

SESSION ONE

FIRST PHILOSOPHY:

MYTH, FLUX, AND DIALOGUE

1. Introduction

During this session we will begin our study of philosophy at the very beginning of Western philosophy itself. The beginning of Western philosophy is thought to start in ancient Greece with the Ionian theorists of the sixth century BC (Thales, Anaximander, Anaximenes and Xenophanes). Those ancient Greek thinkers labelled the Pre-Socratic philosophers (that is, the philosophers that came before Socrates) include such theorists as Pythagoras, Heraclitus, Parmenides, Zeno, Anaxagoras and Democritus, as well as the aforementioned Ionian theorists.

Aristotle describes Thales as the ‘introducer of this sort of philosophy’ (*Metaphysics*, Bk. Alpha I). When he says ‘this sort of philosophy’ he means philosophy as a theoretical enquiry into the primary principles and causes of all things and of the world as a whole (ibid, Bk. Alpha I).

Ionian theory about the primary principles and causes of the physical world came about through an older tradition of cosmology (cosmology is the study of the origin and nature of the universe), represented in Greek thought through the works of poets, particularly Homer and Hesiod. This tradition of cosmology has links with the mythological traditions of Egypt and Eastern civilisations (Taylor, 1997, p.1).

The main subjects of ancient philosophy are...

- Understanding the fundamental causes and principles of the universe, and trying to explain them.
- The epistemological problem of reconciling the diversity and change of the natural universe, with the possibility of obtaining fixed and certain knowledge about it.
- Questions about things which cannot be perceived by the senses, such as numbers, elements, universals, and gods.
- The analysis of patterns of reasoning and argument.
- The nature of the good life, and the importance of understanding and knowledge in order to pursue it.

2. Early Greek culture

We can situate the Pre-Socratics within the context of early Greek culture. The Greek culture could be found in Italy, Southern France, Spain, Ionia (what we now call 'Turkey'), Sicily, and Egypt, as well as Greece. (See the map of Greek colonisation in the West.) There was no political unity – for political organisation focused on city states such as Athens, Sparta and Corinth, which were frequently at war with each other – and there were significant cultural differences between cities, but there was a common language (and if you did not speak Greek, you were a barbarian) and culture (there was, for example, one common mythology). Education was not based on reading written texts but on listening to poetic songs and legendary stories that were transmitted from generation to generation. As such, the Greek culture was fundamentally an oral culture.

3. From mythological stories to rational explanation

The work of the Pre-Socratic philosophers was a radical innovation. They were not singers, poets nor storytellers; they mostly expressed themselves in prose, in written text, the aim of which was not to present stories about the world, but to present theories concerning natural phenomena and the organisation of the world. So with the emergence of Pre-Socratic thought, we see a shift from the oral to the written and from storytelling to explanation.

C.C.W. Taylor claims that

While it is traditional to contrast the 'mythological' thought of the poets, who explained the nature of the world via activities of divinities, with the 'physical' or 'materialistic' thought of the Ionians, who appealed to observable stuffs such as water or air, that contrast is somewhat misleading, since on the one hand many of the divinities of the poets were themselves identified with components of the world, such as the sea or the earth, while on the other the Ionians appear to have regarded their basic components as alive, and to have given them some of the attributes of divinity, such as immortality (Taylor, 1997, p.2).

However, as Taylor further notes, it is justified to separate the two kinds of thought. The mythological cosmology talked of the world with reference to fairy tale things, such as monsters and giants, and had no explanation for the actions of these things other than their personal motivations. Ionians, though, do not talk of the world in terms of mythological figures, nor do they use the personal motivations of creatures in order to explain certain features of, or events in, the world. Rather, they aimed to 'explain the world in terms of a minimum number of basic stuffs (e.g., water, air) and processes (e.g., condensation and rarefaction)'. They also subject their accounts to observation and reasoning (reasoning from cause to effect, for example). Indeed, their speculations were subject to norms of rationality (previous mythology was not). They were the original pioneers of theoretical ideas and of the idea of a world organised by natural laws. Their ideas could be seen to play an essential role in the development of philosophy (see Taylor, 1997, p.2).

