Part I

Philosophy before Socrates: Introduction

Philosophy before Socrates is piecemeal. We are left to discern the philosophical accomplishments of the earliest philosophers mainly from the reports of those who followed them, including, most notably, Aristotle, who was the first systematic historian of philosophy. So, we face formidable problems of interpretation. In the first instance, this means that we read today only fragments of what they actually wrote – snippets of works now long lost, wrenched from their original contexts and often quoted for plainly polemical purposes. Still, all is not lost. In some cases, we possess reasonably lengthy quotations; in others, it is possible to conjecture the likely positions of the earliest thinkers on the basis of paraphrases and reports whose primary purpose was the transmission of the views of the ancients to posterity, so that we can see directly, without inference, what they intended to maintain.

On the basis of the surviving evidence, it is reasonable to focus on two distinct groups of thinkers who are, if in very different ways, important for our understanding of the course taken by philosophy through the Classical and Hellenistic periods, and so, eventually, even into the Late Antique period. These are the *Presocratics* and the *Sophists*. The earliest philosophers included among the canonical Presocratics are those whom Aristotle called the natural philosophers (*physiologoi*) because of their tendency to identify the principles and causes of things in naturalistic terms (*Metaphysics* 983b6–984a4).[1] According to Aristotle, these thinkers differ in important ways from some of their own predecessors and contemporaries who propagated mythological explanations, which tended to be framed in terms of the often whimsical and utterly unpredictable activities of supernatural gods.

Others among the Presocratics engage in recognizably epistemological argumentation. From very early in its history, philosophy has been an intensely self-critical discipline. No sooner did the earliest natural philosophers ridicule the forms and standards of explanation implicit in mythology than they faced challenges to their own preferred idiom of naturalistic explanation, including challenges put by skeptics who sought to undercut *all* claims to human knowledge of any form. In the wake of such skeptical challenges came ever more sophisticated rejoinders, engendering a dialectic of skeptical challenge and response which persisted through the Hellenistic period and beyond.

McKirahan recounts the story of the earliest philosophers, emphasizing the ways in which their thought is at once philosophical and scientific. He not only describes their views, but suggests how they influenced subsequent generations of thinkers. For this reason, those altogether unfamiliar with the history of Ancient Philosophy will find his chapter an indispensable point of departure.

As McKirahan notes, the Presocratics were less concerned with social-political philosophy and ethics than were Socrates, Plato, and Aristotle. These later philosophers were not the first, however, to introduce speculation into these matters. On the contrary, they often found themselves in the position of responding to the views put forward by the Sophists, a loosely knit group of professional intellectuals and teachers active in Greece in the mid-fifth through the first quarter of the fourth centuries, a time of broad political and cultural upheaval. During this period, matters regarding which there had hitherto been broad forms of cultural consensus came in for intense questioning and scrutiny: the objectivity of value; the force and validity of custom, tradition, and law, both natural and conventional; the worth of higher education; the legitimacy of rhetorical persuasion within a democratic context; and, indeed, the legitimacy of Sophistry itself, especially insofar as it was conducted as a commercial enterprise. That is, the Sophists asked for – and received – handsome sums for the instruction they offered, mainly to the sons of socially prominent families with aspirations for political ascendancy.

As Gibert observes, attitudes regarding the Sophists divide rather sharply, today as in antiquity. Some view them as having had a liberating effect: their unapologetic refusal to defer to traditional mores helped usher in new forms of social awareness. Others, including to some extent both Plato and Aristotle, saw them as having a destabilizing, even pernicious effect: however right they may have been to question traditional modes of moral thinking (a critical activity embraced, after all, by both Plato and Aristotle), the Sophists seem self-serving in their easy and expedient refusal to provide grounded alternatives for the views they rejected. In particular, both Plato and Aristotle fault them for embracing naïve forms of relativism, thereby initiating a debate about the foundations of morality and science which remain with us even today.

