remarkable; and since our sources do not remark upon it, we must work on the supposition that both *harmonia* and immortality are Philolaic.

In the *Phaedo* Simmias himself discovers an incongruity between harmony and immortality: 'If, then, the soul really is some kind of harmony, it is clear that when our bodies are unduly relaxed or tensioned by disease or some other evil, the soul must immediately perish' (*Phaedo* 86C). There cannot be separate souls; for it is an immediate consequence of the harmony theory that anyone who has a *psuchê* has a body. And souls cannot survive their owner's body; for any destruction of the arrangement of that body is *eo ipso* an end of the *psuchê*. Aristoxenus, who later developed a version of the *harmonia* theory, was perfectly clear that the *psuchê*, not being substantial, could not have a separate immortal existence (cf. fr. 119–20 W).

There are two distinct arguments to consider here. Before discussing them I have two preliminary points to make. First, even if the argument outlined in the last paragraph is correct, we need not suppose that Philolaus knew it or would have accepted it had he known it. Indeed, 'one has the impression that Plato, in this passage in the *Phaedo*, was the first to point out an embarrassing implication of the idea of the soul as a harmony'.<sup>38</sup> Even if harmony and immortality are inconsistent, Philolaus may well have embraced both doctrines, in blissful ignorance or erroneous belief.

Second, we must distinguish clearly between psychic insubstantiality and psychic incorporeality. To say that the soul is insubstantial, as (1)-(3) implicitly do, is to deny that the soul is an independent substance, or that 'soul' is an indispensable substantive (see above, p. 445). To say that the soul is incorporeal is to deny that souls are physical or that a complete account of psychology can be given in terms of physical theory. The distinction allows four types of view on the soul: (a) the soul is substantial and incorporeal—as Plato and Descartes held; (b) the soul is substantial and corporeal—as Democritus and most of the Presocratics held; (c) the soul is insubstantial and incorporeal ('soul' is not a substance word, but there are irreducibly non-physical

predicates)—Aristotle, I think, held this view; (d) the soul is insubstantial and corporeal—as modern behaviourism and modern physicalism hold. Philolaus' harmony theory rejects (a) and (b); it does not, so far as I can see, plump definitely for (d) rather than (c). Thus Philolaus was not necessarily a full-blooded physicalist; and any difficulty there may be in reconciling his psychology with his eschatology is due not to materialism or physicalism, but to 'insubstantialism'.

What, then, of Simmias' difficulty? One argument is plain enough: the harmony theory entails the impossibility of independently existing souls. Aristotle saw the entailment clearly (*An* 413a3), and it is indeed obvious: there exists a *psuchê* only if '*x* has a *psuchê*' is true of something; and '*x* has a *psuchê*' is true of *a* only if *a* has a body. No soul without body. The conclusion is anathema to modern advocates of immortality. It does not, however, imply that the soul is mortal: I ignore the tedious and unreal possibility that *a*'s body may be immortal and point to the particular form of Pythagorean immortality: metempsychosis allows psychic immortality without requiring the existence of separate, disembodied, souls (see above, p. 111). My body perishes, certainly; and so my *psuchê* cannot achieve immortality by cleaving to this flesh. But other bodies survive, and my soul may fly to a new body on the destruction of mine; and if there is an infinite sequence of bodies, my soul may achieve a transmigratory immortality. Metempsychosis, in short, allows Philolaus to make his *psuchê* immortal, even though it cannot exist apart from a body.

The second argument against Philolaus seems to have failed along with the first: the second urges that if a body, *b*<sub>1</sub>, ceases to be harmoniously arranged, then its harmony and its *psuchê* perish; Philolaus replies that the harmony and *psuchê* need not perish, they may simply pass on to another body, *b*<sub>2</sub>.

Philolaus' victory, however, is spurious. The suggestion is that two different bodies may have the same soul; and that a suitable succession of mortal bodies may support a single immortal soul. In a way the suggestion is correct: there is a perfectly clear sense in which Philolaus can say that *b*<sub>1</sub> houses the same soul as *b*<sub>2</sub>. Two different lyres may have the same *harmonia*, for they may be attuned in exactly the same way; two different men may have the same bad temper, for they may be disposed to rage at the same things in the same ways; two different bodies may 'house' the same soul, for they may exhibit exactly the same harmonious arrangement. And it is logically possible (though no doubt physically improbable) that my soul should, in this sense, be immortal: at any time *t*, there exists a body exhibiting exactly the same harmonious arrangement that my body now exhibits.

