

I

PHILOSOPHY IN ITS INFANCY

The earliest Western philosophers were Greeks: men who spoke dialects of the Greek language, who were familiar with the Greek poems of Homer and Hesiod, and who had been brought up to worship Greek Gods like Zeus, Apollo, and Aphrodite. They lived not on the mainland of Greece, but in outlying centres of Greek culture, on the southern coasts of Italy or on the western coast of what is now Turkey. They flourished in the sixth century BC, the century which began with the deportation of the Jews to Babylon by King Nebuchadnezzar and ended with the foundation of the Roman Republic after the expulsion of the young city's kings.

These early philosophers were also early scientists, and several of them were also religious leaders. In the beginning the distinction between science, religion, and philosophy was not as clear as it became in later centuries. In the sixth century, in Asia Minor and Greek Italy, there was an intellectual cauldron in which elements of all these future disciplines fermented together. Later, religious devotees, philosophical disciples, and scientific inheritors could all look back to these thinkers as their forefathers.

Pythagoras, who was honoured in antiquity as the first to bring philosophy to the Greek world, illustrates in his own person the characteristics of this early period. Born in Samos, off the Turkish coast, he migrated to Croton on the toe of Italy. He has a claim to be the founder of geometry as a systematic study (see Figure 1). His name became familiar to many generations of European schoolchildren because he was credited with the first proof that the square on the long side of a right-angled triangle is equal in area to the sum of the squares on the other two sides. But he also founded a religious community with a set of ascetic and ceremonial rules, the best-known of which was a prohibition on the eating of beans. He taught the doctrine of the transmigration of souls: human beings had souls which were separable from their bodies, and at death a person's soul might migrate into another kind of animal. For this

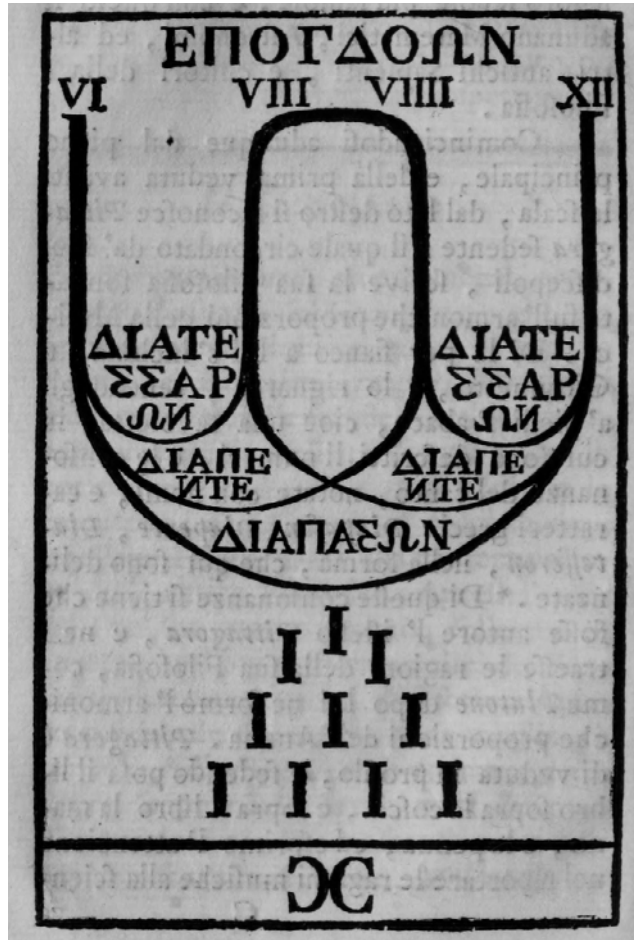


Figure 1 The Pythagoreans discovered the relationships between frequency and pitch in the notes of the octave scale, as shown in this diagram held up for Pythagoras in Raphael's *School of Athens*.

(Getty Research Institute, Los Angeles, USA/Bridgeman Images)

reason, he taught his disciples to abstain from meat; once, it is said, he stopped a man whipping a puppy, claiming to have recognized in its whimper the voice of a dear dead friend. He believed that the soul, having migrated into different kinds of animal in succession, was eventually reincarnated as a human being. He himself claimed to remember having been, some centuries earlier, a hero at the siege of Troy.

The doctrine of the transmigration of souls was called in Greek 'metempsychosis'. Faustus, in Christopher Marlowe's play, having sold his soul to the devil, and about to be carried off to the Christian Hell, expresses the desperate wish that Pythagoras had got things right.

Ah, Pythagoras' metempsychosis, were that true
This soul should fly from me, and I be chang'd
Unto some brutish beast.

Pythagoras' disciples wrote biographies of him full of wonders, crediting him with second sight and the gift of bilocation, and making him a son of Apollo.

THE MILESIAANS

Pythagoras' life is lost in legend. Rather more is known about a group of philosophers, roughly contemporary with him, who lived in the city of Miletus in Ionia, or Greek Asia. The first of these was **Thales**, who was old enough to have foretold an eclipse in 585. Like Pythagoras, he was a geometer, though he is credited with rather simpler theorems, such as the one that a circle is bisected by its diameter. Like Pythagoras, he mingled geometry with religion: when he discovered how to inscribe a right-angled triangle inside a circle, he sacrificed an ox to the gods. But his geometry had a practical side: he was able to measure the height of the pyramids by measuring their shadows. He was also interested in astronomy: he identified the constellation of the little bear, and pointed out its use in navigation. He was, we are told, the first Greek to fix the length of the year as 365 days, and he made estimates of the sizes of the sun and moon.