4. Students of nature

Those called ‘Pre-Socratics’ then are largely concerned with issues of natural science – Aristotle calls them *phusikoi*, that is, students of nature. But they were not just seeking to document nature. They were seeking *explanations* of the physical world. They were also interested in metaphysical questions, including questions about the fundamental nature of the universe (such as, for example, what might underpin the diversity of the natural world?); questions about the origin of the universe (such as, for example, does the universe have a beginning or has it always existed?); and questions about the nature of change (such as, for example, is it possible for one thing to change into another?). Some are also concerned with epistemological questions; questions about the possibility of knowledge and the limits of knowledge (such as, for example, is the true nature of reality something that can be grasped by finite and fallible humans?).

The task of the earliest thinkers or philosophers might be seen as a rational one, motivated by reason – they wanted to move away from an explanation of the world as apparently mysterious, as well as move away from explanations that used mythological thought, divinities or gods. Instead, they wanted to talk of the world in terms of regular patterns and underlying principles (Osborne, 1997, p.90). But, as Catherine Osborne notes, ‘these philosophers still sometimes speak of their own principles and causes as divine, and this indicates that their project is not an atheist drive to exclude the gods from the picture altogether. Indeed, atheism is effectively unknown in antiquity’ (Osborne, 1997, p.90). The distinctiveness of philosophy lies in its break from mythological ways of thinking. Natural phenomena can no longer be explained by appeal to the acts of gods, and even the gods must be understood rationally.

5. Arche

Arche is a key term in ancient metaphysics. It means the start of something but also the ruling principle or structure of it.

Thales (flourishing around 585BC) is well known for his cosmological doctrine that water was the ruling principle of the cosmos. Most of what we know about the work of Thales comes from Aristotle who claims that Thales’ belief in water as the *arche* is based on the observation that warmth, nutrients and the life they foster are all functions of moisture:

Thales... said that it [*arche*] is water (that is why he declared the earth to be sitting on water), perhaps drawing this supposition from seeing that the nourishment of all creatures is moist and that warmth itself arises from this and that it is by this that all creatures live (and the assumption that that from which a thing comes is its principle in all cases) (Aristotle, *The Metaphysics*, Book Alpha).

Thales was attempting to define the substance or substances of which all material objects were composed.

Unlike Thales, Anaximander (fl. c560BC) said that the *arche* is something of infinite nature or something boundless.

[Anaximander] says that it [*arche*] is neither water nor any other of the so-called elements but some different infinite nature, from which all the heavens and worlds in them come into being (Simplicius, *Commentaries on the Physics*).

The infinite is the principle of existing things and is the whole cause of coming-to-be. The infinite is limitless, both temporally and spatially. It must be limitless because it must be inexhaustible in order to give rise to everything else in the universe.

Anaximenes (fl. c545BC) returns to Thales' idea that the ruling principle is an actual component of the world:

[Anaximenes] said that the first principle is infinite air, from which what is coming into being and what has come into being and what will exist and gods and divinities come into being, while everything else comes into being from its offspring. The form of the air is this: when it is most uniform it is invisible, but it is made apparent by the hot and the cold and the moist and the moving. It is always in motion; for the things that change would not change if were not in motion. For as it is condensed and rarefied it appears different: when it dissolves into a more rarefied condition it becomes fire; and winds, again, are condensed air, and cloud is produced from air by compression. Again, when it is more condensed it is water, when still further condensed it is earth, and when it is as dense as possible it is stones (Hippolytus, *Refutation of All Heresies*).

The first principle, for Anaximenes, appears to be air in motion. The opposite processes of thinning and thickening of air are what produces fire and more condensed matter, like stone. This thinning and thickening are what causes the appearance of other properties of things, different sorts of bodies and stuffs (Schofield, 1997, pp.64-68). It's thought that his idea of the *arche* as air was based on observation of processes in the natural world, including rain coming from clouds, condensation, and evaporation. All these processes are explained 'solely in terms of the density of a single material' (Kirk, Raven and Schofield, 1983, pp.145-47). We should perhaps note an interesting but not obvious difference between the view of Anaximander and that of Anaximenes. For Anaximander, the infinite is the source of things, but the infinite is not that which things in the world are made of. For Anaximenes, air is not only the source of things but is also that which things in the world are made of (see Schofield, 1997, p.68).

Thales, Anaximander, and Anaximenes then believed that there was one principle or one substance that underlies all the varied and changing phenomena of the world we experience. Their belief in an underlying unity in the world, the *arche* (as water, air, or something infinite in nature), anticipates the idea of laws of nature. Indeed, many of the Pre-Socratics' ideas have parallels in modern science – especially the idea of some kind of underlying unity (this is a very modern idea). Physicists seek what is called a unified field theory, attempting to derive all fundamental forces (electromagnetism, gravity, quantum mechanics), and the relationships between elementary particles, in terms of a single theoretical framework.