But an immortality of that sort is eschatologically barren. Psychic immortality so construed does not guarantee personal immortality; psychic 'transmigration' (the word is hardly apposite) does not ensure that *I* survive my body's decay. Two different bodies existing at different times may have the same *psuchê*; but in exactly the same way, two different bodies existing at the same time may have the same *psuchê*. For all I know, my body and the body of the Prime Minister of Australia may be attuned exactly alike; hence, the Prime Minister and I have the same soul. But that does not mean that I am the Prime Minister of Australia. Similarly, it may happen that the Australian Prime Minister in 2075 will have the same soul as I have now; but that fact gives me no reason to expect a future Antipodean existence, or to anticipate a prime-ministerial salary. Psychic identity and personal identity fall apart; psychic immortality has no

implications for personal immortality: Philolaus has no call to rejoice in the survival of his soul.

In a monogamous country, if *a* has the same wife as *b*, then *a* is the same person as *b*; in the present state of surgical accomplishment, if *a* has the same brain as *b*, then *a* is the same person as *b*. In general, if *F* is a substance term, and *R* a one-one relation, then if *a* and *b* bear *R* to the same *F*, *a* is identical with *b*. That is an elementary truth of logic. Now on the standard doctrine of metempsychosis, it is my soul that makes me the individual I am; consequently, only I can have my soul. Hence the relationship between myself and my soul is one-one; and if the Australian premier of 2075 has the same soul as I have, then I am he. Philolaus, however, cannot employ that argument: ‘...has a soul’ is not a relational predicate in his view; consequently I do not stand in any relation to my soul, and specifically I do not stand in a one-one relation to it. ‘He has his father’s soul’ is perfectly intelligible; but it is not an assertion of metempsychosis, nor does it imply that he is his father. ‘He has his father’s soul’ is, logically speaking, parallel to ‘He has his father’s temper’: both are comments on the similarity of human nature; neither comments on the identity of human persons.

I conclude that Philolaus is at a loss: *harmonia* and psychic immortality are logically consistent; but together they entail the immortality of the body. If bodies rot, then either *harmonia* or psychic immortality is false. For all that, the harmony theory represents a signal advance in the philosophy of mind; and any discussion of the difficulties into which Philolaus unwittingly drove plunges at once into some of the thickest bush of modern philosophy.

(e) *Was Empedocles a centaur?*

My remarks on Empedocles’ psychology have drawn exclusively on fragments traditionally assigned to his poem *Concerning Nature*; my earlier account of Empedocles’ theory of metempsychosis drew exclusively on the *Katharmoi*. One of the standing problems in Empedoclean studies concerns the relationship between the two poems, and in particular between the doctrine of metempsychosis and the physiological psychology of *Nature*.<sup>39</sup> *Nature*, it is said, is thoroughly materialistic; the *Katharmoi* treats of the fate of an immortal and incorporeal soul: the two poems are thus in flat contradiction. Empedocles’ ‘two pictures of rationality remain not only heterogeneous but contradictory at crucial points; they admit of no rational or, for that matter, even imaginative harmony’; ‘the Orphic piety of his *Purifications*...admits of no rational connexion with the scientific temper and doctrine of his work *On Nature*.’ Some scholars generalize from the case of Empedocles: ‘all through this period, there seems to have been a gulf between men’s religious beliefs, if they had any, and their cosmological views’: Empedocles was a ‘philosophical centaur’, in an age when such monstrosities were regularly spawned.<sup>40</sup>

An essay in intellectual biography may solve the paradox: philosophers change their views; and perhaps Empedocles’ equine and his human features were not contemporaneous characteristics—the Ionian doctrines of *Nature* were forgotten or abandoned when the Pythagorean *Purifications* intoxicated Empedocles’ mind. We

have not an incongruous simultaneity of opinions, but a radical *volte-face*. Such changes are not unknown in the history of philosophy.

The fragments of Empedocles which we possess can be assigned to his different poems with some confidence;<sup>41</sup> moreover, we know the order in which the poems were written. **B 131** comes from the *Katharmoi*:

If for the sake of any of the mortals, divine Muse, it pleased you to let  
my exercises pass through your mind now again stand by me as I pray,  
Calliope, and reveal a good argument about the blessed gods (**438**).

The earlier aid for which **438** thanks the Muse was surely given for the penning of *Nature*; hence *Nature* was penned before the *Katharmoi*.<sup>42</sup>

The biographical solution will hardly do. The *Katharmoi* gives no hint of a change in doctrine; on the contrary, there are well-marked connexions between the two poems. The *Katharmoi* contains constant linguistic echoes of *Nature*; **438** refers complacently to *Nature* at the opening of the later poem. And there are also close connexions of substance: thus **B 111**, from *Nature*, and **B 112**, from the *Katharmoi*, make very similar proclamations, and Clement intelligibly cites both fragments to prove a single point (cf. **A 14**). Hippolytus, who preserves **B 115** of the *Katharmoi*, intelligibly glosses it in the terms of *Nature*.

