



**CONNECTIONS**  
Chalenas, a Greek soothsayer of the 4th century BC, examines an animal's liver. He was not studying anatomy, however, he was trying to predict the future by examining entrails. Everywhere, magical thinking came before rational thinking, and sometimes led to it. For this reason it is a mistake to think of the two as necessarily opposed; they are often contiguous.

# BEFORE SOCRATES

## THE EMERGENCE OF RATIONAL THINKING

*The very earliest Western philosophers, those before Socrates, produced large-scale theories about the world, some of which were wildly mistaken but some profound enough to be influential down to our own day.*

THE FIRST PHILOSOPHERS were making two great breaks with the past simultaneously. In the first place they were trying to understand the world by the use of their reason, without appealing to religion, or revelation, or authority, or tradition. This in itself was something wholly new, and one of the most important milestones in human development. But at the same time they were teaching other people to use their own reason too, and think for themselves; so they did not expect even their own pupils necessarily to agree with them. They were

the first teachers who did not try to pass on a body of knowledge pure and unsullied, inviolate, but instead encouraged their pupils to discuss and argue, debate, put forward ideas of their own.

These two developments in the mental life of mankind, both of them revolutionary, are linked, which is why they appeared on the scene together. They form the foundations of what we now call "rational thinking". Once they had been introduced they launched an unparalleled rate of growth in human knowledge and understanding.

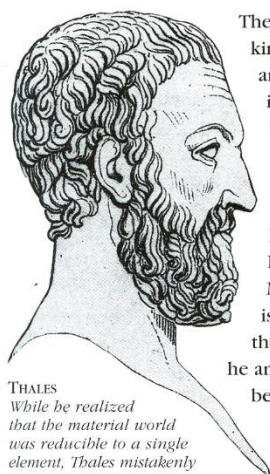


**THE BIRTHPLACE OF WESTERN PHILOSOPHY**  
Rational human thought emerged for the first time in the Western world around the 6th century BC in the eastern Mediterranean. Nearly all the early philosophers lived on one of the region's coastlines or islands.

*The first-known philosopher, Thales, was born in Miletus*

*Socrates and Plato made Athens the first world centre of philosophy*





THALES  
While he realized that the material world was reducible to a single element, Thales mistakenly supposed this to be water.

The first thinkers of this kind emerged in the ancient Greek world in the 6th century BC.

The one usually thought of as the very first, Thales, was a Greek who lived in the town of Miletus, on the Asia-Minor coast of what is now Turkey. After the name of the town, he and his followers have become known as the Milesian school. We

do not know his dates of birth and death, but we

know he was active and flourishing in the 580s BC, because he accurately predicted an eclipse of the sun that took place in 585 BC. He was also an early civil engineer, one who carried out the feat of diverting the waters of the river Hylas to enable King Croesus to pass.

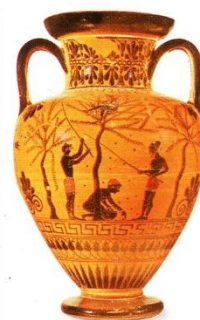
#### WHAT ARE THINGS MADE OF?

The question that most obsessed Thales was: "What is the world made of?" It seemed to him that it must ultimately all be made from a single element. Now this is an amazing insight, extremely unobvious, and one we now know to be true: we now know that all material objects are reducible to energy. But this thought could not have occurred to Thales – the physics that leads up to it had not yet been done. He came to the conclusion that everything was water in one form or another. He could see that at very low temperatures water becomes rock, at very high temperatures air. Every time the rains come down plants spring out of the earth, so they are evidently water in another form. All living things need a huge and constant intake of water to go on living. (Our bodies are in fact some 60 per cent water.) Every landmass comes to an end at the water's edge; so Thales thought this meant that the whole earth is floating on water, and so has emerged out of water, and so is constituted of water.

Thales had a pupil called Anaximander, who was born in Miletus in 610 BC and lived to about 546 BC. He realized that if, as Thales said, the earth was supported by the sea, the sea would have to be supported by something else – and so on, *ad infinitum*: you would find yourself in what is known as an infinite regress. He solved this problem with

the astounding idea that the earth is not supported by anything at all. It is just a solid object hanging in space, and is kept in position by its equidistance from everything else. Anaximander did not think of the earth as being a globe, because it seemed to him self-evident that we live on a flat surface, so he thought of it as cylindrical. "The earth... is held up by nothing, but remains stationary owing to the fact that it is equally distant from all other things. Its shape... is like that of a drum. We walk on one of its flat surfaces, while the other is on the opposite side."

