

Knowledge By Likeness

1. Introduction

In recounting his predecessors' views about the soul, that is, about whatever they think responsible for cognition and movement, Aristotle cites the following lines of Empedocles:

We see earth by earth, water by water

Bright air by air, and obliterating fire by fire

Love by love, and strife by baneful strife. (*De Anima* [= *DA*] I.2, 404b12-15, = B109)¹

And Aristotle's student Theophrastus, in his doxographical work *De Sensibus* [= *Sens.*]², tells us that 'after enumerating how we recognize each thing by each', Empedocles concludes:

Out of these are all things fitted together (*pepêgasin harmosthenta*)

And by these do they think and feel pleasure and pain. (*Sens.* 10, = B107)

Theophrastus classifies Empedocles as one of the thinkers according to whom perception (*aisthêsis*) and knowing or thinking (*phronêsis*) are due to likeness (*Sens.* 1-2, 10, cf. Aristotle, *DA* 427a22-30). Theophrastus explains that thinkers who hold that sense-perception is by likeness hold this view for three (remarkably heterogeneous) sorts of reasons: (i) because most other things are understood (*theôreitai*) by what is like them; (ii) because it is natural for all animals to recognize their kin; and (iii) because perceiving comes about by an effluence which bears like to like (*Sens.* 1-2)

Although Theophrastus goes on to criticize Empedocles' account of perception as by likeness (both on the grounds that Empedocles uses contact rather than likeness to explain many

¹ Unless otherwise indicated, translations are my own.

² The text of Theophrastus *De Sensibus* I have used is in G. M. Stratton (1917), *Theophrastus and the Greek Physiological Psychology Before Aristotle* (Macmillan); Stratton's text is substantially the same as Diels' in *Doxographi Graeci*.

cases of sense-perception, and on the grounds that likeness couldn't explain actual cases of perception by the several senses), he seems to agree with him that understanding, at least, is by likeness. The view that likeness between subject and object of knowledge is required for understanding seems to have had the status of a philosophical intuition in antiquity. Aristotle presents own account of thought, according to which the thinking subject, which is potentially like the object of thought but actually 'not any real thing', becomes actually identical with the object of thought in the act of thinking (*DA* III.4, 429a10-25)³, as harmonizing the contrary views of his predecessors, that (on the one hand) thinking involves likeness (III.3, 427a25) and (on the other) that to be able to know, the mind must be pure and so unlike anything (III.4, 429a18-20). Aristotle attributes to Empedocles the view that 'each thing is known by bodily elements and in relation to some like' (410a27-29), and says that the reasoning behind his predecessors' doctrine that the soul is composed of the elements is 'in order that the soul may perceive and know everything that is' (*DA* I.5, 409b24-25).⁴ And Sextus Empiricus argues that Empedocles must have called himself a god (B112, 113) because he had so purified himself that he could grasp the god without by the god within (*Adv. Math.* 1.302-3). In such cases, the thought seems to be that likeness between subject and object is a necessary precondition for knowledge of object by subject, perhaps because knowing is a causal relation and causation requires a likeness between cause and effect. (Today cognitive psychologists call the apparently

³ II.5 417a18-20 gives a similar account of perception in general.

⁴ We find this idea in Plato's *Republic*, where Socrates says that decent people aren't able to identify injustice when they are young because 'they have no models in themselves of the evil experiences of the vicious to guide their judgments' (409ab, tr. Grube-Reeve). However, Plato contrasts this judging by internal models with recognizing through knowledge.

widespread assumption that cause resembles effect the ‘representativeness heuristic’.)⁵ A distinct, but related, thought is that knowing is a causal relation that makes the subject like the object. So, for example, in the *Phaedo*, Socrates at one point argues that the soul changes or remains unchanged inasmuch as (*hate*) it is in touch with changing or unchanging objects of cognition (79cd).⁶

But if the question is, ‘how can X know Y?’ the answer provided by ‘X and Y are alike’ is quite insufficient. The thought that knowledge is a causal relation, and that cause and effect must be somehow alike at best gives a necessary condition for knowledge, since there are many causal relations, but the question is how we can think, or know, in particular. Reconstructing the role and evolution of the idea that knowledge requires a likeness between knowing subject and known object is obviously beyond the scope of a single paper; my aim here is the more modest one of examining what role likeness might play in the conception of knowledge in Empedocles, one of the earliest thinkers to whom the view that knowledge is by likeness is attributed.