If we cannot seriously entertain the theory of a radical change in Empedocles' philosophical outlook, we cannot, by the same token, find a lack of 'imaginative harmony' between the two poems; at any rate, Empedocles' imagination, and that of his ancient critics, was broad and bold enough to encompass both poems. It was not unusual to find prophet and scientist united in one person in old Greece; and the religious physicist is no rarity today. I may be astonished to find that one man both has expertise in nuclear physics and practises as a lay preacher; but I can hardly doubt that there are such men, and that they manage to combine their apparently heterogeneous beliefs into an imaginative unity.<sup>43</sup>

There is just one Empedocles, the scientist of *Nature* and the moralist of the *Katharmoi*: we have no grounds for positing an intellectual revolution in his life, or for accusing him of imaginative schizophrenia. The main charge remains: are not the two poems simply inconsistent with each other? Is not the transmigratory soul of the *Katharmoi* incompatible with the psychology of *Nature*?

I begin with **B 15**, which scholars locate in *Nature*:

A man wise in such matters would not think in his mind that while they  
live what they call life so long do they exist, and bad and good things  
face them, but that before they were put together as men and once they  
are dissolved they do not exist at all (**439**).

The fragment speaks of immortality; and Plutarch, who quotes it, plausibly takes it to be promising a personal immortality:<sup>44</sup> 'only a fool would think that his existence is limited to that short span which men call life'.

**439** is not easy to integrate with the rest of *Nature*: strictly speaking (see above, p. 442), Empedocles cannot admit that men exist at all; for only the elements really exist.

But **439** is not ascribing immortality to *men*: the things that are immortal are only men for a brief span in their existence. If **439** does announce a personal immortality, it must distinguish persons from men. Persons, of course, must be parcels of elemental stuff; but they need not always be parcels of human form. Thus **439** brings *Nature* into close doctrinal contact with the eschatological promises of the *Katharmoi*. That, I think, shows that in Empedocles' mind the two poems were consistent; it does not, of course, show that they are consistent in reality. We must now look at the incorporeal objects of the *Katharmoi* whose alleged existence breeds the inconsistency.

Four fragments need to be quoted; the first describes 'the divine (*to theion*)':

We cannot bring it near to be approachable by our eyes, or grasp it with our hands, which is the greatest path of persuasion leading into men's minds (**440: B 133**).

The next fragment may well have been continuous with **440**:

For its limbs are not fitted out with a human head, nor do two branches spring from shoulders, nor feet, nor swift knees, nor hairy chest; but it is only a holy and superhuman mind, darting with swift thoughts over the whole world (**441: B 134**).

The Byzantine scholar, Tzetzes, ascribes **441** to 'the third book of the *Physics*'; and some moderns accordingly place **441**, and with it **440**, in *Nature*.<sup>45</sup> From the present point of view the attribution is unimportant: if correct, it only strengthens the connexion between the two poems.

The next long fragment is expressly concerned with transmigration:

There is a pronouncement of Necessity, an old decree of the gods, eternal, sealed with broad oaths: when anyone in wickedness defiles his dear limbs with bloodshed

—a *daimôn* who has been allotted long life—thrice ten thousand seasons is he to wander apart from the blessed 5 ones,

being born through that time in every kind of mortal form, treading in turn the wretched paths of life. For the force of the air pursues him into the sea and the sea spits him up onto the threshold of the land, and the land into the rays

of the tireless sun, and that casts him to the whirls of the air: 10 one receives him from another, and all hate him. This way I myself am now going, a fugitive and wanderer from the gods,

who trusted in mad strife (**442: B 115**).<sup>46</sup>

Finally, a single line reads:

...clothing it about in an alien cloak of flesh (**443: B 126**).

Plutarch makes the subject 'nature'; Porphyry says that 'nature' or '*daimôn*' is the tailor, and that her clients are 'souls'.<sup>47</sup>

These four fragments are together taken to show that the theory of transmigration uses an incorporeal soul: **442** makes the migrating soul a *daimôn* or godlike thing; **443** shows that *daimones* find flesh, and hence the four roots, foreign stuff; and **440** and **441** reveal that, in general, Empedoclean gods are pure, incorporeal minds.