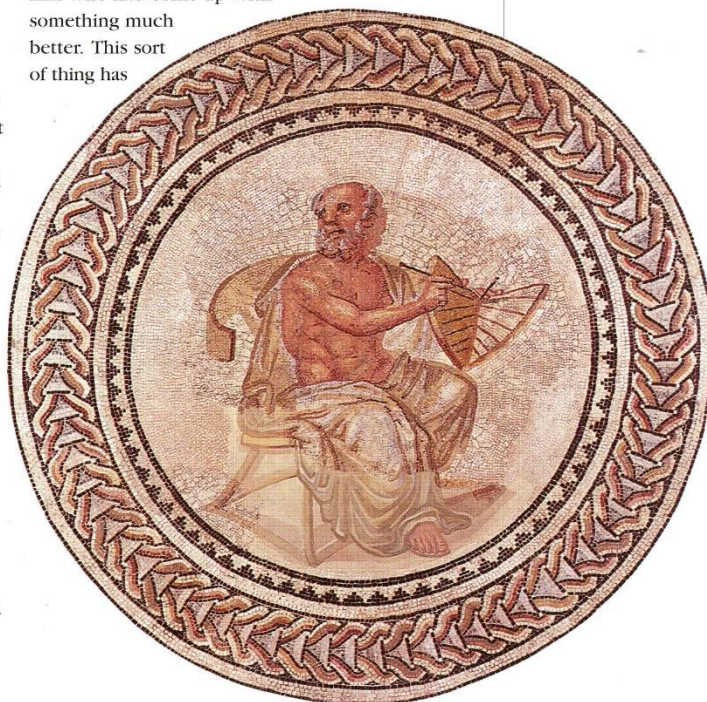
This was too much for his pupil Anaximenes, who considered it self-evident that the earth was flat, and also that it must be held up by something. He came to believe that it floated on air in the sort of way the lid of a boiling saucepan sometimes floats on the steam. It is salutary to realize that for many generations after their deaths Anaximenes remained a more respected and more influential philosopher than Anaximander. This means that throughout those generations there were thinkers using Anaximenes as their starting point when in fact there had already been another thinker before him who had come up with something much better. This sort of thing has



HARVESTING OLIVES

When Thales was taunted for his poverty, he put down all the money he had on deposit to rent the olive presses during the next harvest season.

He was then able to charge whatever he liked when people needed the presses. This was to show that philosophers can make money if they want to, but are interested in other things.



ANAXIMANDER, THE FIRST MAP MAKER

Anaximander was the first to make a map of the known world, and to realize that the earth was hanging unsupported in space. Despite this amazing discovery, however, belief in a flat earth persisted for a long time.



THE SAYINGS OF  
HERACLITUS

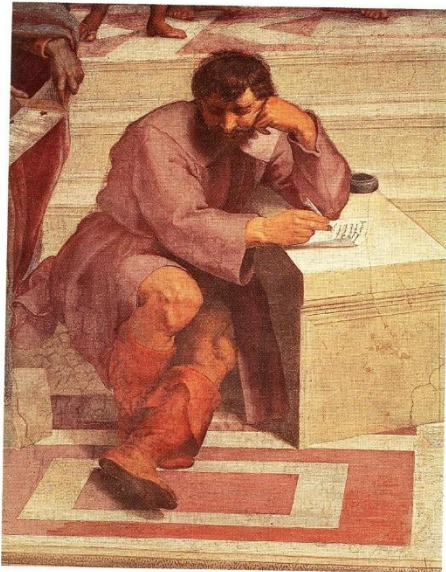
*Heraclitus said two things that are still quoted. One is: "A hidden connection is stronger than an obvious one." The other: "It is not possible to step into the same river twice." Perhaps equally good is "What anger wants it buys at the price of soul."*

*"This world is a comedy to those that think, a tragedy to those that feel – a solution of why Democritus laughed and Heraclitus wept"*

HORACE WALPOLE

PRE-SOCRATIC  
FRAGMENTS

*No complete work survives from any of the pre-Socratic philosophers: we have only fragments of the originals, plus quotations and summaries that appear in the works of later writers – though some of these quotations and summaries are long. The first Western philosopher from whom we have complete works, in their original language, is Plato.*



HERACLITUS: THE FIRST OF THE HIGHLY QUOTABLES  
*Among Heraclitus' sayings is that a man's character is his destiny. This perceptive insight was to be seconded by Sigmund Freud more than two thousand years later.*

continued to happen throughout the history of philosophy. It does not develop in a straight line, but rather in a two-steps-forward-followed-by-one-step-back sort of way. If it should happen that we ourselves are living in a one-step-back period, we have especially much to learn from the past.