That said, as Gibert rightly argues, it would be a mistake to adopt a monolithic attitude towards the Sophists, to treat them, that is, as if they themselves reached consensus about core philosophical concepts or rallied themselves around any sort of unifying credo. To begin, the problem of sources for them, as for the Presocratics, is especially acute. It is not always easy to ascribe determinate views with confidence to an individual Sophist. Moreover, insofar as it is possible to judge with confidence what a particular Sophist actually believed, it also becomes necessary to distinguish distinct and often incompatible positions among the strains generally understood as constituting "the Sophistic Movement." Gibert surveys both the question of sources and the broad range of positions falling under that general designation.

As McKirahan and Gibert both point out, an understanding of all of Ancient Philosophy begins with an appreciation of philosophy as it existed before Socrates.

They posed questions and challenges which the philosophers who followed them could not escape addressing.

Note

1 On using this form of citation to Aristotle's works, see Part IV, "Aristotle," n. 1.

Chapter 1

Presocratic Philosophy

Richard McKirahan

Preface

Greek philosophy began in the early sixth century BC in the Ionian city of Miletus, on the Aegean coast of Asia Minor. By the end of the fifth century it had made astonishing leaps in sophistication and had framed many of the issues that have remained central to philosophical investigation until today. This period is known, not altogether appropriately (since some of the most important "Presocratics" were contemporaries of Socrates), as the Presocratic era. The Presocratics stand at the beginning of the Greek and therefore of the entire Western philosophical tradition. In an important sense they were also the first scientists the Western world produced and their accomplishments in the study of nature are the direct ancestors of science as we know it. Since none of the writings of the Presocratics survives, our knowledge of the men and their ideas comes from other ancient sources which quote their actual words or summarize and sometimes criticize their theories, a situation which leaves room for differing interpretations. The thinkers discussed in this chapter were selected partly for their importance, partly because of the wide range of interests and the differing approaches they display, and partly because of the fascination they continue to have for people living two and a half millennia after their time.

Ionian Beginnings

Thales

Thales, we are told, predicted an eclipse of the sun that took place May 28, 585 BC. In addition to this astronomical feat, the ancients regarded him as the earliest Greek mathematician and attributed to him certain specific results in geometry. His declaration that water is the primary kind of material made him the founder of what was later called "natural philosophy." He is also said to have declared that all things are full of gods and that magnets have souls because they move iron. He gave military

and engineering advice to King Croesus of Lydia, and political counsel to the Greek cities in Ionia. Later tradition also made him the first absent-minded professor, alleging that once he was so absorbed in looking at the heavens that he fell into a well.

How much of this is true we cannot be sure, because Thales was already a legendary figure by the time our information about him was being written and he would be just the person to attach discoveries to in order to establish a venerable pedigree for a discipline such as geometry. In fact, Thales is a shadowy figure many or all of whose claims to fame can be disputed, but who must have been a figure of great importance nevertheless, since there is no better way to account for the fact that so many different things are attributed to him. It is worth mentioning that Thales is said to have learned geometry in Egypt and that it is from Egypt too that he imported his doctrine that the earth floats on water; and if he actually did predict an eclipse of the sun, it can only have been on the basis of the astronomical records that had been kept in Babylon since 747 BC. It is possible, then, that the beginnings of Greek mathematical and scientific speculation owe a heavy debt to the older civilizations of Mesopotamia and the Nile, even though the Greeks developed these and other ideas in novel ways.

Thales' view that water is the primary kind of material has been interpreted as meaning that all things are somehow composed of water and, alternatively and perhaps more plausibly, that in the beginning (although no longer) there was only water, and that from the primeval moisture there developed the diversity of things present in the world today. His reasons for proposing this view are unknown (Aristotle, writing in the fourth century BC, was reduced to guesswork). It is also unknown whether he was following Egyptian mythology here or introducing a new way of thinking about the world, a way that is characteristic of later Presocratics and already prominent in Thales' immediate successors, according to which it is no longer the actions of anthropomorphic gods but the behavior of natural substances that account for the things and events in the world around us.