Since our texts of Empedocles never say explicitly that likeness is a cause of knowledge and/or perception, it will be necessary to combine Empedocles’ words with the interpretations of Aristotle and Theophrastus, but without taking these interpretations as authoritative. For setting

⁵This seems to be Aristotle’s thought: causation is a relation of like (in kind) affecting like, changing it from one of a pair of contraries to another (*On Generation and Corruption* [= *GC*] I.7), with sensation being a causal relation, and thinking being analogous to sensation. Aristotle is explicit that his account of nutrition (eater and eaten are actually unlike, potentially like) harmonizes the ‘likes’ and ‘opposites’ views of his predecessors, *DA* II.4, 416a29-b9; this is presumably what he is referring back to in *DA* II.5, 417a1-2.

⁶ The causality is presumably two-way here: souls of a certain type go after changing things, and going after changing things makes souls be of that type.

aside the issue of views being distorted by Aristotelian over-schematization, Aristotle is not even always a sympathetic interpreter of Empedocles: in the *Rhetoric*, for example, he accuses Empedocles of using ambiguous words to obscure the fact that he does not have anything to say (1407a31-39). So if the interpretations of Empedocles in Aristotle or Theophrastus require us to attribute self-contradictory views to him, we may do well to reject these interpretations and to take up the burden of explaining how these philosophers—despite being closer to Empedocles’ text than we are—could have understood Empedocles less well than we.

I will argue below that Empedocles gives very different accounts of thinking and perceiving, and that the ‘like by like’ formula applies particularly to thinking, where it means reasoning by analogy. We can come to know the principles (earth, water, air, fire, love and strife) by the likeness between their effects in our experience (in our bodies, and in our doings and makings) and in the cosmos as a whole. My reconstruction will show that Empedocles has a richer conception of thinking and knowing than has previously been recognized.

2. Theophrastus’ testimony

In his paper ‘Empedocles’ Theory of vision and Theophrastus’ *De sensibus*,’ David Sedley argues that Theophrastus squeezes the ‘by likeness’ schema out of Empedocles’ account of perception by describing the fit of effluences into commensurate pores as a matter of likeness—and then complaining that Empedocles’ account of perception doesn’t actually show how it is by likeness but only uses the idea of commensurate sizes:⁷

. . . he attributes recognition to two things, likeness and contact, on account of which he says ‘fit’ [*harmottein*]. . . And in general on his view likeness is taken away, but

⁷ (1992) in W. W. Fortenbaugh and D. Gutas (eds.) *Theophrastus: His Psychological, Doxographical, and Scientific Writings* (Rutgers University Studies in Classical Humanities, vol. V), pp. 20-31 at 27-29.

commensurateness by itself is sufficient [for perception]. On account of this he says that things don't perceive one another because they have incommensurate pores, but whether the effluences are like or unlike, he has not yet defined. . . (*Sens.* 15)

As Sedley points out, Theophrastus' testimony itself shows that Empedocles' theory of effluences is silent on the composition, and thus on the compositional likeness, of effluences and pores.

According to Sedley, Theophrastus attributes to Empedocles a likeness theory of perception on the basis of B109, about our seeing earth by earth, fire by fire, and so on, followed by B107, about how all things think and feel pleasure and pain by these. But, Sedley argues, the sense of 'see' (*opôpamen*) in B109's 'we see earth by earth' cannot be visual seeing, since we are supposed to 'see' love by love and strife by strife, which we cannot do by vision; so what Empedocles must mean by 'see' is 'comprehend'. What Empedocles explains by likeness is thinking, and Sedley suggests that B109 is about the blood, which, by virtue of being composed of all the elements, is capable of thinking. Theophrastus must bring to Empedocles' words the Aristotelian assumption that the Presocratics identify thinking and perceiving to conclude from B109 and B107 that Empedocles must hold of perceiving too that it is by likeness. This is how Theophrastus can take Empedocles' (B107) claim that all things are fitted together (*harmosthenta*) out of the elements both to refer to the fit between pores and effluences and to include the notion of likeness (cf. *Sens.* 15).

Indeed, Theophrastus' report clearly reveals the process of inference by which he arrives at the conclusion that Empedocles is a likeness theorist of perception:

Concerning taste and touch he does not define them one by one, either how or on account of what they come to be, except [to say] what is common [to them], that perception is by

the fitting into pores. And feeling pleasure is by likes in respect of parts and mixture, feeling pain by contraries. He speaks similarly also concerning thinking and being ignorant. For [he says that] thinking is by likes and being ignorant by unlikes, on the grounds that (*hôs*) thinking is either the same as or pretty close to perception. For having enumerated (*diarithmêsamenos gar*) how we know (*gnôrizomen*)⁸ each by each [presumably in B109], in the end he has set it down that . . . [here Theophrastus quotes B107].’ (*Sens.* 9-10)