That argument is wholly mistaken. First, the gods. **440** is quickly dismissed: it says that *we* cannot see or touch *to theion*. The point is epistemological: 'since we cannot have immediate perception of the divine, we must rely on inference or analogy or the like'. From that it scarcely follows that the divine is absolutely intangible and invisible; let alone that the divine is incorporeal. As for **441**, that is pure Xenophanes: as Ammonius observes, Empedocles' point is to 'castigate the stories told by the poets which treat of the gods as being anthropomorphic' (*ad B 134*). A denial of anthropomorphism does not entail incorporeality; and if the divinity is 'a sacred mind (*phrên*)', that will not secure incorporeality, for Empedocles is a psychological materialist.

In fact, Empedocles' theology is far denser and more difficult than the simple argument from **440** and **441** suggests. First, the four roots, together with Love and Strife, are given divine names (e.g., **B 6**);<sup>48</sup> those gods are, trivially, corporeal. Second, the cosmic Sphere is given divine status (e.g., **B 31**); and the Sphere too is a massy god. Third, there are the traditional gods named in **B 128**:

Nor was there among them any god Ares, nor Kudoimos, nor King Zeus,  
nor Cronus, nor Poseidon, but only queen Cypris...(**444**).

The main purport of these lines is to state that men of the Golden Age made love, not war; and the gods may be no more than rhetorical window-dressing. If we take the gods of **444** seriously, then they are to be placed among the fourth set of divinities, the created gods of **B 21**:

For from these [sc. the elements] comes everything that was and is and will be—

trees sprang up, and men and women, and beasts and birds and water-dwelling fish, and long-lived gods who are first in honour (**195**: cf. **B 23**. 5–8).

Like men, these gods are not eternal but at best long-lived (*dolichaiônes*): being elemental compounds, they cannot survive the complete elemental dissociation at the time of total Strife, nor the utter fusion in the years of the Sphere. Finally, and fifth, there are the *daimones* of **442**. They have a divine status; yet they are not eternal, their lot is 'long-lived life (*makraîôn biotos*)'. The *daimones* and the long-lived gods of **195** have much in common: parsimony suggests their identification.

If that identification is correct, it has some importance for **442** and **443**, to which I now turn. The orthodoxy sees in those two fragments a picture of the *daimôn* as a journeying *homunculus*, condemned to lodge in a succession of dirty doss-houses; the *daimôn* is, as it were, an incorporeal ghost of a thing, which properly exists

untrammelled by any body, but whose sins condemn it to 30,000 seasons in physical clink. The picture suggests a Cartesian rather than a Presocratic artist. I do not think that it is entirely wrong; nor even that the Cartesian touches are all anachronistic. But in one point it is seriously unrepresentational: nothing at all in **442** implies that the *daimôn*, in its blessed state, is incorporeal; fallen, it puts on mortal forms; but that does not imply that unfallen it was wholly bodiless. Nor does **443** imply daemonic incorporeality: the word '*allognôos*,' which I translate 'alien', is unique. If the translation is right, **443** does not show that the *daimôn* is naturally incorporeal, or even that it is naturally fleshless; if I put on a strange suit of worsted at the tailor's, that does not mean that I entered the shop naked, nor even that I did not enter in my familiar worsted. If '*allognôos*' means rather 'making unrecognizable',<sup>49</sup> the same holds: men who put on disguises need not have been naked beforehand, nor even undisguised.

In short, we are at liberty to have our *daimôn* corporeal; and that liberty becomes a pleasant necessity if the *daimones* of **442** are identified, as I suggest, with the long-lived gods of **195**.

Of what stuffs is the material *daimôn* compounded? The natural answer is: of all stuffs. The response is implicit, I think, in **195**; and it is necessary if the *daimones* are going to have a knowledge of the world commensurate with their unfallen status; for 'by earth we see earth'. Some modern scholars give a different answer: first, they distinguish between two types of *psuchê*: the seat of cognition and consciousness, and the 'divine spark' or soul. Second, they connect the former *psuchê* with the materialistic psychology of *Nature* and the latter with the *daimôn* of the *Katharmoi*. Finally, they urge that the *daimôn* is not composed of the four roots, but solely of Love (and, perhaps, Strife); thus the *daimôn* is not exactly material, for Love and Strife are only quasi-matter.<sup>50</sup>

That modern theory is, I fear, a modern fantasy, engendered by the desire to give a transmigratory theorist an incorporeal soul. The desire is unwarranted; for transmigration does not require incorporeality. And the fantasy does not satisfy the desire; for Love and Strife are corporeal. No jot of evidence suggests that the *daimôn* is made of Love (and Strife). If the *daimôn* is separated from the psychology of *Nature*, then it is hard to see how the *daimones* will live their blessed life. And the distinction between two types of *psuchê*, if it is found in other Greek texts, is nowhere hinted at by any Presocratic.