THE WAY UP IS THE WAY DOWN

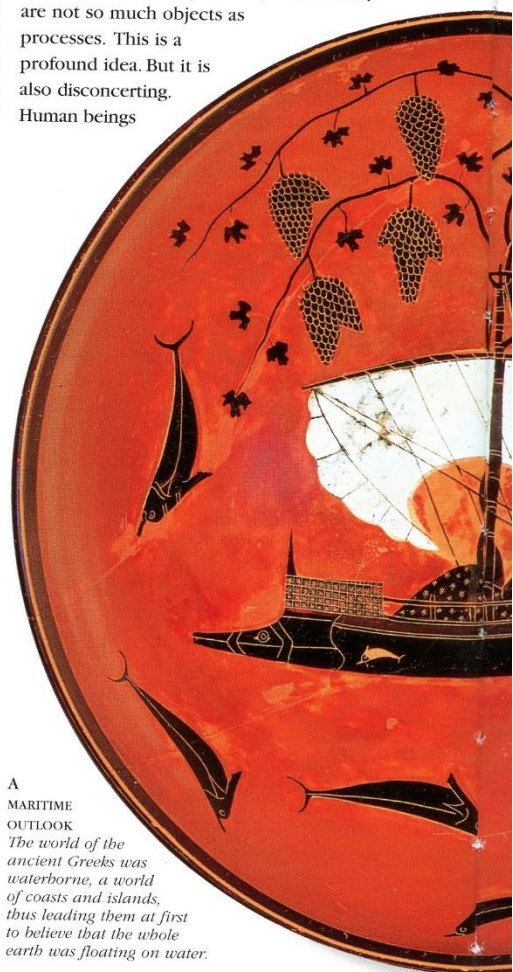
A philosopher better known today than any of the Milesians is Heraclitus. He was from Ephesus, a town on the same stretch of coast as Miletus, and at his peak in the early 6th century BC. He is famous for two ideas in particular, both of which have had great influence.

The first is the unity of opposites. He pointed out that the path up the mountainside and the path down the mountainside are not two different paths running in opposite directions, they are one and the same path. The young Heraclitus and the old Heraclitus are not two different individuals, they are the same Heraclitus. If your drinking companion says your bottle of wine is half full and you say it is half empty you are not contradicting him, you are agreeing with him. Everything (Heraclitus thought) is a coming together of opposites, or at least of opposing tendencies.

This means that strife and contradiction are not to be avoided. Indeed, they are what come together

to make up the world. If you did away with contradiction you would do away with reality. But this in turn means that reality is inherently unstable. Everything is in flux all the time. And this is the second idea that has been permanently associated with Heraclitus. "Everything is Flux."

Nothing in this world of ours just permanently *is*. Everything is changing all the time. Things come into existence in their different ways, and are never the same for two moments together so long as they exist, until eventually they go out of existence again. We ourselves are like this. Everything in the universe is like it – perhaps the universe itself is like it. What we think of as "things" are not actually stable objects at all, they are in perpetual transition. Heraclitus likened them to flames in this respect: flames *look* as if they are objects, but they are not so much objects as processes. This is a profound idea. But it is also disconcerting. Human beings



A  
MARITIME  
OUTLOOK  
*The world of the ancient Greeks was waterborne, a world of coasts and islands, thus leading them at first to believe that the whole earth was floating on water.*