Despite his classification of Empedocles as a likeness theorist, this is Theophrastus’ first mention of likeness in reporting Empedocles’ views about how we perceive. So far, he has recounted that Empedocles accounts for perception in general by the fitting of effluences into pores (*Sens.* 7), and in particular for vision by the entry of dark and light into the alternating pores of fire and water in the eye (7-8), for hearing by an external blow resounding once again within the ear (9), and so on. Theophrastus then introduces likeness by reporting that according to Empedocles, pleasure is due to likeness and pain to unlikeness, adds that thinking is due to likeness and ignorance to unlikeness, and then explains that Empedocles offers the same account for thinking as for feeling pleasure because he supposes that thinking is the same as or very like perception (*Sens.* 10). Theophrastus’ explanation here depends on an assumed but unstated connection between feeling pleasure and perception; when he returns to the topic he makes this assumption explicit, but now, oddly, says: ‘they consider pleasure and pain to be perceptions or things that accompany perception’ (*Sens.* 16). But who are ‘they’—presocratics? likeness theorists? We have reason to be suspicious of these connections between perception on the one hand and thinking and feeling pleasure on the other, given that the immediate consequence of the

⁸ This also supports Sedley’s interpretation of *opopamen* in B109.

connections is that every perception and thought is pleasant (because due to likeness), and given that instead of reporting Empedocles' words, Theophrastus is drawing on the alleged presocratic identification of thinking and perception and on another, unattested, identification or close connection between feeling pleasure and perception.⁹

Two further considerations support the view that Empedocles does not simply assimilate thinking and perceiving. First, Empedocles explicitly distinguishes them in B17 when he urges us to look at love with our understanding (*noôti*), not with our eyes (cf. B3, B2, B133—passages to be discussed further in section 4). Second, Aristotle, Theophrastus' likely authority for the view that Empedocles conflates thinking and perceiving, cites as his evidence B106 ('For in respect of what is present to humans does their wisdom (*mêtis*) increase'), and B108 ('As far as they change and become different, so far are they always supplied different thinking') (*DA* 427a22-26), but these lines may only say that a person's experiences influence their thoughts.

Sedley's interest is in Empedocles' account of perception, and in particular vision; since ours is in his account of thinking, we need to investigate Theophrastus' testimony on thinking a little further and ask on what basis Theophrastus attributes to Empedocles the view that pleasure and thinking are by likeness and pain and ignorance by unlikeness. For forms of 'like' (*homoios*) do not show up in our text of Empedocles in the context of thinking and feeling pleasure and pain (or perceiving). Still, although B109 doesn't use the language of likeness, it clearly

⁹ Theophrastus' report of Empedocles, Parmenides, and Plato as holding that perception is by likeness contrasts with his treatment of Diogenes of Apollonia, where he is explicit about inferring that Diogenes thinks perception is by likeness (*Sens.* 39). But this contrast may reflect Theophrastus' lack of an Aristotelian precedent for saying that Diogenes holds perception to be by likeness, whereas he has that for Empedocles at *DA* III.3.427a25-27.

involves the idea: by earth we know only earth (not water, air, or love), and so for the other principles. But what does this mean? And what does it tell us about thinking or knowing more generally?

I turn now to the view that thinking is to be explained by the Empedoclean principle that likes attract one another.

3. Attraction: the link between knowing and likeness?

According to A.A. Long, Empedocles explains not only thinking and perceiving, but also nutrition, growth, magnetic attraction, reflection in a mirror, and mixture in general, by the mechanism of attraction between likes.¹⁰

In favour of this view, it might be added that the forms of ‘like’ that do not show up in the context of thinking (and perceiving) do show up in the context of explaining combination and location. First, combination: after observing that the great bodies of earth, air, water, and fire, namely the earth, sky, sea and sun, are qualitatively the same as the parts of them that are separated from them; Empedocles says that among these separated parts are some that are suited to (*eparkea*)¹¹ mixture and so are made like one another (*allêlois homoiôthenta*) by Aphrodite

¹⁰A.A.Long, ‘Thinking and Sense-perception in Empedocles: Mysticism or materialism?’ *Classical Quarterly* vol. 16 no. 2 (Nov. 1966), pp. 256-76. In the case of sense-perception, Long says, fire in the eye and external fire are attracted to one another and the fit between fire-effluence and eye-pore channels the external fire to the right place so that it can make contact with a sensitive organ of perception. (261)