6. Why is *arche* a philosophical rather than a scientific principle?

The reason why *arche* is a philosophical principle and not a scientific one is because the philosophers of whom we speak are reasoning from a premise – that one underlying principle unites the varied phenomena in the world – but they are not directly investigating the nature of the principle. They are affirming, not demonstrating. (Science usually involves forming a hypothesis and making experiments to confirm or disprove the hypothesis, rather than theoretical reasoning from a premise.)

7. Reason as a route to understanding reality

One of the things that links all the Pre-Socratic philosophers is the belief that reason provides a better route to understanding reality than the senses because our senses provide knowledge only of outward appearances and not of what underlies these appearances. While knowledge derived from the senses can inform our understanding of the world, it is knowledge supplemented by reason that is seen as the best way to understand the reality of the world and its contents. This becomes a dominant theme of Western philosophy for the next 2000 years. In the theories of the Pre-Socratics, we also find the growing belief that nature is intelligible; that its workings can be grasped by the human mind – and a human mind informed by reason. So the Pre-Socratics are undeniably the first real philosophers and scientists of the Western world.

8 (i) Heraclitus

All the Pre-Socratic philosophers put forward innovative theories with regard to the reality of the world and its underlying principles. It is beyond the scope of this lecture to discuss fragments from all the Pre-Socratic philosophers (but the exercise related to this lecture will require you to interpret a wide range of fragments). (See the notes at the end of this lecture for information on the sources of fragments.) Therefore, we will focus on the views of Heraclitus. There are two reasons for this. Firstly, the doctrine of flux, a doctrine originally put forward by Heraclitus, is thought to have inspired Plato's theory of forms (although, we shall see that, in developing his theory of forms, Plato could have been reacting to the more radical theory of flux put forward by Cratylus, Heraclitus' follower) as well as stirred Parmenides to react with his denial that change is possible. (This will all become clearer towards the end of this lecture.) As such, an understanding of Heraclitus' thought will enable us to form a concept of philosophy as a discipline which involves a great deal of dialogue, as well as involves gaining an understanding of the views of one's predecessors. Indeed, philosophy is a discipline in which philosophers (in the process of forming their own theories and arguments) have criticised, and reacted against, the views of philosophers who went before them, including their teachers. Philosophers were expected to take on board the arguments of their predecessors (this led to them developing their predecessors' views; rejecting those views, either partly or fully; or supporting their arguments albeit to a certain extent). An awareness of philosophy as a dialogue in this sense, will allow us to understand one of the central methods of philosophy. (More will be said about this towards the end of this lecture.) Secondly, the

thought of Heraclitus is innovative and important in its own right, and an understanding of Heraclitus' ideas will go some way towards enabling us to gain an understanding of the root of the problem of how knowledge is possible in the light of an ever changing world. (Again, this should become clearer towards the end of the lecture.)

(ii) Logos

Logos is another key term in ancient metaphysics meaning an account or a reason (and is the root of the term 'logic'). It is derived from the verb meaning 'to say' or 'to state'.

Heraclitus (500BC) uses the term 'logos' to signify his account of the nature of things and the rationale that governs natural processes. It appears as if he regards *logos* as objective truth. The philosopher's task, Heraclitus implies, is to express everyday truths in such a way that their underlying meaning can leap to one's attention – like the solution to a riddle – and thereby reveal the nature of things according to the *logos*. For Heraclitus, it is only through an understanding of the *logos* that we can make sense of our experience. However, although the *logos* is a truth available to all, most people fail to recognise it:

With this *logos* which is for ever human people are out of touch both before they hear it and once first they have heard it; for although all things take place in accordance with this *logos*, they are like beginners experimenting with both words and practices such as these that I am going through as I divide each thing according to nature and say how it is. But it eludes other people what they are doing when they are awake, just as it eludes them what they do when asleep (Sextus Empiricus, *Against the Mathematicians*).

Sextus Empiricus is the source of this fragment of Heraclitus' work. Catherine Osborne claims that '[The fragment] suggests that ordinary people are unaware of what's going on, or indeed of what they themselves are doing, as if they are going through life in a sleep. What they are missing out on is 'this logos'... We are told that it 'is for ever', and that all things take place in accordance with it, but it is also something that people hear, yet fail to appreciate even when they have heard it' (1997, p.97).