Anaximander

Thales was followed by two other Milesian thinkers, Anaximander and Anaximenes. Anaximander was regarded as Thales' successor in investigating nature, and Anaximenes as Anaximander's student and associate. Biographical information is practically nonexistent for these men, although we are told that Anaximander was sixty-four in the year 546 and that he travelled to Sparta, where he constructed some kind of sundial and predicted an earthquake. He is also said to be the first Greek to draw a map of the world and to have been the leader of a colony of Miletus on the Black Sea. Anaximander's range of interests was narrower than that of Thales, more closely confined to what we would call the scientific. He sketched an account of the origin and structure of the world and accounted for such phenomena as eclipses, thunder and lightning, and other meteorological events, as well as the origin of life. In connection with this last topic, he identified and offered a solution to a problem that arises in accounting for the origin of humans. Babies cannot fend for themselves,

but need parents; but parents grew from babies. How did this cycle begin? Anaximander "declares that in the beginning humans were born from other kinds of animals, since other animals quickly manage on their own, and humans alone require lengthy nursing. For this reason, in the beginning they would not have been preserved if they had been like this." He "believed that there arose from heated water and earth either fish or animals very like fish. In these humans grew and were kept inside as embryos up to puberty. Then finally they burst and men and women came forth already able to nourish themselves."

Anaximander is best known for his view that the origin of the world is the *apeiron*, an eternal substance, boundlessly large and without any definite characteristics: neither hot nor cold, neither wet nor dry, neither white, black, nor any other color. Again, his reason for introducing such an unfamiliar origin for our world, in contrast to Thales' view that the origin of all things was water, can be reconstructed with some probability. The world around us is marked by contrasts: some parts of it are wet, others are dry, and so on. But if the origin of the world were wet, it is hard to account for the existence of anything that is not wet. The originating material must therefore not be either wet or dry, neither hot nor cold, and so on. It must, in fact, be indefinite (one English meaning of *apeiron*). Also, if it is the origin of everything, it cannot have a beginning itself: hence it is eternal. (The Greek philosophers are unanimous in supposing that anything that is without a beginning is also without an end.) And it must be boundlessly large ("boundless" is another meaning of *apeiron*) in order to be able to generate not only our world but also an indefinitely large number of other worlds that according to Anaximander come into existence and perish at different times and in different places.

What survives of Anaximander's account of how our world was formed goes as follows: "what arose from the eternal [i.e., the *apeiron*] and produces hot and cold was separated off at the coming to be of this world, and a kind of sphere of flame from this grew around the dark mist about the earth like bark about a tree. When it was broken off and enclosed in certain circles, the sun, moon and stars came to be." Anaximander gave the dimensions of our world: "the earth is cylindrical in shape, and its depth is one-third its breadth." "The sun is equal to the earth and the circle [on which] it is carried is twenty-seven times the size of the earth." "The circle of the sun is twenty-seven times [that of the earth] and that of the moon [eighteen times]." Particularly noteworthy here are the assumptions that the world has a simple geometrical structure and that the sizes and distances of the earth and the heavenly bodies are related by simple proportions, as well as the lack of any conceivable empirical basis for making these claims.

Anaximander also wrote the first surviving fragment of any Greek philosopher, an incomplete sentence that seems to describe how a variety of phenomena in our world, such as day and night, and the seasons, take place. "[The things that are perish into the things out of which they come to be,] according to necessity, for they pay penalty and retribution to each other for their injustice in accordance with the ordering of time." The bracketed words are most likely not to be Anaximander's, but the remainder, with its images of necessity, justice, and punishment, is apparently original, some of the very earliest surviving Greek prose. The picture is that of not

just a world but an ordered world, a *kosmos*, in fact, which is characterized by regular processes of change and alternation (say, between hot and cold weather, or between daylight and darkness) that are governed by an impersonal judge, namely time, who guarantees that each contender holds sway to the right degree and for the appropriate duration. In fact, the talk of justice and punishment is unlikely to be a mere metaphor, but rather an expression of the widespread early view that there is no clear dividing line between humans and the rest of the world, that the same forces and processes that we experience in our human life are found elsewhere in the world as well, that man is a part of nature.