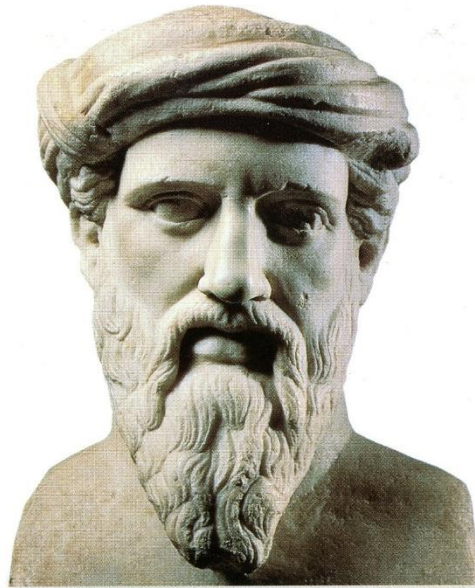
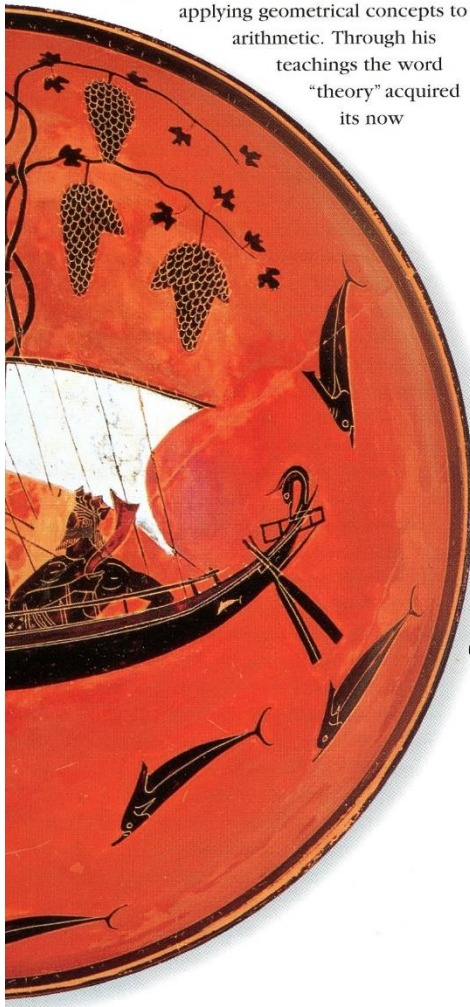


have always tried to find something stable to believe in, something reliable that would last and not pass away. And Heraclitus is telling us that there is no such thing. Change is the law of life and of the universe. It rules over all. We can never escape it.

#### THE KEY IS MATHEMATICS

Perhaps the most famous of all the pre-Socratic philosophers, better known even than Heraclitus, is Pythagoras. He was born on Samos, an island off the coast from which all the philosophers came that we have discussed so far; and he lived from about 570 BC to about 497 BC. He was a many-sided genius, one of his gifts being for mathematics – many of us in the 20th century have had to learn Pythagoras' Theorem at school. It was he who introduced the idea of the "square" and the "cube" of a number, thus

applying geometrical concepts to arithmetic. Through his teachings the word "theory" acquired its now



PYTHAGORAS

*This Greek philosopher and mathematician was the first person to have the idea that all the workings of the material universe are expressible in terms of mathematics.*

familiar meaning. He is thought to be the person who invented the term "philosophy", and who first applied the word "cosmos" to the universe. His direct influence lasted for generations.

He was the first great thinker to bring mathematics to bear on philosophy. This was one of the most fruitful notions that any human being has ever had. Ever since his day, mathematics has developed in symbiotic relationship with philosophy and the sciences, and some of the very greatest philosophers have also been great mathematicians – Descartes, for instance, invented not only the graph but the whole subject of analytic geometry, and Leibniz discovered calculus; to take only two examples.

“EVERYTHING IS FLUX”

HERACLITUS

We are now used to the idea that mathematics plays an indispensable role in our understanding of the universe. The fact that the cosmos at every level, from the outermost galaxies down to the interior of the individual atom, is saturated with structure of a kind that is expressible in mathematical



PENNY-WISE

Coins transmit not only value but information and propaganda, even religious images. Their use began in the same geographical area as rational thinking. By the time of the pre-Socratic philosophers many Greek city states had their own mints, and these began to stamp their coins with their own distinctive devices: Athens chose that of an owl, the bird of wisdom.

“Thou almost  
makest me  
waver in  
my faith  
To hold  
opinion with  
Pythagoras”

WILLIAM SHAKESPEARE,  
*THE MERCHANT OF VENICE*

#### PYTHAGORAS' THOUGHTS

*Pythagoras originated more of the fundamental ideas of Western philosophy than any thinker before Plato. Indeed, much that is often attributed to Plato was adapted by him from Pythagoras, including the idea that we remember a good deal of what we know from a previous life, and the idea that mathematical order pervades the physical world.*





ALLEGORY OF THE LIBERAL ARTS

In this Renaissance painting, created two thousand years after his death, Pythagoras was still seen as being at the summit of the liberal arts for his mathematics. Aristotle – on the first tier holding a book – is also still in the picture for his logic.

terms is so familiar to us that it is in danger of appearing obvious, but in truth it is not obvious at all, it is utterly astonishing. It is what has led so many of the greatest scientists of all, such as Einstein, to believe

that there must be some sort of intelligence behind the universe, if not necessarily a God in the conventional Judaeo-Christian sense. The very first person to have this insight about the expressibility of the whole universe in terms of mathematics was Pythagoras, and he also was led by it into some sort of mysticism.