Empedocles can now emerge with a coherent psychology-cumeschatology. Let us replace the term '*daimôn*' by 'person', its nearest English equivalent. Persons are long-lived: they are created fairly early in the cosmic cycle, and destroyed or decomposed fairly late. They are essentially corporeal, being tightly-knit elemental compounds; and thanks to their elemental constitution, they are capable of cognition and of locomotion. In their original state, persons are not human in form, nor do they rely upon human organs of cognition or locomotion; and to that extent an Empedoclean person is a *res cogitans*, a 'sacred mind'.

In their original state persons have some sort of social life. The punishment for moral transgression in that life is severe: the person is obliged to take on human, animal and vegetable forms—to become a man, a horse, a marrow. Throughout these transmigrations it remains a person, and the same person. Proteus-like, it changes form frequently and radically; like Proteus, it remains the same divine creature. And at

last, its sins expiated, it reverts to its original state, and may again flit knowingly through the universe.

The account is doubtless implausible: Empedocles does not tell us how to identify a *daimôn*, or how to trace a daemonic substance from one mortal form to another; and if it is possible to think of ways in which his hypothesis might become scientifically testable, it is hard to think of a way which would not also lead to speedy refutation. But that is only to say what everyone believes: that transmigration does not happen. Logically, the hypothesis is impeccable: no inconsistency is generated by the supposition that one and the same physical *daimôn* passes through a succession of animal and vegetable phases; and those scholars who state that transmigration requires an incorporeal soul are simply in error.

Pedants will deny Empedocles' theory the name of metempsychosis, since it involves no wanderings of a *psuchê*; but if those ancient commentators who called the *daimôn* a *psuchê* were going beyond their evidence, the appellation was intelligible and harmless. Nor need we be puzzled, as Aristotle was, by Empedocles' failure to give a plain account of *psuchê*: he may, if he pleases, say that the soul is a mass of blood, or of whatever stuff is most appropriate to describe the daemonic composition; he may, that is to say, call the *daimôn* a *psuchê*. Alternatively, he may say that the *psuchê* is a 'logos of the mixing': the *daimôn* has a *psuchê* inasmuch as its component stuffs are arranged thus and so. The two accounts are only verbally distinct.

Empedocles was no centaur: *Nature* and the *Katharmoi* do not state opposing philosophies uneasily coexisting in a single schizophrenic mind. On the contrary, as Hippolytus obscurely saw (*ad B 115*), *Nature* provides the physical foundation for the eschatology of the *Katharmoi*: a proper natural philosophy shows first, that the events we denominate by 'birth' and 'death' are in actual fact comminglings and separations of our elemental parts; and second, that our vital functions are, scientifically speaking, alterations in our physical constitution. Now 'birth' and 'death' evidently do not start from or end in pure elemental stuffs: the processes of association and dissociation are long drawn out. What, then, is more reasonable than to imagine that our selves have pre-existed and will survive those partial dissolutions and reminglings of our gross constituents which men habitually suppose to mark the terminal points of their lives? Natural philosophy does not imply an Empedoclean eschatology; but in a perfectly clear sense it provides the backcloth against which that drama can be played out.

#### (f) *The whirligig of time*

The gods of **195** are *dolichaiônes*, not *aidioi*; the *daimones* of **442** enjoy a *makraiôn biotos*; and **439**, strictly construed, promises not immortality but only survival of what is vulgarly called death. Moreover *Nature* is incompatible with an unbroken personal immortality: in the homogeneous Sphere, and again at the time of Utter Strife (and doubtless for some considerable periods at the beginning and at the end of the cosmogonical era) there is no place for persons. Men are shorter lived than *daimones*; but *daimones* are not immortal.

The *Katharmoi*, however, promises immortality: greeting the inhabitants of Acragas, Empedocles announces:

I come to you an immortal god (*theos ambrotos*), no longer mortal (**445: B 112.4**);

and at the end of their punishment the *daimones*

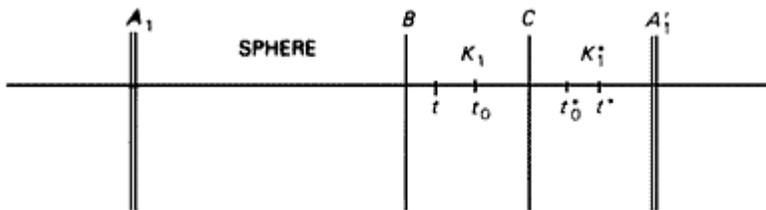
spring up as gods, highest in honours, sharing a hearth with the other immortals (*athanatois*) (**446: B 146.3; B 147.1**).