Thales was perhaps the first philosopher to ask questions about the structure and nature of the cosmos as a whole. He maintained that the earth rests on water, like a log floating in a stream. (Aristotle asked, later: what does the water rest on?) But earth and its inhabitants did not just rest on water: in some sense, so Thales believed, they were all made out of water. Even in antiquity, people could only conjecture the grounds for this belief: was it because all animals and plants need water, or because the seeds of everything are moist?

Because of his theory about the cosmos Thales was called by later writers a physicist or philosopher of nature ('*physis*' is the Greek word for 'nature'). Though he was a physicist, Thales was not a materialist: he did not, that is to say, believe that nothing existed except physical matter. One of the two sayings which have come down from him verbatim is 'everything is full of gods'. What he meant is perhaps indicated by his claim that the magnet, because it moves iron, has a soul. He did not believe in Pythagoras' doctrine of transmigration, but he did maintain the immortality of the soul.

Thales was no mere theorist. He was a political and military adviser to King Croesus of Lydia, and helped him to ford a river by diverting a stream. Foreseeing an unusually good olive crop, he took a lease on all the oil-mills, and made a fortune. None the less, he acquired a reputation for unworldly absent-mindedness, as appears

in a letter which an ancient fiction-writer feigned to have been written to Pythagoras from Miletus:

Thales has met an unkind fate in his old age. He went out from the court of his house at night, as was his custom, with his maidservant to view the stars, and forgetting where he was, as he gazed, he got to the edge of a steep slope and fell over. In such wise have the Milesians lost their astronomer. Let us who were his pupils cherish his memory, and let it be cherished by our children and pupils.

A more significant thinker was a younger contemporary and pupil of Thales called **Anaximander**, a savant who made the first map of the world and of the stars, and invented both a sundial and an all-weather clock. He taught that the earth was cylindrical in shape, like a section of a pillar. Around the world were gigantic tyres, full of fire; each tyre had a hole through which the fire could be seen, and the holes were the sun and moon and stars. The largest tyre was twenty-eight times as great as the earth, and the fire seen through its orifice was the sun. Blockages in the holes explained eclipses and the phases of the moon. The fire within these tyres was once a great ball of flame surrounding the infant earth, which had gradually burst into fragments which enrolled themselves in bark-like casings. Eventually the heavenly bodies would return to the original fire.

The things from which existing things come into being are also the things into which they are destroyed, in accordance with what must be. For they give justice and reparation to one another for their injustice in accordance with the arrangement of time.

Here physical cosmogony is mingled not so much with theology as with a grand cosmic ethic: the several elements, no less than men and gods, must keep within bounds everlastingly fixed by nature.

Though fire played an important part in Anaximander's cosmogony, it would be wrong to think that he regarded it as the ultimate constituent of the world, like Thales' water. The basic element of everything, he maintained, could be neither water nor fire, nor anything similar, or else it would gradually take over the universe. It had to be something with no definite nature, which he called the 'infinite' or 'unlimited'. 'The infinite is the first principle of things that exist: it is eternal and ageless, and it contains all the worlds.'

Anaximander was an early proponent of evolution. The human beings we know cannot always have existed, he argued. Other animals are able to look after themselves, soon after birth, while humans require a long period of nursing; if humans had originally been as they are now they could not have survived. He maintained that in an earlier age there were fish-like animals within which human embryos grew to puberty before bursting forth into the world. Because of this thesis, though he was not otherwise a vegetarian, he preached against the eating of fish.

The infinite of Anaximander was a concept too rarefied for some of his successors. His younger contemporary at Miletus, **Anaximenes**, while agreeing that the ultimate element could not be fire or water, claimed that it was air, from which everything else had come into being. In its stable state, air is invisible, but when it is moved and condensed it becomes first wind and then cloud and then water, and finally water condensed becomes mud and stone. Rarefied air, presumably, became fire, completing the gamut of the elements. In support of his theory, Anaximenes appealed to experience: ‘Men release both hot and cold from their mouths; for the breath is cooled when it is compressed and condensed by the lips, but when the mouth is relaxed and it is exhaled it becomes hot by reason of its rareness.’ Thus rarefaction and condensation can generate everything out of the underlying air. This is naive, but it is naive science: it is not mythology, like the classical and biblical stories of the flood and of the rainbow.

Anaximenes was the first flat-earthier: he thought that the heavenly bodies did not travel under the earth, as his predecessors had claimed, but rotated round our heads like a felt cap. He was also a flat-mooner and a flat-sunner: ‘the sun and the moon and the other heavenly bodies, which are all fiery, ride the air because of their flatness’.

XENOPHANES

Thales, Anaximander, and Anaximenes were a trio of hardy and ingenious speculators. Their interests mark them out as the forebears of modern scientists rather more than of modern philosophers. The matter is different when we come to Xenophanes of Colophon (near present-day Izmir), who lived into the fifth century. His themes and methods are recognizably the same as those of philosophers through succeeding ages. In particular he was the first philosopher of religion, and some of the arguments he propounded are still taken seriously by his successors.