Pythagoras developed the philosophical consequences of these insights over a broad area; but since nearly all his most important ideas were taken up and developed still further by Plato we shall (to avoid repetition) wait until we get to Plato before going into them further.

#### WE MAKE OUR KNOWLEDGE

One of the most attractive of the pre-Socratic philosophers is Xenophanes, who flourished in the later part of the 6th century BC. Like Pythagoras, he was born on the Greek littoral (Colophon, Ionia) of Asia Minor but spent most of his time in southern Italy. He seems to have understood in a rather deep way that human views of things are human creations, including what we take to be our knowledge. By learning more and more, and changing our ideas in the light of what we learn, we may get nearer and nearer to the truth, but our ideas remain always ours, and there is always an element of guesswork involved. He said

*... as for certain truth, no man has known it,  
Nor shall he know it, neither of the gods  
Nor yet of all the things of which I speak,  
For even if by chance he were to utter  
The final truth, he would himself not know it:  
For all is but a woven web of guesses.*

Xenophanes was shrewd, indeed witty, on the subject of gods:

*The Ethiopians say that their gods are flat-nosed  
and black.*

*While the Thracians say that theirs have blue  
eyes and red hair:*

*Yet if cattle or horses or lions had hands and  
could draw*

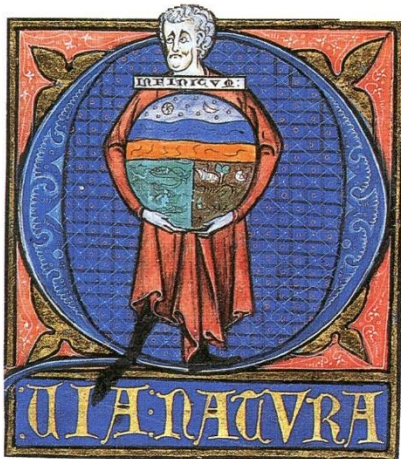
*And could sculpture like men, then the horses  
would draw their gods*

*Like horses, and cattle like cattle, and each  
would then shape*

*Bodies of gods in the likeness, each kind,  
of its own.*

These translations of Xenophanes were made by the 20th-century philosopher Karl Popper. The idea that all of our so-called scientific knowledge is in fact conjecture, and is in principle always replaceable by something that may be nearer to the truth, is central to Popper's philosophy; and he regarded Xenophanes





THE BASIC ELEMENTS

Two thousand years after Empedocles first formulated the idea that the world consists of the four elements of earth, water, air, and fire the notion still persisted. The idea is represented in this medieval painting.

as the first person ever to have expressed that thought. There is a tradition that the next philosopher we come to consider, Parmenides, was a pupil of Xenophanes. He flourished in the first half of the 5th century BC, and he provides us with our first link to Socrates. Plato has an account of Parmenides as an old man, Zeno (a disciple of Parmenides) as a middle-aged man, and the young Socrates, meeting for a philosophical discussion. Both Socrates and Plato were conscious of having learnt from Parmenides.

#### ALL IS ONE

Parmenides considered it self-contradictory to say of nothing that it exists. There can never, he thought, have been nothing, and therefore it cannot be true to say that everything – or, indeed, anything – came out of nothing. Everything must always have existed. For a similar reason it is not possible for anything to pass into nothing. Therefore not only must everything be beginningless and uncreated, it must also be eternal and imperishable. For similar reasons, too, there cannot be any gaps in reality, parts of reality where nothing is: reality must be continuous with itself at all points; all of space must be full, a plenum. This gives rise to a view of the universe being really a single unchanging entity. All is One. What appears as change, or movement, is something that occurs within an enclosed and unchanging system.