Indeed, it certainly seems that Heraclitus appears to believe that people who do not understand the *logos* go through life in a kind of dream-like state, as if they are sleeping. What goes on in a sleeping mind is perhaps thought to be purely subjective and not connected to what is going on in the real world. Similarly, those who investigate nature without understanding the *logos* only gain access to their own subjective worlds, not to the real, objective one. This idea was revived in Plato's allegory of the cave (this allegory will be discussed in the next lecture).

(iii) The unity of opposites

Heraclitus is best known for his doctrine of flux; this is the thesis that everything flows and nothing stays still (the doctrine of flux). The fragments that best reveal this commitment are known as the 'River fragments'. One of these is as follows:

We step and do not step into the same rivers, we are and we are not.

The river here could be seen as a metaphor to describe the nature of things: a river may appear to be a permanent and stable entity, but closer inspection reveals that it continually changes – it is not the same river from one moment to the next. However, the river image also suggests a unity that depends on balance in change. The reason for this is that a river is an example of a dynamic system that's constantly changing yet it has its own organisation.

The substances of the world are related as opposites to one another – yet the opposites have a unity embodied in the conflict between them. Hot becomes cold, dry becomes wet, and thus all opposites are one. The opposites would not exist without each other. In a sense then a conflict between opposites is responsible for the existence of the world; but opposites are held together in a unity which is more fundamental than the differences that we observe on the surface. So, for Heraclitus, the world is in a process of perpetual flux, just like a river. But Heraclitus should also be interpreted as implying that there is continuity of change in every single thing. The 'doctrine of flux is probably not that ultimate reality *is* change, but that change is the manner in which ultimate reality, *logos*, manifests itself' (Graham, 1999, p.245).

Heraclitus presents us with several paradoxes that seem intended to alert us to the *co-existence* of opposites. So, for instance, he points out that the same ocean water can be undrinkable and dangerous to us but drinkable and life sustaining to fish: 'The sea is most pure and most polluted water: for fish, drinkable and life-preserving; for men, undrinkable and death-dealing'. He is then suggesting that one thing can have two wholly different aspects. *But* we should draw attention to a dropped qualification here. Sea water is good *for fish* and bad *for humans*, but from this it does not follow that it is both good and bad.

Other paradoxes seem to point to a stronger relation between certain opposites, a conceptual dependence (i.e. they cannot be thought of without one another). For example, good and evil, hot and cold, health and disease define each other. We can't have a concept of one without the other. *But* just because many concepts are defined in terms of their opposites (good and evil, hot and cold, etc), it does not follow that two opposites are simultaneously present.

Finally, in other paradoxes, we get the strongest sort of relation, a relation of identity. He claims that 'day and night are one' and 'the same thing is both living and dead'. *But* here he is describing cases in which one opposite succeeds another, not cases in which a single object is simultaneously characterised by both opposites.

Perhaps the important thing to grasp in relation to Heraclitus' idea of the unity of opposites is that the balancing of these opposites enables us to understand that a hidden connection underlies the seemingly chaotic nature of the world, with change in one direction being balanced by a corresponding change in another. This is again a very modern idea: in physics we have the laws of the conservation of mass and energy – neither matter nor energy can be either created or destroyed, and according to the special theory of relativity, they are equivalent to one another.

Change is the key idea with respect to the doctrine of the unity of opposites. To say that every object manifests some pair of contrary properties is just to say that every object undergoes change. So the doctrine of the unity of opposites is, for Heraclitus, a way of making the point that every object is subject to change.

(iv) Change and possibility of knowledge

Heraclitus was criticised by Plato for introducing the kind of change which makes knowledge of the world impossible. However, it is thought that Plato could have confused the flux doctrine of Heraclitus with the more radical doctrine of Cratylus. The latter doctrine properly renders it impossible to have knowledge of the sensible world.

As we have seen, for Heraclitus, all sensible things (that is, able to be sensed things) are in a state of flux, and Heraclitus seems to believe that this is the true nature of reality. In the light of this view, it could be supposed that if there is to be any knowledge or thought about anything, there must be certain other entities, besides sensible ones, which persist – for there can be no knowledge of that which is perpetually changing. This goes some way towards explaining the development of Plato's theory of forms (discussed in the next lecture) – the forms were rational, constant and unchanging; they were prototypes for particular things. For Plato, truth was to be sought in the forms. Belonging to the intelligible realm, they were contrasted with things in the visible realm (that is, sensible things or objects of sensory experience), which are, of course, subject to change.