¹¹ In ‘Empedocles for the New Millenium’ (*Ancient Philosophy* vol. XXII, pp. 333-414), Peter Kingsley points out that *eparkea* means ‘resistant to’ rather than ‘suited to’, and argues that Aphrodite forces together elements that do not want to be together. He contrasts the ‘inner attitude of the elements . . . and the outer situation they find themselves in. The contrast could hardly be sharper between the intrinsic relationship of

(B22). How might earth, water, air or fire be likened to one another? Perhaps the idea is that water and fire need to be made to share in solidity and earth in liquidity and heat so that they can combine to form bone. Or perhaps it is that the three need to be mixed in the right ratios (cf. B96). Similarly, location: the explanation for why the whole-natured forms come up out of the earth is that they are made up of fire and water, and the fire wishes to reach its like (*homoion*) (B62). Finally, there is one intellectual context in which Empedocles uses language that although not the language of likeness, is closely related to it, and in which the explanation of forgetting seems to involve the mechanism of attraction between likes (B110).

If you plant these under your close-packed heart
And watch over them with goodwill and pure care
Not only will every one of them be with you all your life long,
You will also acquire many others out of them. For those (*auta*, i.e. the things planted
under the heart) will augment (*auxei*)¹²

harmony existing between the different parts of a single element and the brutal fate they are subjected to, of being forced into exile from their own kind and made to mix with parts of other elements to form mortals.’ (p. 392). This interpretation hard to square with B21, which describes things that come together in love as being desired (*potheitai*) by one another (desire is most certainly an inner attitude, but I suppose it could conceivably be an unwelcome attitude forced on things by Aphrodite). It is also hard to square with B35, according to which when love gets into the middle of the vortex, then things come together willingly (*thelêma*). Kingsley thinks the word is ‘unwillingly’ (*athelêma*), a hapax for which he cites Hesychius A1547.

¹² An alternative translation for *auxei* would be ‘grow’, so that the line would read, ‘For these themselves will grow into each character . . . ‘ (Inwood translates, ‘for these things themselves/will expand to form each character, according to the growth [lit. nature] of each’ at p. 219 in *The Poem of Empedocles: A text and translation with an introduction*

These (*tauta*, i.e. the many others) into each character (*êthos*), wherever [it] is the nature for each [to be].

But if you reach out for things of another sort,

The many worthless human things which come to be and dull our concerns,

They will leave you at once when the time comes round

Longing to reach their own dear kind (*sphôn autôn potheonta philên epi gennan hikesthai*):

For know that all things have thought (*phronêsin*) and a share in understanding (*nômatos*).

The general practical point of these lines is clear: if the learner takes up Empedocles' teachings in the right spirit (valuing them intrinsically), they will increase his powers; if, on the other hand, the learner pursues 'worthless human things' (perhaps, for example, the reputation for wisdom instead of wisdom itself, cf. B3), he will forget even the teachings he first learned.

Long mines these verses for Empedocles' conception of thinking, and argues that the idea of growth (*auxei*) in these lines shows the materiality of the processes of learning and forgetting, and the identity of the elements with thought.¹³ According to Long, in thinking, the blood (the organ of thought, B98), because it is made up of an evenly-balanced mixture of elements, is able to attract to itself (in the right ratios) the elements that compose things in the world—and thus to

[Toronto 2001].) I agree that this is less awkward. However, the transitive 'augment, cause to grow' finds a parallel at B17.14: learning (*mathê*) will increase (*auxei*) your wits (*phrenas*), and at B37: earth increases (*auxei*) earth and air (*aithêr*) air. The intransitive 'grow' seems more appropriate for the middle use of the verb, e.g. at B106: cunning grows (*aexetai*) with what one encounters; and B26.2: they shrink (*phthinein*) into one another and grow (*auxetai*) by turns.

¹³ Long, pp. 269-70

achieve a balanced grasp of this world. Thus B110 says that the elements that comprise the truth in Empedocles' teaching will add to their counterparts in the blood, but if the blood is not properly constituted, the truth will escape it. Teachings add to bodily parts by mixture (*mixis*): elements in the truth or in thought attract, and thus augment, elements in the body. Along these lines, the goodwill that is said to be a necessary condition for the growth of Empedocles' teachings may be that in the learner which attracts or anchors the element of love 'in' the teachings (or perhaps, more simply, that which attracts or anchors the teachings about love). The growth promised a proper learner is one in which each character (*ethos*), perhaps the character of each of the principles, is developed.¹⁴ The different places (*hopêi*) in which these characters develop may be the different tissues and organs which are made out of the elements in different ratios, and variations in the blends result in variations in intelligence, temperament, and particular skills (cf. *Sens.* 11, 24). So Empedocles' teachings themselves will grow into principles in the learner's blood, or will cause principles in the learner's blood to grow, in the right places so as to make him intelligent, skillful in the use of his voice and hands, and so on.