Surprisingly, perhaps, this is strikingly like the scientific view of the universe that developed between Newton in the 17th century and Einstein in the twentieth. Two things about that view made

it reminiscent of Parmenides. First, it was deterministic, so everything was seen as being inescapably and necessarily as it is. Second, it was believed that only from the subjective standpoint of an observer could there be a “now”: objectively speaking, all time-instants were equally significant. When two of the greatest minds of the 20th century found themselves having an argument about this, the name of Parmenides came up in the discussion. The two were Einstein and Popper, and in the account the latter gives of it in his autobiography *Unended Quest* he writes: “I tried to persuade him to give up his determinism, which amounted to the view that the world was a four-dimensional Parmenidian block universe in which change was a human illusion, or very nearly so. (He agreed that this had been his view, and while discussing it I called him ‘Parmenides.’)” Nothing could illustrate more vividly than this the fact that the ideas of Parmenides have been a living point of reference for thinkers down to our own day.

#### THE FOUR ELEMENTS

The most colourful personality among the pre-Socratic philosophers was Empedocles, who lived for roughly the first half of the 5th century BC. He was a democratic political leader, no doubt a demagogue, who was credited with miraculous powers, and died by throwing himself into the crater of the volcano Mount Etna – which must be the most melodramatic, not to say operatic, death of any famous philosopher.

Empedocles tried to reassert the reality of the ever-changing world of sensory experience, and also the plurality of this world, as against Parmenides, while conceding some of Parmenides’ insights. He admitted that matter cannot come into existence out of nothing, or pass away into nothing, but he held that everything was made up of four different elements that are perennial: earth, water, air, and fire. (The fire accounts for the heavenly fires of sun and stars.)

This doctrine of the four elements

#### CLASSICAL ORDER

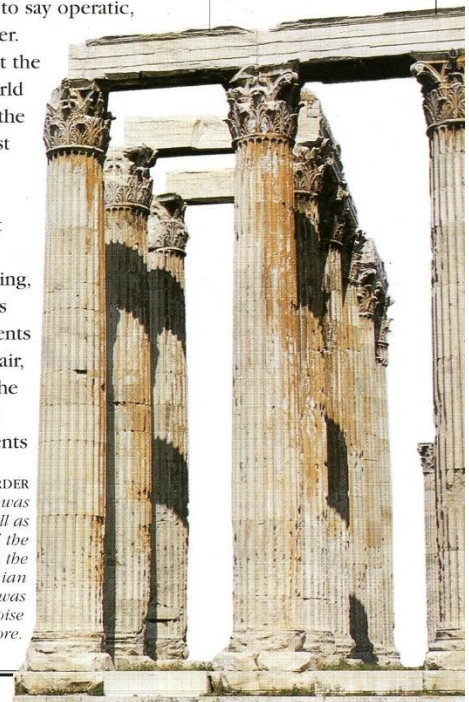
The beauty of mathematics was appreciated by Greek architects as well as Greek philosophers. They embodied the principles of geometry in stone, as in the Temple of Olympian Zeus (Corinthian capitals begun 174 BC). The result was architecture of a harmony and poise such as the world had never seen before.

#### MEMORABLE THOUGHTS

*Before the development of writing, poetry preceded prose because it was easier to remember. Some of the very earliest philosophy is written in poetry and some of it highly memorable. Outstanding among the ancient Greeks in this respect is Xenophanes. Outstanding among the later, Roman philosophers, who wrote in Latin, was Lucretius.*

*“Each man believes only his experience”*

EMPEDOCLES





**SOPHISTS**  
*Professional teachers, Sophists began to appear in the period just before Socrates. They trained young men in the arts needed for public life, in particular public speaking. Because they taught their pupils how to make the best of any case, regardless of what their own private convictions might be, they drew opprobrium from the intellectually fastidious; the word "sophist" consequently acquired a derogatory connotation that it has kept to this day. The first and most famous of the Sophists was Protagoras.*

was taken up by Aristotle, and played an important role in Western thinking until the Renaissance. Indeed, it is still quite often alluded to in Western literature.

Among the most insightful of the pre-Socratic philosophers were those known as "the Atomists", by which term is meant chiefly two people, Leucippus and Democritus. Leucippus had the fundamental idea that everything is made up of atoms that are too small to be seen, or even subdivided any further – the word "atom" comes from the Greek words meaning "cannot be cut". All that exists, he taught, are atoms and space; and all the different objects that there are consist simply of different collections of atoms in space.