Xenophanes detested the religion found in the poems of Homer and Hesiod, whose stories blasphemously attributed to the gods theft, trickery, adultery, and all kinds of behaviour that, among humans, would be shameful and blameworthy. A poet himself, he savaged Homeric theology in satirical verses, now lost. It was not that he claimed himself to possess a clear insight into the nature of the divine; on the contrary, he wrote, ‘the clear truth about the gods no man has ever seen nor any man will ever know’. But he did claim to know where these legends of the gods came from: human beings have a tendency to picture everybody and everything as like themselves. Ethiopians, he said, make their gods dark and snub-nosed, while Thracians make them red-haired and blue-eyed. The belief that gods have any kind of human form at all is childish anthropomorphism. ‘If cows and horses or lions had hands and could draw, then horses would draw the forms of gods like horses, cows like cows, making their bodies similar in shape to their own.’

Though no one would ever have a clear vision of God, Xenophanes thought that as science progressed, mortals could learn more than had been originally revealed. 'There is one god,' he wrote, 'greatest among gods and men, similar to mortals neither in shape nor in thought.' God was neither limited nor infinite, but altogether non-spatial: that which is divine is a living thing which sees as a whole, thinks as a whole, and hears as a whole.

In a society which worshipped many gods, he was a resolute monotheist. There was only one God, he argued, because God is the most powerful of all things, and if there were more than one, then they would all have to share equal power. God cannot have an origin; because what comes into existence does so either from what is like or what is unlike, and both alternatives lead to absurdity in the case of God. God is neither infinite nor finite, neither changeable nor changeless. But though God is in a manner unthinkable, he is not unthinking. On the contrary, 'Remote and effortless, with his mind alone he governs all there is.'

Xenophanes' monotheism is remarkable not so much because of its originality as because of its philosophical nature. The Hebrew prophet Jeremiah and the authors of the book of Isaiah had already proclaimed that there was only one true God. But while they took their stance on the basis of a divine oracle, Xenophanes offered to prove his point by rational argument. In terms of a distinction not drawn until centuries later, Isaiah proclaimed a revealed religion, while Xenophanes was a natural theologian.

Xenophanes' philosophy of nature is less exciting than his philosophy of religion. His views are variations on themes proposed by his Milesian predecessors. He took as his ultimate element not water, or air, but earth. The earth, he thought, reached down beneath us to infinity. The sun, he maintained, came into existence each day from a congregation of tiny sparks. But it was not the only sun; indeed there were infinitely many. Xenophanes' most original contribution to science was to draw attention to the existence of fossils: he pointed out that in Malta there were to be found impressed in rocks the shapes of all sea-creatures. From this he drew the conclusion that the world passed through a cycle of alternating terrestrial and marine phases.

HERACLITUS

The last, and the most famous, of these early Ionian philosophers was Heraclitus, who lived early in the fifth century in the great metropolis of Ephesus, where later St Paul was to preach, dwell, and be persecuted. The city, in Heraclitus' day as in St Paul's, was dominated by the great temple of the fertility goddess Artemis. Heraclitus denounced the worship of the temple: praying to statues was like whispering gossip to an empty house, and offering sacrifices to purify oneself from sin was like trying to wash off mud with mud. He visited the temple from time to time, but only to play

dice with the children there – much better company than statesmen, he said, refusing to take any part in the city's politics. In Artemis' temple, too, he deposited his three-book treatise on philosophy and politics, a work, now lost, of notorious difficulty, so puzzling that some thought it a text of physics, others a political tract. ('What I understand of it is excellent,' Socrates said later, 'what I don't understand may well be excellent also; but only a deep-sea diver could get to the bottom of it.')

In this book Heraclitus spoke of a great Word or Logos which holds forever and in accordance with which all things come about. He wrote in paradoxes, claiming that the universe is both divisible and indivisible, generated and ungenerated, mortal and immortal, Word and Eternity, Father and Son, God and Justice. No wonder that everybody, as he complained, found his Logos quite incomprehensible.

If Xenophanes, in his style of argument, resembled modern professional philosophers, Heraclitus was much more like the popular modern idea of the philosopher as guru. He had nothing but contempt for his philosophical predecessors. Much learning, he said, does not teach a man sense; otherwise it would have taught Hesiod and Pythagoras and Xenophanes. Heraclitus did not argue, he pronounced: he was a master of pregnant dicta, profound in sound and obscure in sense. His delphic style was perhaps an imitation of the oracle of Apollo, which, in his own words, 'neither tells, nor conceals, but gestures'. Among Heraclitus' best-known sayings are these:

The way up and the way down is one and the same.

Hidden harmony is better than manifest harmony.

War is the father of all and the king of all; it proves some people gods, and some people men; it makes some people slaves, and some people free.

A dry soul is wisest and best.

For souls it is death to become water.

A drunk is a man led by a boy.

Gods are mortal, humans immortal, living their death, dying their life.

The soul is a spider and the body is its web.

That last remark was explained by Heraclitus thus: just as a spider, in the middle of a web, notices as soon as a fly breaks one of its threads and rushes thither as if in grief, so a person's soul, if some part of the body is hurt, hurries quickly there as if unable to bear the hurt. But if the soul is a busy spider, it is also, according to Heraclitus, a spark of the substance of the fiery stars.

In Heraclitus' cosmology fire has the role which water had in Thales and air had in Anaximenes. The world is an ever-burning fire: all things come from fire and go into fire; 'all things are exchangeable for fire, as goods are for gold and gold for goods'. There is a downward path, whereby fire turns to water and water to earth, and an upward path, whereby earth turns to water, water to air, and air to fire. The death of earth is to become water, and the death of water is to become air, and the death of air is to become fire. There is a single world, the same for all, made neither by god nor man; it has always existed and always will exist, passing, in accordance with cycles laid

down by fate, through a phase of kindling, which is war, and a phase of burning, which is peace.