The attraction account of thinking seems to commit Empedocles to the view that there is a relationship between the material constitution of a thought and its representational content. So, for example, the truth about air would be attracted to the air in us, and the reason for this would be that the truth about air is itself airy. But why should one suppose that a thought about air is more airy than a thought about earth? After all, both are thoughts, which is a good reason for supposing that they are compositionally alike. (And what about other representational media? Is a painting of air itself more airy than a painting of water?) But perhaps the oddness of this idea

¹⁴ cf. Êthos in B17. Shirley Darcus, "'Daimon" as a force shaping "Ethos" in Heraclitus', *Phoenix* vol. 24 no. 4 (Winter 1974), pp. 390-407

is not enough to rule out attributing it to Empedocles. It may be paralleled in Plato's *Phaedo*, where thinking about the unchanging Forms makes the soul itself stable, and thinking about changing sensibles causes it to wander (79d).

Another initial worry about the attraction account of thinking may also be allayed. One might object that the attraction of likes to one another seems to be the work of strife, and strife and its works have a negative valence in Empedocles that thinking does not. Strife is 'baneful', B109, 'raving', B115.14, 'destructive', B17.19, 'wrath', B21.7 cf. B22.9—although strife does do something 'blamelessly' (*amempheôs*, B35.9), when it moves out to the furthest limits of the circle. In reply it could be said that these are just standard epithets that fit the poem's metre and do not signify anything much about Empedocles' attitude to strife, or perhaps strife appears this way only from certain perspectives that may be affected badly by it.

Still, the attraction account cannot be the whole story about thinking. First, on the likes-attract account of thinking, the explanation for why the learner with the right attitude succeeds in retaining the teachings and why the learner with the wrong attitude fails should be symmetrical, but in fact B110 brings in the longing things have to be with their own kind only to explain why the wrong-headed learner will not retain the teachings. Indeed, the learner's task, of retaining teachings despite their tendency to fly off towards their own kind, is rather reminiscent of Aphrodite's task of binding together unlikes.¹⁵

¹⁵Kahn, 'Religion and natural philosophy in Empedocles' doctrine of the soul', (in Mourelatos [ed.] *The Presocratics* [Princeton, 1993], pp. 426-56) also emphasizes the materiality of Empedocles' conception of thinking based on this fragment: learning has to be integrated into the mixture of our own nature and character in order to be held fast; 'The psychological fact of forgetting is understood as the escape of ingredients from a particular mixture.' (pp. 438-9) But Kahn also argues that love, as the principle which

Second, the kind of knowledge the material description of which is separation into principles and then unification of these principles with their counterparts in the blood would seem to be some sort of analysis, but (as I'll argue more fully in the following section) Empedocles seems to hold that there is more to knowing than analyzing. In particular, knowing love by love cannot just be a matter of analyzing another constituent element of some compound and uniting it to its counterpart constituent element in us. Love is not an element, and its nature is to unite unlikes. We will achieve a fuller understanding of Empedocles' account of knowing if we attend to his account of how it is that we know love by love.

4. Knowing Love by Love

To begin to understand how one might know love by love, we first need to say something about love and the works of love. Among the things that Empedocles attributes to the agency of love are a mixture from which pour forth countless mortals (B35); the formation of blends in geometric proportion that constitute our bodies, e.g. bone (B96); the design and construction of complex and well-functioning natural bodies such as the eye (B84); and the creation of accidental and non-functional unions, for example neckless heads, and forehead-less eyes (B57, cf. B59), and ox-faced men (B61). How much design and how much chance coming together figure in a work of love may have to do with the relative powers of love and strife in a given

unifies natural compounds and nature as a whole, fitting together the elements in rational proportions and bringing about the blends that account for thinking, is the distinct and dominant rational element in nature and is known by *nous*, i.e., love, in us (pp. 445-46). I take what I say here to amplify Kahn's conception of love and of knowing love by love. However, I do not have anything to contribute to Kahn's further claims that love is the principle with which the daimon is to be identified, and that the daimon's blessed condition is one of purity in love, which is achieved by increased learning and the rejection of strife.

stage of the cosmogonic cycle. Perhaps all love can do when strife is still more powerful is to attract unlikes to one another, but as love's power increases, perhaps it can begin to combine unlikes in more complex ways so as to produce well-functioning bodies. (The bones of B96 and the flesh and blood of B98 are made up of the elements in proportional parts, but they are still the result of a chance coming together.)