Anaximenes

Anaximenes too concerned himself with matters scientific. A less original thinker than Anaximander his best-known contribution is the view that the origin of all things and the fundamental form of matter is air. He was able to justify this divergence from Anaximander's compelling argument for an indefinite originative material by explaining how air (which is already a fairly indefinite material with few clear properties) changes form. "It differs in rarity and density according to the substances [it becomes]. Becoming finer it comes to be fire; being condensed it comes to be wind, then cloud, and when still further condensed it becomes water, then earth, then stones, and the rest come to be out of these." By means of becoming more dense and more rare, air changes into different forms just as water changes into ice and steam, "and the rest come out of these" – the remaining substances are formed through combinations of the different forms of air. Anaximenes held that other qualities depend on rarity and density, hot and cold for example: "a person releases both hot and cold from his mouth, for the breath becomes cold when compressed and condensed by the lips, and when the mouth is relaxed, the escaping breath becomes warm through the rareness." In addition, air, which constitutes our soul or principle of life, "holds us together and controls us" and it plays a similar role in the context of the *kosmos* as well, surrounding it, pervading it and keeping everything in its right place and functioning in the appropriate way. Bearing in mind the remarks made above concerning justice and punishment in Anaximander's fragment, we are able to infer that for Anaximenes not only humans and animals, but the *kosmos* as a whole is a living thing.

Xenophanes

One of the most unexpected features of early Greek philosophy is the way it accounts for the origin and functioning of the world in naturalistic terms. No more are the gods of Greek mythology responsible for events in the world; rather it is substances like water, air, and the *apeiron*, and processes and events like separation, condensation, and rarefaction that make things happen. Moreover, the world is seen as a place of order rather than chaos, where natural laws, not the capricious desires

and rivalries of personified gods hold sway. The implicit criticism of the Olympians and the ways of accounting for phenomena in the world that are based on belief in such gods became explicit in the poetry of Xenophanes (c. 570 to after 478 BC). Xenophanes was born in Colophon, another Ionian city of Asia Minor, and spent much of his life as a bard, travelling from city to city and singing the poems of Homer and others, including himself, for his supper. Two of his most famous fragments (about forty survive) challenge the anthropomorphic view which the Greeks had of their gods:

> Ethiopians say that their gods are flat-nosed and dark,
> Thracians that theirs are blue-eyed and red-haired. (frag. 16)

> If oxen and horses and lions had hands
> and were able to draw with their hands and do the same things as men,
> horses would draw the shapes of gods to look like horses
> and oxen to look like oxen, and each would make the
> gods' bodies have the same shape as they themselves had. (frag. 15)

There is no good reason other than vanity or limited imagination to suppose that the gods look like Greeks, or the larger than life and more beautiful Greeks that we see in the artwork that survives from ancient Greece. Not that Xenophanes or his Milesian forebears were atheists. Anaximander's *apeiron* was divine, as was Anaximenes' air. And Xenophanes sketches his own view about the divine:

> God is one, greatest among gods and men,
> not at all like mortals in body or thought. (frag. 23)

> He always remains in the same place, moving not at all,
> nor is it fitting for him to go to different places at different times. (frag. 26)

> All of him sees, all of him thinks, all of him hears. (frag. 24)

> But without effort he shakes all things by the thought of his mind. (frag. 25)

It is disputed whether fragment 23 means that Xenophanes believed in a single god, or a god supreme among others, but it is clear that there is only one god who controls the events of the world, and he does so not through physical means but by his thought or will. It is also clear what Xenophanes' criterion was for determining the nature of god: what "is fitting," that is to say, what he, a mere human thinking for himself, judged appropriate for the ruler of the universe to be like. For instance, the activities of the Olympian gods are not fitting for a true divinity, as the following fragment indicates:

> Homer and Hesiod have ascribed to the gods all deeds
> which among men are a reproach and a disgrace:
> thieving, adultery, and deceiving one another. (frag. 11)

Rejecting the Olympians in this way was a revolutionary move in more than one way. It meant changing beliefs, but more profoundly it meant changing attitude as well. No longer is cultural tradition (embodied preeminently in the poetry of Homer and Hesiod) seen as an unquestionable source of truth. Rational criteria replace tradition as a way of justifying beliefs, and the world becomes different. There is a rational order to it, and knowledge of it can be attained: a rational god rules it and as rational beings we can for the first time hope to understand how it works.