Heraclitus' vision of the transmutation of the elements in an ever-burning fire has caught the imagination of poets down to the present age. T. S. Eliot, in *Four Quartets*, puts this gloss on Heraclitus' statement that water was the death of earth.

There are flood and drouth
Over the eyes and in the mouth,
Dead water and dead sand
Contending for the upper hand.
The parched eviscerate soil
Gapes at the vanity of toil,
Laughs without mirth
This is the death of earth.

Gerard Manley Hopkins wrote a poem entitled 'That Nature is a Heraclitean Fire', full of imagery drawn from Heraclitus.

Million fueled, nature's bonfire burns on.
But quench her bonniest, dearest to her, her clearest-selved spark,
Man, how fast his firedint, his mark on mind, is gone!
Both are in an unfathomable, all is in an enormous dark
Drowned. O pity and indignation! Manshape, that shone
Sheer off, disseveral, a star, death blots black out . . .

Hopkins seeks comfort from this in the promise of the final resurrection – a Christian doctrine, of course, but one which itself finds its anticipation in a passage of Heraclitus which speaks of humans rising up and becoming wakeful guardians of the living and the dead. 'Fire', he said, 'will come and judge and convict all things.'

In the ancient world the aspect of Heraclitus' teaching which most impressed philosophers was not so much the vision of the world as a bonfire, as the corollary that everything in the world was in a state of constant change and flux. Everything moves on, he said, and nothing remains; the world is like a flowing stream. If we stand by the river bank, the water we see beneath us is not the same two moments together, and we cannot put our feet twice into the same water. So far, so good; but Heraclitus went on to say that we cannot even step twice into the same river. This seems false, whether taken literally or allegorically; but, as we shall see, the sentiment was highly influential in later Greek philosophy.

THE SCHOOL OF PARMENIDES

The philosophical scene is very different when we turn to **Parmenides**, who was born in the closing years of the sixth century. Though probably a pupil of Xenophanes,

Parmenides spent most of his life not in Ionia but in Italy, in a town called Elea, seventy miles or so south of Naples. He is said to have drawn up an excellent set of laws for his city; but we know nothing of his politics or political philosophy. He is the first philosopher whose writing has come down to us in any quantity: he wrote a philosophical poem in clumsy verse, of which we possess about a hundred and twenty lines. In his writing he devoted himself not to cosmology, like the early Milesians, nor to theology, like Xenophanes, but to a new and universal study which embraced and transcended both: the discipline which later philosophers called ‘ontology’. Ontology gets its name from a Greek word which in the singular is ‘*on*’ and in the plural ‘*onta*’: it is this word – the present participle of the Greek verb ‘to be’ – which defines Parmenides’ subject matter. His remarkable poem can claim to be the founding charter of ontology.

To explain what ontology is, and what Parmenides’ poem is about, it is necessary to go into detail about points of grammar and translation. The reader’s patience with this pedantry will be rewarded, for between Parmenides and the present day, ontology was to have a vast and luxuriant growth, and only a sure grasp of what Parmenides meant, and what he failed to mean, enables one to see one’s way clear over the centuries through the ontological jungle.

Parmenides’ subject is ‘*to on*’, which translated literally means ‘the being’. Before explaining the verb, we need to say something about the article. In English we sometimes use an adjective, preceded by the definite article, to refer to a class of people or things; as when we say ‘the rich’ to mean people who are rich, and ‘the poor’ to mean those who are poor. The corresponding idiom was much more frequent in Greek than in English: Greeks could use the expression ‘the hot’ to mean things that are hot, and ‘the cold’ to mean things that are cold. Thus, for instance, Anaximenes said that air was made visible by the hot and the cold and the moist and the moving. Instead of an adjective after ‘the’ we may use a participle: as when we speak, for instance, of a hospice for the dying, or a playgroup for the rising fours. Once again, the corresponding construction was possible, and frequent, in Greek; and it is this idiom which occurs in ‘the being’. ‘The being’ is that which is be-ing, in the same way as ‘the dying’ are those who are dying.

A verbal form like ‘dying’ has, in English, two uses: it may be a participle, as in ‘the dying should not be neglected’, or it may be a verbal noun, as in ‘dying can be a long-drawn-out business’. ‘Seeing is believing’ is equivalent to ‘To see is to believe’. When philosophers write treatises about being, they are commonly using the word as a verbal noun: they are offering to explain what it is for something *to be*. That is not, or not mainly, what Parmenides is about: he is concerned with *the being*, that is to say, with whatever is, as it were, doing the be-ing. To distinguish this sense of ‘being’ from its use as a verbal noun, and to avoid the strangeness of the literal ‘the being’ in English, it has been traditional to dignify Parmenides’ topic with a capital ‘B’. We will follow this convention, whereby ‘Being’ means whatever is engaged in being, and ‘being’ is the verbal noun equivalent to the infinitive ‘to be’.

Very well; but if that is what Being is, in order to make out what Parmenides is talking about we must also know what being is, that is to say, what it is for something to be. We can understand what it is for something to be blue, or to be a puppy: but what is it for something to just be, period? One possibility which suggests itself is this: being is existing, or, in other words, to be is to exist. If so, then Being is all that exists.