Do we not, after all, have a basic inconsistency between *Nature* and the *Katharmoi*? It is not that the former poem is materialistic, the latter spiritualistic; but that the former countenances no immortals but the elements, while the latter proclaims personal immortality.

The difficulty here is not serious: 'immortal' is a stock epithet of the Greek gods, and 'the immortals' comes to mean 'the gods', its literal sense ('those who never cease to exist') being at most a faint semantic undercurrent; it would be absurd to press the word '*athanatois*' in **446** and to insist that it ascribes literal deathlessness to the gods. It would be equally silly to make anything of '*ambrotos*' in **445**. At worst, Empedocles is speaking loosely: his thought is consistent, and it consistently yields gods and *daimones* who are long-lived but not immortal. Personal immortality is not, in fact, explicitly promised in Empedoclean eschatology.

Yet an ingenious suggestion seems capable, after all, of investing Empedocles' *daimones* with a sort of eternity. Dicaearchus ascribes to Pythagoras the view that 'at certain periods, what has happened once happens again' (**84:14 A 8a**). The theory of Eternal Recurrence has had a strange hold on the human mind. In an enervated form it is embraced both by Plato and by Aristotle, and adopted by those who claim to find cyclical patterns in human history; in a strong form it was propounded by the Stoic sages, and raised by Nietzsche as the pinnacle of philosophy, the *Gedanke der Gedanken*. The view is ancient and has Eastern origins. Even if we do not believe Dicaearchus' ascription (though I do not see why we should not), Eternal Recurrence was surely current in fifth-century Pythagorean circles; and it is clearly present in the cosmic cycle of Empedocles.

For Empedocles' universe, on the orthodox interpretation (above, p. 310), gives a perfect example of Eternal Recurrence: the Sphere yields to a cosmological period which ends in total Strife; after Strife comes a second cosmogony, symmetrical with the first; and then the Sphere returns, only to yield again to a cosmology. The cycles roll on infinitely, without beginning and without end; each cycle follows the pattern of its predecessor.



$A1 A'1$  represents one cosmic cycle; within it  $B A'1$  is the period of the cosmos, divided at  $C$  by the instant of total strife. The state of the world at  $t$  in  $K1$  is exactly repeated at  $t^*$  in  $K^*1$ , if  $Bt=t^* A'1$ ; and the history of  $K^1$  from  $t$  to  $t_0$  is exactly repeated, in the opposite direction, from  $t^*0$  to  $t^*$  in  $K^*1$  (if  $t t0=t^*0t^*$ ). Before and after  $A1A'1$  there are infinitely many cycles,  $A_i A'_i$ ; in each cycle there are cosmic periods  $K_i + K^*_i$ ; and in each cosmic period the roll of events exactly mirrors the history of  $K1 + K^*1$ . Empedocles holds a theory of Eternal Recurrence in a remarkably strong form.

Why should anyone have embraced that bizarre theory? Two lines of argument are suggested. The first is scientific: we observe the movements of the heavens; and we see that they are strictly periodical; after a long span or 'Great Year' every heavenly body will be in exactly the same place as it is now. Since the heavens mirror, or even determine, sublunary events, we infer that the world as a whole has its Great Year: 'in the case of the motion of the heavens and of each of the stars, there is a circle: what then prevents the generation and decay of perishable things from being like this, so that these things are generated and decay again?' ([Aristotle], *Probl* 916a25–7). Above, the boarhound and the boar pursue their patterns as before: below, they are faced by the same destiny.<sup>51</sup>

The second line of argument is metaphysical. Crudely stated, it has a certain charm: the universe is finite, and it has finitely many different states; but time flows on infinitely, and every moment in time is the time of some state of the universe. Since the states follow one another in causally ordered succession, they are bound to recur: the history of the universe is cyclical. More precisely: consider some state of the universe,  $s_1$  (a description of  $s_1$  will specify the total arrangement of the universe at some time).  $s_1$  will cause  $s_2$ ;  $s_2$ ,  $s_3$ ; and so on. Consider the series  $s_1, s_2, \dots, s_n, s_{n+1}$ . Suppose that there are just  $n$  different  $s_i$ s: then  $s_{n+1}$  is identical with some  $s_i$  between  $s_1$  and  $s_{n-1}$ . Call it  $s_j$ . Then the series from  $s_j$  to  $s_n$  will repeat itself infinitely in infinite time; and since  $s_1$  was caused by some  $s_i$ ,  $s_1$  was caused by  $s_n$ , so that the cycle  $s_j - s_n$  has already been infinitely repeated.<sup>52</sup>

The argument relies on the following large premisses: that time is infinite; that time cannot exist without change; that the universe is deterministic; that there are finitely many distinct states of the universe. None of those premisses is uncontroversially true. For all that, the argument is a rational construction: Nietzsche did not merely adopt, by superhuman intuition, a striking thesis. But alas, I doubt if any such argument ran through Empedocles' head (see above, p. 311).