But, unlike his follower, Cratylus, Heraclitus recognised some stability in an ever-changing cosmos. Indeed, Heraclitus does not 'postulate change without an underlying unity' (Graham, 1999, p. 246). Nevertheless it is fairly clear that the radical interpretation of Heraclitus caused Plato to develop a 'theory of forms' to justify the possibility of knowledge in an otherwise Heraclitean world. Further, Heraclitus' views may have prompted Parmenides to deny the reality of change.

In relation to this section, you should do some reading on Parmenides' thinking; in particular, his views about the nature of reality (reality as undivided and one) and his conception of knowledge (for Parmenides, sense-perception does not yield knowledge; his rejection of the senses as a genuine source of knowledge suggests that he is calling for an *a priori* investigation of knowledge). His views had an influence on the whole development of Western thought. (His influence should become clearer as we move through the course.) Read Edward Hussey's 'Pythagoreans and Eleatics', in *From the*

Beginning to Plato, Routledge History of Philosophy, Vol. I, ed. C.C.W. Taylor (London and New York: Routledge, 2003).

(v) Heraclitus' use of language

Heraclitus has been interpreted as making important linguistic claims. He certainly appears to show an interest in the nature of language and its relation to reality (problems which still remain today). Take the river fragment: 'We step and we do not step into the same rivers', or 'Upon those who step into the same rivers, different and again different waters flow'. On the one hand, this could be seen as merely a verbal puzzle that can easily be cleared up applying the tools of conceptual analysis. The expression 'same river' is ambiguous: it can mean (a) a stream of fresh water flowing along a definite course from source to outlet. It can be defined geographically. The River Thames can be defined precisely as that stream originating at point A and finishing at point B. It can also mean (b) the same body of water comprising precisely the same molecules. So under description (a) we *can* step into the same river twice. Under description (b) we *cannot*. So you step into different water but the same river. The river changes (in physical composition) but remains the same (geographical identity). So something can be the same in one sense and different in another sense. On the other hand, there is also a much deeper metaphysical puzzle: how identity persists despite change? What's clear about the river sentence is that Heraclitus plays with words so that the reader arrives at more than one meaning from a single sentence.

Other sentences of Heraclitus depend not on ambiguous words or words carrying difference meanings, but on an ambiguous grammatical structure where the sentence reads differently depending on how we interpret the syntax of the sentence. Consider the following fragment: 'Tainted with blood they purify themselves... as if someone who stepped into mud were cleansed with mud.' This fragment is concerned with the religious practice of blood sacrifice for purification. (It is usually thought that Heraclitus is mocking this practice.) In the sentence 'the word for 'with blood' (*haimati*) is placed between 'tainted' and 'they purify themselves' in such a way that it can function equally well with either. This draws our attention to the fact that people are purified with the very same stuff that they were first polluted with. Clearly it is important to Heraclitus' message that one and same word belongs in both contexts: 'Tainted with blood, they purify themselves...' and 'Tainted, they purify themselves with blood' (Osborne, 1997, p.115).

Although Heraclitus does not discuss how language acquires its meaning in context, Osborne claims that his use of language suggests 'a commitment to the idea that language does not have meaning independently of the particular context in which it is used; indeed the same words may carry a plurality of meanings when read in different ways, or by different readers with different points of view' (Osborne, 1997, p.115). While Heraclitus may not have explicitly addressed the idea that words can have different senses and that language is dependent on the context for its meaning, his style of writing certainly strongly suggests that he was interested in or at least aware of how words can derive their

meaning in context; this is something that has concerned modern philosophers of language for some time.

9. The importance of dialogue

As said at the beginning of section eight, the dialogue between the Pre-Socratic philosophers can be seen as one in which the views of one's predecessors were carefully considered and questioned.

Have a look at the handout containing commentaries on and fragments from the Pre-Socratic philosophers. On this handout you will see that the Pre-Socratics are listed in historical order:

- Thales (flourishing around 585BC)
- Anaximander (fl. c560BC)
- Anaximenes (fl. c545BC)
- Xenophanes (570-475BC).
- Pythagoras (fl. 530BC).
- Heraclitus (fl. c500BC).
- Parmenides (fl. c480BC).
- Zeno (fl. c450BC).
- Anaxagoras (c500-428BC)
- Democritus (c460-c370BC)

Note the following interesting points:

- Anaximander was an associate of Thales, but criticised his views.
- Anaximenes was thought to be a pupil of Anaximander, but criticised the views of his teacher.
- Xenophanes was thought to be a pupil of Anaximenes and the mentor of Parmenides. He was critical of the views of Anaximenes and agreed with some of what Anaximander said.
- Pythagoras had a great influence on those who followed him, especially the post-Parmenidean Pythagoreans such as Philolaus and Archytas.
- Heraclitus' work had a massive influence on subsequent philosophers, not least Parmenides and Plato. The radical interpretation of Heraclitus' doctrine of flux inspired, for example, Plato's account of the sensory world. Heraclitus' influence is also felt in Democritus, Cratylus, Aristotle, and the Stoics.
- Parmenides is thought to have learned philosophy from Xenophanes, but did not follow him. He rejected the whole of Ionian cosmology.
- Zeno supported the views of his teacher, Parmenides, arguing against motion and against plurality. He presents us with several paradoxes that are thought to be designed in response to Parmenides' critics.
- Anaxagoras and the atomist Democritus attempted to respond to the metaphysical and epistemological challenges posed by Parmenides.

- The links between philosophers do not end with the Pre-Socratics. Aristotle (384-322BC) studied under Plato (427-347BC), but went on to criticise Plato's conclusions.

Thus we see a tradition in which people were permitted to criticise the previous generation and the people who mentored them. Popper claims that this is one of the factors that make them all philosophers (see Popper, 1963, pp.150-51; see also Popper 1998, the appendix). It would explain why philosophers felt able to criticise the views of their teachers.

This sort of critical analysis of the views of others can be related to the two commitments of philosophers, talked about in lecture one: the commitments to truth and to honesty. The philosophers above are all seeking to find the truth of their subject matter, and this will involve an honest appraisal of each other's views. It will involve a dialogue that's probing and questioning. The philosopher then is permitted, in her enquiries, to take a critical approach. Graham Priest argues that this approach is part and parcel of the 'constructive enterprise' that is philosophy. 'Philosophers are responsible for creating many new ideas, systems of thoughts, pictures of the world and its features... This kind of creativity is not something over and above the critical spirit' (Priest, 2006, p.203).

Notes on the fragments of the Pre-Socratics

The actual fragments for the Pre-Socratic thinkers can be found in the works of subsequent authors, including the works of Plato, Aristotle, Sextus Empiricus (second century AD), Plutarch (second century AD), and Simplicius (sixth century AD). The author of a quotation may not have seen the original work and may be merely summarising or providing a critique of an earlier thinker. Nevertheless, commentators on the Pre-Socratics provide us with valuable criticism, as well as factual information. For more on sources and problems related to sources, see Kirk et al, 1983, pp.1-6.

Bibliography

The interpretations, given in this session, of the work of the Pre-Socratics are derived from the writings of a variety of scholars, but primarily Catherine Osborne (in respect of Heraclitus), Malcolm Schofield (in respect of the Ionians), and Kirk, Raven and Schofield (in respect of Anaximenes). The work of C.C.W. Taylor has been used to provide an account of the features of Pre-Socratic thought, including its break from mythological thinking.

- Edward Hussey, 'Pythagoreans and Eleatics', in *From the Beginning to Plato, Routledge History of Philosophy*, Vol. I, ed. C.C.W. Taylor (London and New York: Routledge, 1997).
- Malcolm Schofield, 'The Ionians', in *From the Beginning to Plato, Routledge History of Philosophy*, Vol. I, ed. C.C.W. Taylor (London and New York: Routledge, 1997).
- Catherine Osborne, 'Heraclitus', in *From the Beginning to Plato*, 1997, *ibid*.
- C.C.W. Taylor, 'Introduction', in *From the Beginning to Plato*, 1997, *ibid*.

- G.S. Kirk, J.E. Raven, and M. Schofield, *The Presocratic Philosophers: a critical history with a selection of texts*, second edn. (Cambridge: Cambridge University Press, 1983).
- Daniel Graham, entry on Heraclitus, in *Dictionary of Philosophy*, ed. Thomas Mautner (London: Penguin, 1999).
- Graham Priest, 'What is Philosophy?', *Philosophy*, Vol. 81, No.316 (Apr. 2006), pp.189-207.
- Karl R. Popper, *The World of Parmenides: Essays on the Presocratic Enlightenment*, 1998.
- Karl Popper, *Conjectures and Refutations*, Routledge, 1963.
- Aristotle, *The Metaphysics*, translated with an introduction by Hugh Lawson-Tancred (London: Penguin Books, 2004).