It will also be helpful to bear in mind some things Empedocles has to say about knowledge. B3 recommends the use of 'every power'--hearing, seeing, as well as the other senses--as a 'pore for understanding' (*poros noêsai*). B2 contrasts the senses ('the narrow pores spread throughout the body') with the mind (*nous*) and wisdom (*mêtis*).¹⁶ One point of the last contrast seems to be that because the senses are assaulted by many worthless things (the worthless human things of B110?¹⁷), our thoughts are blunted and our minds cannot achieve a grasp of the whole. But another point of the contrast is that while most people cannot grasp the whole with their mind, Empedocles' audience will grasp all the wisdom that is humanly possible.

For narrow pores are spread over their limbs,

And many worthless things assault them, and they dull their thoughts.

They live having seen [but] a small part of life,

Swift like smoke they fly away, raised up to judgment.

They are persuaded by that alone which each one has encountered,

As they are driven every which way, but each boasts that he has found the whole.

In this way these things [= Empedocles' principles] are neither seen nor heard by men,

¹⁶ B133 asserts that something (the divine? strife? love and strife?) cannot be grasped by the eyes or hands and seems to indicate that it can be grasped by another power.

¹⁷ Schwabl (1956), 'Empedokles fr. B110', explores the parallel between B110 and B2 (*Wiener Studien* LXIX pp. 49-56).

Nor are they grasped by the mind . . .

. . . But you, since you have come here,

you will learn: indeed, mortal wisdom has gone no further. (B2)

It is not clear from these lines whether, in addition to contrasting ordinary and Empedoclean understanding, Empedocles intends a contrast between *nous* and *mêtis*, where the latter but not the former is capable of grasping the whole. Elsewhere, he uses the term *mêtis* for the knowledge that equips the painter to decorate temples with many figures using only a few colours (B23, further discussed below), and observes that humans' *mêtis* is increased by experience (B106).

Turning now to how to know love by love, Empedocles instructs his student Pausanias:

You, look upon her [=love, Aphrodite] with your mind (*noôti*), don't sit there with
astonished eyes:

She is considered even by mortals [to be] inborn in their limbs

And by her they think friendly [thoughts] and accomplish deeds of unity

Calling her by the names 'Delight' and 'Aphrodite'. (B17.21-24)

In this fragment, Empedocles not only contrasts grasping with the mind as opposed to with the senses, but also explains how one is to grasp with the mind rather than with the eyes. To begin with, one should note that even ordinary mortals know love as the inborn power in their limbs, as the cause of loving thoughts and unions, and as a bringer of delight. Note, however, that the names they give love, 'Delight' (a felt effect) and 'Aphrodite' (a goddess whose power is mysterious to mortals), do not indicate that ordinary mortals have much of a grasp of what love is. Coming to understand love with *nous* seems to involve the following sort of reasoning: one should regard the affections and actions familiar to one from experience as caused by the same

principle that Empedocles teaches is the cosmic principle that makes ‘one from many’. So it may be that what partly constitutes knowing love is knowing all the various effects that are the effects of love as effects of one cause.

Empedocles continues:

No mortal man has seen (*dedaêkê*) her whirling (*helissomenê*) amidst these

But you, hear my account. . . (B17/25-26)

Empedocles may here be making the point that he is the first to discover the principle of love or unity (Heraclitus, for instance, only spoke of strife), and so he may be characterizing love as ‘whirling’ because whirling water pulls things in and brings them together. Or perhaps Empedocles is continuing to develop his earlier contrast, between understanding (*nous*), by which one can grasp the principle of love, and literal seeing, by which one can grasp only the elements; in order to show that love is a principle that can be grasped only by the understanding, he might be characterizing the activity (uniting) as one which can’t be seen but must be inferred.

We are now also in a position to give more content to what is involved in knowing love by love. If love blends and harmonizes disparate elements to make unities, to understand love would be to understand how it blends and harmonizes so as to produce these unities. This involves knowing which elements to combine and in what proportions. Insofar as the unities are designed to work in particular ways, it also involves knowing the design: the placement of parts, the structure. Love makes not just a proportionate mixture of elements to form the eyes (B84, B86, B87), but places the parts in a certain relation to each other as a lantern-maker places the pieces of a lantern.