To Xenophanes too we owe the beginnings of reflection on the difficulty of finding out the truth and of the skeptical tradition that knowledge cannot be attained, as the following fragments show:

> By no means did the gods reveal all things to mortals from the beginning,
> but in time, by searching, they discover better (frag. 18)

> No man has seen nor will anyone know
> the truth about the gods and all the things I speak of.
> For even if a person should in fact say what is absolutely the case,
> nevertheless, he himself does not know, but fashions belief over all things (frag. 34)

The first of these fragments is a statement of the possibility of discovery through research, whereas the latter, while distinguishing between truth, knowledge, and belief, denies the possibility of absolute knowledge, at least about the kinds of difficult and remote topics that were the concern of Xenophanes and the other Ionian philosophers of the sixth century.

Conclusions

Most of the subjects treated by the earliest philosophers would nowadays be considered scientific, not philosophical. The origin of the world, its composition and present structure, how it functions, how life arose – these are topics in astronomy, physics, meteorology, biology. And discussions of the nature of the divine are more at home in theology than philosophy. On the other hand, Xenophanes, who is clearly a member of the Ionian tradition of thought, first raised questions that are still with us in epistemology, and these were questions that would naturally arise for a thoughtful person engaged in the critical work that is characteristic of the early thinkers.

One of philosophy's historical roles has been to serve as the source of other disciplines. For example, psychology was considered a part of philosophy until the late nineteenth century, and only when it developed its own distinctive methods was it acknowledged as a separate subject. Science too was commonly called natural philosophy until the eighteenth century. From this perspective, it is not surprising that no distinction was made in theory or in practice between science and philosophy in the very beginning, and it is an artificial and anachronistic project to distinguish the philosophical from the scientific side of the Presocratics.

Aside from their particular views, though, many of which from our point of view may have little or no relevance to philosophy, there is a common feature of their approach that is evidently original with them and which is still very much characteristic of philosophy. I call this feature rational criticism. Each of the thinkers we have considered reflected on current ideas and the views of his predecessors. They identified objections and produced new theories immune to those objections. They rejected theories because they failed to fit observed facts or because they did not satisfy rational criteria. Theories were not accepted or rejected through mysterious processes controlled by a few privileged individuals, but were accessible to all and the grounds for accepting and rejecting them were publicly stated – because the standard for acceptance was "what is fitting" rather than what tradition says or what the gods approve. The practice of rational criticism led in the initial stages to rapid advance, with each successive theory improving in certain respects on its predecessor. Traditional mythological accounts were speedily eliminated from this kind of discourse since mythology and authority based simply on the familiarity of long tradition are not in position to withstand critical scrutiny or to mount a rational defense.

Another feature the speculations of these early thinkers have in common with philosophy as we know it today is that many of the theories that were proposed are not easily open to refutation on empirical grounds. It would be hard to imagine what kind of data could be brought to refute the view (possibly Thales') that water was the origin of all things, or (Anaximander's) that the world had its beginning in some *apeiron* substance, or (Anaximenes') that all kinds of things are compounds of fire, air, wind, and so forth, or (Xenophanes') that all events in the world are governed by a divinity that is "not at all like mortals in body or thought." They were accepted or rejected on grounds of rational plausibility, not because they were hypotheses confirmed by evidence, much less the experimental method. In fact, in the entire history of ancient science we find very little use of the experimental method as we understand it, although in some cases, such as Anaximenes' observation that the temperature of our breath is affected by whether we exhale rapidly or slowly, observational evidence is brought to bear, sometimes with imagination and sophistication. And this is only to be expected, since one of the primary goals of these men was to understand important observed features of the world that surrounds us.