So far Eternal Recurrence makes no reference to personal immortality. Nietzsche proceeds thus: 'Now I die and disappear,' you would say; "in the totality of things I am nothing. Souls are as mortal as bodies." But the knot of causes in which I am bound up returns—it will create me again. I myself belong to the causes of the eternal recurrence. I come again with this sun, with this earth, with this eagle, with these snakes—not to a new life or a better life or a similar life: eternally again to this very same life, the same in largest and in smallest points; and I teach again the eternal recurrence of all things' (*Also Sprach Zarathustra III*, 'Der Genesende'). The Stoics had said the same: 'after our death, when certain periods of time have passed, we shall come to the state in which we are now'; 'this same I will be born again in the renaissance'; 'after the conflagration, everything in the universe comes about again, the same in

number (*ta auta...kat 'arithmon'*).<sup>53</sup> And the same point was explicitly made by the Pythagoreans; for, according to Eudemus, they hold that

[Things will occur] again, the same in number (*ta auta arithmôî*), and I shall be holding my stick and lecturing to you sitting like that—and the same will go for everything else (447: fr. 88 W= 58 B 34).

Consider the present stretch of the cosmic cycle,  $BC=K1$ . It consists of  $n$  successive world states,  $S_1^1, S_2^1, \dots, S_n^1, \dots, P_1^k - P_1^m$ , is Pythagoras' life is included in a subset of those states: it is constituted by the set of states  $P_1^i$  where each  $S_1^i$  is a part of.  $P_1^{k*} - P_1^{m*}$ . In the next stage of the cycle,  $CA'1=K1$ , there is an analogous set of states,  $P_1^{k*} - P_1^{m*}$ , and in every one of the infinitely many  $K_i$ s, there is a set of Pythagorean states,  $P_i^k - P_i^m$ . Thus Pythagoras lives in each  $K_i$ ; and since there are infinitely many  $K_i$ s, he enjoys an immortal existence. His existence is discontinuous; but it never ends. Such an immortality would be tedious if we had perfect memories; and it is, indeed, hard to see why anyone should find comfort in it. Yet Nietzsche certainly did; and so, I suppose, did the Stoa, Empedocles, and perhaps even Pythagoras himself.

The argument I have just presented, simple though it is, is worth setting out more formally. Call the man whose history is constituted by the successive states  $P_1^k - P_1^m$ , 'Pythagoras1'. Each  $K_i$  will then contain a Pythagoras. Now every  $S_1^j$  is identical with each corresponding  $S_i^j$ . Consequently, for any  $j$ ,  $P_1^j = P_2^j \cdot S_1^j$ . Hence:

(1) For any property  $\phi$ , Pythagoras1 has  $\phi$  if and only if Pythagoras2 has  $\phi$ .

But in general:

(2) If for any property  $\phi$ ,  $a$  has  $\phi$  if and only if  $b$  has  $\phi$ , then  $a=b$ .

Hence:

(3) Pythagoras1=Pythagoras2.

In general:

(4) For any cycle  $K_i$ , Pythagoras1=Pythagoras <sub>$i$</sub> .

Hence Pythagoras—our familiar Pythagoras—lives in every cosmic cycle; and he is therefore immortal.

The argument is open to objection from two sides. The first objection allows its validity but denies it any immortal significance. Eudemus places his report of the Pythagorean view in a philosophical context: 'If one believes the Pythagoreans, so that [things occur] again, numerically the same ..., then it is plausible (*eulogon*) that the time too is the same, for it is [the time] of the same motion; and similarly, of many identical things the "earlier and later" are one and the same, and so, then, is their number. All things, then, are the same; so that the time is, too' (fr. 88 W=58 B 34). Eudemus expresses himself in terms of Aristotle's philosophy of time; but the main point of his argument stands out independently of that philosophy. Times are necessarily times of *events* (or 'motions'); one time is distinct from another, therefore, only if it is the time of a different event. Now since, by hypothesis, the state of the

world  $t_j^1$  holding at  $S_j^1$  in  $K1$  is exactly the same as the corresponding state  $t_j^2$   $S$  holding at  $t_j^1$  in  $K2$ , the two instants  $t_j^2$  and  $t_j^1$  are identical.