In English 'to be' can certainly mean 'to exist'. When Hamlet asks the question 'to be or not to be?' he is debating whether or not to put an end to his existence. In the Bible we read that Rachel wept for her children 'and would not be comforted because they are not'. This usage in English is poetic and archaic, and it is not natural to say such things as 'The Tower of London is, and the Crystal Palace is not', when we mean that the former building is still in existence while the latter is no longer there. But the corresponding statement would be quite natural in ancient Greek; and this sense of 'be' is certainly involved in Parmenides' talk of Being.

If this were all that was involved, then we could say simply that Being is all that exists, or if you like, all that there is, or again, everything that is in being. That is a broad enough topic, in all conscience. One could not reproach Parmenides, as Hamlet reproached Horatio, by saying:

There are more things in heaven and earth
Than are dreamt of in your philosophy.

For whatever there is in heaven and earth will fall under the heading of Being.

Unfortunately for us, however, matters are more complicated than this. Existence is not all that Parmenides has in mind when he talks of Being. He is interested in the verb 'to be' not only as it occurs in sentences such as 'Troy is no more' but as it occurs in any kind of sentence whatever – whether 'Penelope is a woman' or 'Achilles is a hero' or 'Menelaus is gold-haired' or 'Telemachus is six feet high'. So understood, Being is not just that which exists, but that of which any sentence containing 'is' is true. Equally, being is not just existing (being, period) but being anything whatever: being red or being blue, being hot or being cold, and so on *ad nauseam*. Taken in this sense, Being is a much more difficult realm to comprehend.

After this long preamble, we are in a position to look at some of the lines of Parmenides' mysterious poem.

What you can call and think must Being be
For Being can, and nothing cannot, be.

The first line stresses the vast extension of Being: if you can call Argos a dog, or if you can think of the moon, then Argos and the moon must be, must count as part of Being. But why does the second line tell us that nothing cannot be? Well, anything that can be at all, must be something or other; it cannot be just nothing.

Parmenides introduces, to correspond with Being, the notion of Unbeing.

Never shall this prevail, that Unbeing is;
Rein in your mind from any thought like this.

If Being is that of which something or other, no matter what, is true, then Unbeing is that of which nothing at all is true. That, surely, is nonsense. Not only can it not exist, it cannot even be thought of.

Unbeing you won't grasp – it can't be done –
Nor utter; being thought and being are one.

Given his definition of 'being' and 'Unbeing' Parmenides is surely right here. If I tell you that I am thinking of something, and you ask me what kind of thing I'm thinking of, you will be puzzled if I say that it isn't any kind of thing. If you then ask me what it is like, and I say that it isn't like anything at all, you will be quite baffled. 'Can you then tell me anything at all about it?' you may ask. If I say no, then you may justly conclude that I am not really thinking of anything or indeed thinking at all. In that sense, it is true that to be thought of and to be are one and the same.

We can agree with Parmenides thus far; but we may note that there is an important difference between saying

Unbeing cannot be thought of

and saying

What does not exist cannot be thought of.

The first sentence is, in the sense explained, true; the second is false. If it were true, we could prove that things exist simply by thinking of them; but whereas lions and unicorns can both be thought of, lions exist and unicorns don't. Given the convolutions of his language, it is hard to be sure whether Parmenides thought that the two statements were equivalent. Some of his successors have accused him of that confusion; others have seemed to share it themselves.

We have agreed with Parmenides in rejecting Unbeing. But it is harder to follow Parmenides in some of the conclusions he draws from the inconceivability of Unbeing and the universality of Being. This is how he proceeds.

One road there is, signposted in this wise:
Being was never born and never dies;
Foursquare, unmoved, no end it will allow
It never was, nor will be; all is now,

One and continuous. How could it be born
 Or whence could it be grown? Unbeing? No –
 That mayn't be said or thought; we cannot go
 So far ev'n to deny it is. What need,
 Early or late, could Being from Unbeing seed?
 Thus it must altogether be or not.
 Nor to Unbeing will belief allot
 An offspring other than itself . . .

'Nothing can come from nothing' is a principle which has been accepted by many thinkers far less intrepid than Parmenides. But not many have drawn the conclusion that Being has no beginning and no end, and is not subject to temporal change. To see why Parmenides drew this conclusion, we have to assume that he thought that 'being water' or 'being air' was related to 'being' in the same way as 'running fast' and 'running slowly' is related to 'running'. Someone who first runs fast and then runs slowly, all the time goes on running; similarly, for Parmenides, stuff which is first water and then is air goes on being. When a kettle of water boils away, this may be, in Heraclitus' words, the death of water and the birth of air; but, for Parmenides, it is not the death or birth of Being. Whatever changes may take place, they are not changes from being to non-being; they are all changes within Being, not changes of Being.

Being must be everlasting; because it could not have come from Unbeing, and it could never turn into Unbeing, because there is no such thing. If Being could – *per impossibile* – come from nothing, what could make it do so at one time rather than another? Indeed, what is it that differentiates past from present and future? If it is no kind of being, then time is unreal; if it is some kind of being, then it is all part of Being, and past, present, and future are all one Being.

By similar arguments Parmenides seeks to show that Being is undivided and unlimited. What would divide Being from Being? Unbeing? In that case the division is unreal. Being? In that case there is no division, but continuous Being. What could set limits to Being? Unbeing cannot do anything to anything; and if we imagine that Being is limited by Being, then Being has not yet reached its limits.