As when someone planning (*noeôn*) a journey outfitted a lamp,

A flame of burning fire through the wintry night,

Fitted linen screens protecting against all sorts of winds,
Which disperse the air of the blowing winds,
But the light insofar as it was rarer flashed through,
Shone across the threshold with unfailing rays.
So at that time was ancient fire, wrapped in membranes
And fine linens, concealed in the round pupil.
And they kept out the surrounding deep water,
And let through the fire insofar as it was rarer. (B84, after Wright¹⁸)

Designing the eye is not just a matter of blending elements, but of placing them appropriately in a structure so that the eye can do its work of seeing. Without the eye's membranes that let out the pupil's fire while protecting the pupil from the surrounding water, there would be no seeing. We can understand the eye's membranes by analogy with a lantern's screens because we make the lantern for a similar purpose. Similarly,

As when painters decorate votive offerings,
Men well-taught in their craft by wisdom (*mêtios*),
And so when they take the many-coloured pigments in hand,
Mix them in harmony, some more, others less,
From them they make shapes resembling all things,
Making trees and men and women,
And beasts and birds and water-nourished fish,
And long-lived gods, best in honours:
So do not let deception overcome your mind (*phrena*) that anything else is

¹⁸ M.R. Wright, *Empedocles: The Extant Fragments* (Yale, 1981), pp. 240-43.

The source of mortal things, however many countless ones have become manifest,
But know these precisely, having heard the account from a god. (B23)

Here Empedocles' point is that everything in the world comes to be from the elements under love and strife, just as all of a painter's work uses a few pigments in different combinations—indeed, just four pigments, red, ochre, black, and white. The painter's skill (*mêtis*) consists not just in producing a great variety of colours from these four pigments,¹⁹ but in the many shapes or forms (*eidea*)—of birds, plants, fish, and so on—he makes by his placement of these pigments. We can see the importance of placement and arrangement in love's work if we consider B75 and B76: using the same materials, the dense bone and the less dense flesh, Aphrodite made us with the bone on the inside and the flesh on the inside, but made turtles and mussels have the bone on the outside and the flesh on the inside. Once again, we can begin to know nature's creativity by analogy with our own.

5. Back to knowing like by like

Seeing love with one's mind seems to involve acknowledging an analogy and on that basis inferring a cause-effect relationship. We know that in the mortal case, love causes harmonious unions; we now infer that in a new case of harmonious union, that of the binding together of different elements into a unity, the cause will again be love. This way of knowing with one's mind is appropriately characterized as knowing or understanding something by likeness—it is by the likeness between the two things compared, one familiar or evident and one novel or obscure (mortal love, love as a first principle), that one comes to know the novel and obscure. That is to say, rather than suppose that that by which we know some X must be some

¹⁹ According to Wright, painters in Empedocles' time did not blend the four basic colours but juxtaposed or superimposed them to create a greater variety (pp. 38-39).

bodily part of us that is itself X, perhaps all we need for knowledge to be by likeness is that it proceed by analogy. Knowing by likeness in this sense is quite different from the sense assumed by Aristotle and Theophrastus, according to which the likeness is between the knowing subject and the known object, where the knower is supposed to be what he seeks to know. On my weaker interpretation, the knower need only have experienced, in some way, some instance of what he seeks to know.

If this is right, we may view Empedocles' claim in B109 that we see earth by earth, etc. as illustrative rather than exhaustive: it is not only earth by earth or love by love that we see, but also, e.g. the eye by a lantern (B 84), because both are cleverly-crafted devices enabling us to see while at the same time protecting the agents of seeing. We know the lantern because we have made it; we can come to know the eye insofar as it is like, constructed on the same principles as, the lantern.²⁰ The likeness that enables knowledge may be structural and not only compositional.

It may be objected that my account of knowledge cannot explain the fact that the blood, the organ of thought, consists in equal parts of all the elements (B105, B98)—whereas the attraction account has, following Aristotle, a ready explanation: because it contains within it all the elements, it can know them all, by their likeness to its constituents, and because it contains

²⁰ André Laks argues that in Parmenides B16, which Empedocles echoes at B106 and B108, each element in us, but not the mixture, thinks about each element in experience, and that this is what ensures that thought is 'full', i.e., that nothing is lost in thinking. See Laks (1990), "The More" and "the Full": On the reconstruction of Parmenides' theory of sensation in Theophrastus, *De Sensibus* 3-4. (*Oxford Studies in Ancient Philosophy* vol. VIII, pp. 1-18. The account of thinking I have been developing for Empedocles does not quite have mixtures in us doing the thinking, but it does allow that we can think 'by' mixtures or complex structures and not just 'by' principles.

them in equal parts, it can achieve an accurate grasp of the whole cosmos (the constituents of which are also present in equal parts). In reply, I would point out that flesh too consists of roughly equal parts of all the elements (B98), but flesh is not the organ of thought. Aristotle and Theophrastus have led us to believe that the composition of the blood explains its suitedness to thinking, but why could it not be the fact that the blood travels throughout the body to all our pores?