Stated more rigorously, the Eudemean argument runs like this: Take two instants of time,  $t1$  and  $t2$ . Suppose that every event occurring at  $t1$  has a counterpart occurring at  $t2$ , and *vice versa*; and suppose further that every event occurring at  $t1+n$  (for any positive or negative  $n$ ) has a counterpart at  $t2+n$ , and *vice versa*: then nothing distinguishes  $t1$  from  $t2$ , and so  $t1=t2$ . Now the instant in our period  $K1$  has, by hypothesis, a counterpart instant  $t_j^1$  in every  $K_i$ ; hence for every  $i$   $t_j^1 = t_j^i$ . Hence  $t_j^1 = t_j^i$ . every cosmic period  $K_i$  is simultaneous with  $K1$  ('the time too is the same'). Pythagoras<sub>1</sub> lived from  $t_x^1$  to;  $t_y^1$  Pythagoras<sub>2</sub> lived from  $t_x^2$  to  $t_y^2$ . But  $t_x^1 t_x^1 t_y^1 = t_x^2 t_x^2 t_y^2 = t_x^2 t_x^2 t_y^2$  and Pythagoras<sub>1</sub> and Pythagoras<sub>2</sub> are indeed identical; but their lifespan is not infinite, it is simply the three score years and ten between  $t_x^1$  and  $t_y^1$ .

Eternal Recurrence not only fails to produce immortality; it appears to produce a cyclical theory of time itself: take any state  $S_n$  occurring at  $t_n$ , and preceded at  $t_{n-1}$  by  $S_{n-1}$ . At some point,  $t_1$ ,  $S_{n-1}$  will recur. By the preceding argument,  $t_1=t_{n-1}$ . But  $t_{n-1}$  is, *ex hypothesi*, before  $t_n$ ; and  $t_1$  is, by construction, after  $t_n$ . Thus  $t_1$  is both before and after  $t_n$  and time is, as they say, circular. The cyclical theory of time is distinct from the thesis of Eternal Recurrence, though the two things are often confused. Some philosophers, insisting that time has a unique 'direction', would reject circular time out of hand; other philosophers allow that temporal circularity is at least a logical possibility. I cannot decide which view to adopt; and I leave the issue in the air.

For Eudemus, time is the 'measure of change'—not a medium in which events occur but an aspect of the organization of those events. Events necessarily occur in time; but there is no 'absolute' time, independent of events: instants of time are determined by the occurrence of events; periods of time are delimited by ends and beginnings of events. 'Time is a thought or a measure', not a substance (Antiphon, 87 B 9). The Eudemean argument relies on that theory; but the theory does not go uncontested: according to Newton, 'absolute, true and mathematical time, of itself and from its own nature, flows equably without relation to anything external'; and Newton is not without followers. Perhaps Newtonian time can reconcile Recurrence and Immortality, and remove the threat of a circular chronology?

Alas, Newtonian time saves Pythagoras from Eudemus' frying-pan only to deposit him in the fire. The difficulty was adumbrated in antiquity. Pseudo-Aristotle asserts that 'it is silly to aver that those who are born are always the same in number' (*Probl* 916a29); and Simplicius says of the Stoics that 'they inquire, reasonably, whether I am one in number now and then (because I am the same in substance) or rather differ in virtue of my ordering in different cosmogonies' (*in Phys* 886.13=*SVF* II.627). One salient feature of Pythagoras<sub>1</sub> is not, so far as we can tell, a feature of Pythagoras<sub>2</sub>: Pythagoras<sub>1</sub> taught eternal recurrence in 520 BC; Pythagoras<sub>2</sub> will teach it, but not until AD 29,480. Thus every Pythagoras<sub>i</sub> will differ from every other Pythagoras<sub>i</sub>, at least in his teaching hours. Indeed, every Pythagoras<sub>i</sub> will differ from every other Pythagoras<sub>i</sub>, in respect of countless predicates. For if time 'flows equably' along, independently of events, then  $t$  is distinct from  $t$  and '...is  $F$  at  $t$ ' is a distinct predicate from '...is  $F$  at  $t'$ '. Thus the theory of Eternal Recurrence does not lead to (3), nor to immortality.

‘Absolute’ time does not, of course, entail that Eternal Recurrence does not offer a hope of immortality: we may, I suppose, find some reason for identifying Pythagoras1 and Pythagoras2—perhaps Pythagoras2 experiences a succession of otherwise inexplicable *déjà vus*;<sup>54</sup> and on the strength of that we might affirm that ‘...teaches at 520 BC’ and ‘...teaches at AD 29,480’ do in fact apply to the same person. The argument adduced in the last paragraph only exhibits a weakness in the reasoning for immortality; it does not provide an argument against immortality.