To think a thing's to think it is, no less.
 Apart from Being, whate'er we may express,
 Thought does not reach. Naught is or will be
 Beyond Being's bounds, since Destiny's decree
 Fetters it whole and still. All things are names
 Which the credulity of mortals frames –
 Birth and destruction, being all or none,
 Changes of place, and colours come and gone.

Parmenides' poem is in two parts: the Way of Truth and the Way of Seeming. The Way of Truth contains the doctrine of Being, which we have been examining;

the Way of Seeming deals with the world of the senses, the world of change and colour, the world of empty names. We need not spend time on the Way of Seeming, since what Parmenides tells us about this is not very different from the cosmological speculations of the Ionian thinkers. It was his Way of Truth which set an agenda for many ages of subsequent philosophy.

The problem facing future philosophers was this. Common sense suggests that the world contains things which endure, such as rocky mountains, and things which constantly change, such as rushing streams. On the one hand, Heraclitus had pronounced that at a fundamental level, even the most solid things were in perpetual flux; on the other hand, Parmenides had argued that even what is most apparently fleeting is, at a fundamental level, static and unchanging. Can the doctrines of either Heraclitus or Parmenides be refuted? Is there any way in which they can be reconciled? For Plato, and his successors, this was a major task for philosophy to address.

Parmenides' pupil **Melissus** (*fl.* 441) put into plain prose the ideas which Parmenides had expounded in opaque verse. From these ideas he drew out two particular shocking consequences. One was that pain was unreal, because it implied a deficiency of being. The other was that there was no such thing as an empty space or vacuum: it would have to be a piece of Unbeing. Hence, motion was impossible, because the bodies which occupy space have no room to move into.

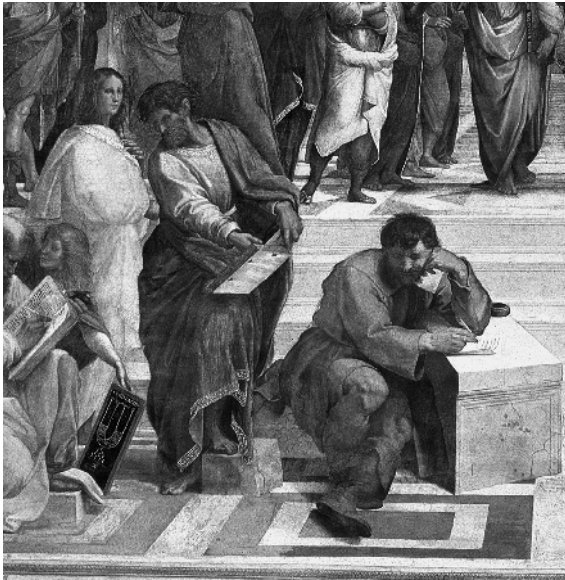


Figure 2 Parmenides and Heraclitus as portrayed by Raphael in the *School of Athens* (detail).

(Vatican Museums and Galleries, Vatican City/Bridgeman Images)

Zeno, a friend of Parmenides some twenty-five years his junior, developed an ingenious series of paradoxes designed to show beyond doubt that movement was inconceivable. The best known of these purports to prove that a fast mover can never overtake a slow mover. Let us suppose that Achilles, a fast runner, runs a hundred-yard race with a tortoise which can only run a quarter as fast, giving the tortoise a forty-yard start. By the time Achilles has reached the forty-yard mark, the tortoise is still ahead, by ten yards. By the time Achilles has run those ten yards, the tortoise is ahead by two-and-a-half yards. Each time Achilles makes up the gap, the tortoise opens up a new, shorter, gap ahead of him; so it seems that he can never overtake him. Another, simpler, argument sought to prove that no one could ever run from one end of a stadium to another, because to reach the far end you must first reach the half-way point, to reach the half-way point you must first reach the point half way to that, and so *ad infinitum*.

These and other arguments of Zeno assume that distances are infinitely divisible. This assumption was challenged by some later thinkers, and accepted by others. Aristotle, who preserved the puzzles for us, was able to disentangle some of the ambiguities. However, it was not for many centuries that the paradoxes were given solutions that satisfied both philosophers and mathematicians.

Plato tells us that Parmenides, when he was a grey-haired sixty-five-year-old, travelled with Zeno from Elea to a festival in Athens, and there met the young Socrates. This would have been about 450 BC. Some scholars think the story a dramatic invention; but the meeting, if it took place, was a splendid inauguration of the golden age of Greek philosophy in Athens. We shall turn to Athenian philosophy shortly; but in the meantime there remain to be considered another Italian thinker, Empedocles of Acragas, and two more Ionian physicists, Leucippus and Democritus.

EMPEDOCLES

Empedocles flourished in the middle of the fifth century and was a citizen of the town on the south coast of Sicily which is now Agrigento. He is reputed to have been an active politician, an ardent democrat who was offered, but refused, the kingship of his city. In later life he was banished and practised philosophy in exile. He was renowned as a physician, but according to the ancient biographers he cured by magic as well as by drugs, and he even raised to life a woman thirty days dead. In his last years, they tell us, he came to believe that he was a god, and met his death by leaping into the volcano Etna to establish his divinity.

Whether or not Empedocles was a wonder-worker, he deserved his reputation as an original and imaginative philosopher. He wrote two poems, longer than Parmenides' and more fluent if also more repetitive. One was about science and one about religion. Of the former, *On Nature*, we possess some four hundred lines from an

original two thousand; of the latter, *Purifications*, only smaller fragments have survived.