It may also be objected to my account of 'knowledge by likeness' that if knowledge requires only reasoning about the likeness between one item in experience and another, this account will not explain how we acquire our first items of knowledge. We can grasp the elements by perception, and then reason about our perceptions, but how do we first grasp love and strife?

Again, B17 may suggest an answer. Ordinary people consider love to be the power in their bodies that brings about certain social and sexual effects. What they perceive are effects, and they suppose some cause, which they call 'love', without really knowing what it is. Knowledge of love (in the microcosm or the macrocosm) is achieved when we recognize all of the effects of which it is a principle, which involves learning how it achieves these effects. So perhaps familiarity is to be contrasted with knowledge; perhaps reasoning by analogy enhances our grasp of both the novel and the familiar.

A fairly natural transition gets us from knowing by likeness in the sense of the likeness between familiar and novel to the Aristotelian interpretation of knowing by likeness as a compositional likeness between subject and object of knowledge. In the expression 'I know x by y', the y 'by which' I know x could be any of a variety of things: an instrument of measurement like a straight edge, an organ of my body like my blood, a body of knowledge like the skill of

carpentry. And it is fairly common that a psychological power ‘by which’ or ‘in virtue of which’ one does something (e.g. one’s capacity for anger, or an item in one’s memory) is spoken of as the agent that does the thing in question. To cite just two very well-known examples of the former: in Homer, Odysseus’ spirit (*thumos*) is aroused when he sees his maidservants going off to see the suitors and his heart (*kradiê*) cries out (*Odyssey* 20.9-21); in Euripides, Medea addresses her heart ‘Do not, O my heart, you must not do these things!/ Poor heart, let them go, have pity upon the children/’ and then a little later, ‘Oh, arm yourself in steel, my heart! Do not hang back/ From doing this fearful and necessary wrong.’ (*Medea* 1056-57 and 1242-43, tr. Lattimore).²¹ But like a bodily organ or a faculty, an item of thought is plausibly thought of as ‘in’ the knower. So whereas, as I have argued, Empedocles could have described knowledge as by likeness to characterize investigation by analogy, his successors could quite naturally come to think of the familiar item as one of the things ‘in’, and so as characterizing, the subject of knowledge.

If inference by analogy is indeed part of Empedocles’ account of thinking, we can reply swiftly to two particularly troubling Aristotelian objections to his views. First, Aristotle objects that Empedocles fails to explain how we know not only elements but also their compounds unless, absurdly, we also have these compounds in us (*DA* 410a6-10). But according to Empedocles, nonreductive knowledge of compounds does not require having those compounds ‘in’ the soul, only some prior acquaintance with something like them, the knowledge of which is ‘in’ us in a very ordinary sense. I need not have a stone in my soul to know a stone; all I need is to have had an experience of a stone now stored in my memory.

²¹For a general discussion of this phenomenon, see D. B. Claus, *Toward the Soul* (Yale, 1981), 17-21.

Second, Aristotle objects that Empedocles' god, who has in him no strife, is less knowledgeable than others since if knowledge is of like by like, he cannot, but they can, know strife [*Metaph.* 1000b2-5].) We can put the objection in reverse: is the price of full knowledge, the knowledge that Empedocles advertises as enabling control over the winds, disease, mortality, and so on (B111), internal discord? Once again, we can reply on Empedocles' behalf that it is possible to know strife without having to maintain strife in oneself (experience of an instance will suffice), and also it is possible to cultivate internal harmony without an increase in ignorance of strife.

More important than surviving Aristotelian objections, however, Empedocles emerges from this reconstruction with a richer conception of knowledge than previously supposed. Thinking and knowing include both analysis (e.g. isolation of the element of earth in a compound by the earth in us, or of the element of fire in a compound by the fire in us), and also, by love, synthesis, a craft-like knowledge of how elements are put together to produce well-functioning compound bodies.

In *Polarity and Analogy*, G.E.R. Lloyd says that although Empedocles used detailed analogies extensively in his reasoning, 'there is no concrete evidence that he explicitly recognised the procedure he uses so extensively *as such*, as a method of investigating obscure phenomena'.²² I hope that I have shown that although Empedocles does not try either to justify his analogies or to identify their limitations, his analogies are not just rhapsodies on likeness. Instead, Empedocles uses analogies to reveal the principles of the cosmos, and names the use of them for this purpose a use of mind rather than the senses. This is concrete evidence that he did indeed recognize analogy as a method of investigation.

²² G.E.R. Lloyd, *Polarity and Analogy*, p. 337 and generally chapter 5.