The atoms themselves are uncreated and indestructible, and all change in the universe consists of atoms altering either their formations or their locations. The interpretation that he and Democritus put on change was essentially causal, and this is notable because they made no attempt to explain natural phenomena in terms of purposes. Democritus once said: "I would rather discover one cause than gain the Kingdom of Persia." Yet another basic doctrine they taught is that the universe is not a continuum, as Parmenides said it was, but consists of separate entities. Between them they seem to have originated atomic physics. Altogether these two thinkers made astonishing strides. We must not fall into the error of attributing to them developments of their ideas which came later; but when all is said and done there remains something profoundly original about their insights.

#### PHILOSOPHY COMES TO ATHENS

Our consideration of the Greek philosophers before Socrates has been selective, and has by no means exhausted the catalogue of interesting and important figures. We have discussed only the most influential of them; but there remains, for example,

Anaxagoras, who introduced philosophy to Athens itself, and Protagoras, who is still often quoted for his phrase: "Man is the measure of all things."

If we stand back and view them as a whole we find that before Protagoras they all had certain striking features in common. First, they were concerned primarily to understand the nature of the world around us rather than human nature – indeed, it is doubtful whether they even had such a concept as "human nature". Second, they uninhibitedly went in for bold theorizing on the largest possible scale. Inevitably, given that they

“MAN IS  
 THE  
 MEASURE  
 OF ALL  
 THINGS”

PROTAGORAS

were the very first thinkers to do so, much of what they came up with may seem wild and woolly. But the impressive thing is how many good ideas they had, ideas destined to bear rich fruit in the subsequent development of the attempts we human beings have made over the centuries to understand the world in which we find ourselves.



THE WISDOM OF CLASSICAL PHILOSOPHY

*Philosophers of classical antiquity were frequently portrayed in medieval and Renaissance art. They represented a secular ideal of wisdom and*

*learning. Often their presence in an otherwise religious context was meant to indicate that faith was not hostile to reason, but harmonious with it.*



# ACHILLES *and* the TORTOISE

One of Parmenides' pupils was a clever young man called Zeno (known as Zeno of Elea to distinguish him from the founder of Stoicism, Zeno of Citium). This Zeno was brilliant at producing paradoxes, some of which have puzzled people ever since.

Among these is the story of Achilles and the tortoise. Achilles and the tortoise decide to have a race. Because Achilles can run twice as fast as the tortoise he gives her a long start. Now, says Zeno, by the time Achilles reaches the tortoise's starting point she will have moved ahead by half the distance of her lead. And by the time Achilles reaches that point she will have moved on by half of that distance. And so on, and so forth, *ad infinitum*. Achilles is never able to catch up with the tortoise, because, at each point, by the time he has covered the distance between them she will always have moved on further by half of that distance. So Achilles never overtakes the tortoise.

"Hang on!", you may cry: "But Achilles does overtake the tortoise. Of course he does. This is all nonsense." If you say that you will be

missing the point – and it is important to be clear what the point of this story is. It is not to convince you that Achilles never

actually overtakes the tortoise. He does, and you know perfectly well that he does, and so does Zeno. The point is that here is

an impeccably logical argument that leads to a false conclusion. And what are we to say about that?

## AN IMPECCABLY LOGICAL ARGUMENT THAT LEADS TO A FALSE CONCLUSION



## THE PARADIGM OF A PHILOSOPHICAL PUZZLE

If it is possible for us to start from unobjectionable premises, and then proceed by logical

steps, each of which is without fault, to a conclusion which is manifestly untrue, this threatens with chaos all our attempts to reason about the world around us. People have found it terribly disconcerting. There must be a fault in the logic, they have said. But no-one has yet been wholly successful in demonstrating what it is.

For this reason, one of the well-known philosophers of the 20th century, Gilbert Ryle, has written of the parable of Achilles and the tortoise: "In many ways it deserves to rank as the paradigm of a philosophical puzzle". Perhaps one day it will be solved, as someone has recently solved the problem of Fermat's Last Theorem.



**Check your understanding:**

1. Who is considered the first known 'philosopher'?
2. The sub-title of this chapter is 'the emergence of rational thinking'. What does this mean?
3. What did Heraclitus mean with his famous saying, "everything is in flux"?
4. Why do philosophers love maths?
5. Why is 'Achilles and the tortoise' a perfect example of a philosophical puzzle?

**Things to do:**

Make a timeline of key ancient Greek thinkers.

Summarise, in a sentence, the big idea of each of the ancient Greek thinkers in this chapter.