Empedocles' philosophy of nature can be regarded as a synthesis of the thought of the Ionian philosophers. As we have seen, each of them had singled out some one substance as the basic stuff of the universe: for Thales it was water, for Anaximenes air, for Xenophanes earth, for Heraclitus fire. For Empedocles, all four of these substances stood on equal terms as the basic elements ('roots', in his word) of the universe. These elements have always existed, he believed, but they mingle with each other in various proportions to produce the furniture of the world.

From these four sprang what was and is and ever shall
Trees, beasts, and human beings, males and females all;
Birds of the air, and fishes bred by water bright,
The age-old gods as well, long worshipped in the height.
These four are all there is, each other interweaving
And, intermixed, the world's variety achieving.

The interweaving and intermingling of the elements, in Empedocles' system, is caused by two forces: Love and Strife. Love combines the elements together, making one thing out of many things, and Strife forces them apart, making many things out of one. History is a cycle in which sometimes Love is dominant, and sometimes Strife. Under the influence of Love, the elements unite into a homogeneous and glorious sphere; then, under the influence of Strife, they separate out into beings of different kinds. All compound beings, such as animals and birds and fish, are temporary creatures which come and go; only the elements are everlasting, and only the cosmic cycle goes on for ever.

Empedocles' accounts of his cosmology are sometimes prosaic and sometimes poetic. The cosmic force of Love is often personified as the joyous goddess Aphrodite, and the early stage of cosmic development is identified with a golden age over which she reigned. The element of fire is sometimes called Hephaestus, the sun-god. But despite its symbolic and mythical clothing, Empedocles' system deserves to be taken seriously as an exercise in science.

We are accustomed to think of solid, liquid, and gas as three fundamental states of matter. It was not unreasonable to think of fire, and in particular the fire of the sun, as being a fourth state of matter of equal importance. Indeed, in the last century, the emergence of the discipline of plasma physics, which studies the properties of matter at the temperature of the sun, may be said to have restored the fourth element to parity with the other three. Love and Strife can be recognized as the ancient analogues of the forces of attraction and repulsion which have played a significant part in the development of physical theory through the ages.

Empedocles knew that the moon shone with reflected light; however, he believed the same to be true of the sun. He was aware that eclipses of the sun were caused by

the interposition of the moon. He knew that plants propagated sexually, and he had an elaborate theory relating respiration to the movement of the blood within the body. He presented a crude theory of evolution. In a primitive stage of the world, he maintained, chance formed matter into isolated limbs and organs: arms without shoulders, unsocketed eyes, heads without necks. These Lego-like animal parts, again by chance, linked up into organisms, many of which were monstrosities such as human-headed oxen and ox-headed humans. Most of these fortuitous organisms were fragile or sterile; only the fittest structures survived to be the human and animal species we know.

Even the gods, as we have seen, were products of the Empedoclean elements. *A fortiori*, the human soul was a material compound, composed of earth, air, fire, and water. Each element – and indeed the forces of Love and Strife – had its role in the operation of our senses, according to the principle that like is perceived by like.

We see the earth by earth, by water water see
The air of the sky by air, by fire the fire in flame
Love we perceive by love, strife by sad strife, the same.

Thought, in some strange way, is to be identified with the movement of the blood around the heart: blood is a refined mixture of all the elements, and this accounts for thought's wide-ranging nature.

Empedocles' religious poem *Purifications* makes clear that he accepted the Pythagorean doctrine of metempsychosis, the transmigration of souls. Strife punishes sinners by casting their souls into different kinds of creatures on land or sea. Empedocles told his followers to abstain from eating living things, for the bodies of the animals we eat are the dwelling-places of punished souls. It is not clear that, in order to avoid the risks here, vegetarianism would be sufficient, since on his view a human soul might migrate into a plant. The best fate for a human, he said, was to become a lion if death changed him into an animal, and a laurel if he became a plant. Best of all was to be changed into a god: those most likely to qualify for such ennoblement were seers, hymn-writers, and doctors.

Empedocles, who fell into all three of these categories, claimed to have experienced metempsychosis in his own person.

I was once in the past a boy, once a girl, once a tree
Once too a bird, and once a silent fish in the sea.

Our present existence may be wretched, and after death our immediate prospects may be bleak; but after the punishment of our sins through reincarnation, we can look forward to eternal rest at the table of the immortals, free from weariness and suffering. No doubt this was what Empedocles looked forward to as he plunged into Etna.

THE ATOMISTS

Democritus was the first significant philosopher to be born in mainland Greece: he came from Abdera, in the north-eastern corner of the country. He was a pupil of one Leucippus, about whom little is known. The two philosophers are commonly mentioned together in antiquity, and the atomism which made both of them famous was probably Leucippus' invention. Aristotle tells us that Leucippus was trying to reconcile the data of the senses with Eleatic monism, that is, the theory that there was only one everlasting, unchanging Being.

Leucippus thought he had a theory which was consistent with sense-perception and would not do away with coming to be and passing away or with motion and the multiplicity of things. He conceded thus much to appearances, but he agreed with the Monists that there could be no motion without void, and that the void was Unbeing and no part of Being, since Being was an absolute plenum. But there was not just one Being, but many, infinite in number and invisible because of the minuteness of their mass.

However, no more than one line of Leucippus survives verbatim, and for the detailed content of the atomic theory we have to rely on what we can learn from his pupil. Democritus was a polymath and a prolific writer, author of nearly eighty treatises on topics ranging from poetry and harmony to military tactics and Babylonian theology. But it is for his natural philosophy that he is most remembered. He is reported to have said that he would rather discover a single scientific explanation than become king of the Persians. But he was also modest in his scientific aspirations: 'Do not try to know everything,' he warned, 'or you may end up knowing nothing.'

The fundamental tenet of Democritus' atomism is that matter is not infinitely divisible. According to atomism, if we take any chunk of any kind of stuff and divide it up as far as we can, we will have to come to a halt at some point at which we will reach tiny bodies which are indivisible. The argument for this conclusion seems to have been philosophical rather than experimental. If matter is divisible to infinity, then let us suppose that this division has been carried out – for if matter is genuinely so divisible, there will be nothing incoherent in this supposition. How large are the fragments resulting from this division? If they have any magnitude at all, then, on the hypothesis of infinite divisibility, it would be possible to divide them further; so they must be fragments with no extension, like a geometrical point. But whatever can be divided can be put together again: if we saw a log into many pieces, we can put the pieces together into a log of the same size. But if our fragments have no magnitude then how can they ever have added up to make the extended chunk of matter with which we began? Matter cannot consist of mere geometrical points, not even of an infinite number of them; so we have to conclude that divisibility comes to an end, and the smallest possible fragments must be bodies with sizes and shapes.

It is these bodies which Democritus called ‘atoms’ (‘atom’ is just the Greek word for ‘indivisible’). He believed that they are too small to be detected by the senses, and that they are infinite in number and come in infinitely many different kinds. They are scattered, like motes in a sunbeam, in infinite empty space, which he called ‘the void’. They have existed for ever, and they are always in motion. They collide with each other and link up with each other; some of them are concave and some convex; some are like hooks and some are like eyes. The middle-sized objects with which we are familiar are complexes of atoms thus randomly united; and the differences between different kinds of substances are due to the differences in their atoms. Atoms, he said, differed in shape (as the letter A differs from the letter N), in order (as AN differs from NA), and in posture (as N differs from Z).

Critics of Democritus in antiquity complained that while he explained everything else in terms of the motion of atoms, he had no explanation of this motion itself. Others, in his defence, claimed that the motion was caused by a force of attraction whereby each atom sought out similar atoms. But an unexplained attraction is perhaps no better than an unexplained motion. Moreover, if an attractive force had been operative for an infinite time without any counteracting force (such as Empedocles’ Strife), the world would now consist of congregations of uniform atoms; which is very different from the random aggregates with which Democritus identified the animate and inanimate beings with which we are familiar.

For Democritus, atoms and void are the only two realities: all else is appearance. When atoms approach or collide or entangle with each other, the aggregates appear as water or fire or plants or humans, but all that really exists are the underlying atoms in the void. In particular, the qualities perceived by the senses are mere appearances. Democritus’ most often quoted dictum was:

By convention sweet and by convention bitter; by convention hot, by convention cold,
by convention colour: in reality atoms and void.

When he said that sensory qualities were ‘by convention’, ancient commentators tell us, he meant that the qualities were relative to us and did not belong to the natures of the things themselves. By nature nothing is white or black or yellow or red or bitter or sweet.

Democritus explained in detail how different flavours result from different kinds of atom. Sharp flavours arise from atoms which are small, fine, angular, and jagged. Sweet tastes, on the other hand, originate from larger, rounder atoms. If something tastes salty, that is because its atoms are large, rough, jagged, and angular.

Not only tastes and smells, but colours, sounds, and felt qualities are similarly to be explained by the properties and relationships of the underlying atoms. The knowledge which is given us by all these senses – taste, smell, sight, hearing, and touch – is a knowledge which is darkness. Genuine knowledge is altogether different, the prerogative of those who have mastered the theory of atoms and void.

Democritus wrote on ethics as well as physics: the sayings which have been handed down to us suggest that as a moralist he was edifying rather than inspiring. The following remark, sensible but unexciting, is typical of many:

Be satisfied with what you have, and do not spend your time dreaming of acquisitions which excite envy and admiration; look at the lives of those who are poor and in distress, so that what you have and own may appear great and enviable.

A man who is lucky in his son-in-law, he said, gains a son, while one who is unlucky loses a daughter – a remark that has been quoted unwittingly, and often in garbled form, by many a speaker at a wedding breakfast. Many a political reformer, too, has echoed his sentiment that it is better to be poor in a democracy than prosperous in a dictatorship.

The sayings which have been preserved do not add up to a systematic morality, and they do not seem to have any connection with the atomic theory which underlies his philosophy. However, some of his dicta, brief and banal as they may appear, are sufficient, if true, to overturn whole systems of moral philosophy. For instance,

The good person not only refrains from wrongdoing but does not even desire it.

conflicts with the often held view that virtue is at its highest when it triumphs over conflicting passion. Again,

It is better to suffer wrong than to inflict it.

cannot be reconciled with the utilitarian view, widespread in the modern world, that morality should take account only of the consequences of an action, not the identity of the agent.

In late antiquity, and in the Renaissance, Democritus was known as the laughing philosopher, while Heraclitus was known as the weeping philosopher. Neither description seems very solidly based. However, there are remarks attributed to Democritus which support his claim to cheerfulness, notably

A life without feasting is like a highway without inns.