The remainder of this chapter will focus on three Presocratic philosophers of very different stripes. All of them share with the first philosophers a serious interest in the nature and structure of the physical world, but their thought ranges more widely, and as we shall see, the elements in it that are recognizably philosophical soon come to the foreground.

Heraclitus

Born a generation later than the thinkers so far considered, Heraclitus (c. 540–480 BC) of Ephesus, a Greek city located not far from Miletus, was an arrogant and

enigmatic figure who broadened the scope of enquiry from cosmology, the principal pursuit of the early Ionians, to include matters more properly considered philosophical. Over 120 original fragments survive from his book, most of them short and pithy sayings whose precise meanings are unclear (in antiquity Heraclitus was known as "the obscure") and whose significance and interconnections are left for us to discover. Heraclitus expressed views on many subjects, including the faults of earlier and contemporary writers from Homer to Pythagoras and Xenophanes, and the stupidity of ordinary people. He had positive views on cosmology but also on matters concerned with ethics, politics, and religious practices, and also on the nature of god and of the soul or mind. In addition he had much to say on how and how not to go about inquiring into the true nature of things. But the most striking ideas of Heraclitus are more general and underlie all his work. His fundamental principles are encapsulated in the following words:

> This *logos* holds always, but people always prove unable to understand it, both before they hear it and when they have first heard it. For even though all things happen in accordance with this *logos*, people show their lack of experience when they experience such words and deeds as I set out, distinguishing each one in accordance with its nature and saying how it is. (frag. 1)

> Listening not to me but to the *logos* it is wise to agree that all things are one. (frag. 50)

> Things taken together are whole and not whole, something being brought together and brought apart, in tune and out of tune; out of all things there comes a unity, and out of a unity all things. (frag. 10)

Heraclitus claims to have made a great discovery, one that accounts for no less than absolutely everything that is and that comes to pass in the world. It is a single principle, which he calls *logos*, that holds completely generally and explains all things and all events. Except for Heraclitus and despite his efforts to teach it, no one understands the principle, a (or the) primary implication of which he states at the end of fragment 10: "out of all things there comes a unity and out of a unity all things." The world is a single dynamic whole made up of many things related to one another in various ways. We need to understand both the many and the one: how the one world works and how the many things in it work as well, and to do so involves understanding that the many things are interrelated in many and unexpected ways, and understanding that they work together, not each on its own, and how they do so; likewise it involves understanding how the world is a unity composed of many parts and how each part contributes to the whole. Two case studies of this one–many relation appear in the following fragment:

> They do not understand how, being at variance with itself, it agrees with itself. It is a backwards-turning attunement like that of the bow and lyre. (frag. 51)

In order to function, bows and lyres require their strings to be stretched. Otherwise no arrows will be shot, no music played. Two things happen simultaneously in order for the tension ("being at variance") in the string to occur: the wood must be pulling on the string and the string must be pulling on the wood – and the pulling must be equal, or either the string will snap or the wood will break. Consider the bow as simply a piece of wood and a string, and you cannot understand what makes it work, what makes the wood and string *a bow*. It is their special mutual relationship of balanced tension that accounts for their working together as a functioning bow. On the other hand, the tension by itself does not make up the bow, because the tension cannot exist without the wood and the string. Once we understand how the bow works, we also have a better understanding of its components. The wood and string are no longer just wood and string, but things with properties that enable them to work together in certain specified ways. While the bow and the lyre are typical of how things in the world work, they also represent the world as a whole.

Heraclitus employed other familiar phenomena as well to illustrate his "one and many" doctrine. Several of his examples are based on things that are opposites of one another, presumably because opposites would seem to be obvious counter-examples to the principle of "all things are one." The most elaborated of these examples is the following:

> The sea is the purest and most polluted water; to fishes drinkable and bringing safety, to humans undrinkable and destructive. (frag. 61)

Here the opposites are the superlatives "purest" and "most polluted," and Heraclitus' insight is that one and the same thing can have both properties – as long as it has them in relation to different kinds of living things. In fact, the two properties go hand in hand: an environment that is "purest" for fishes must be "most polluted" for humans, and this tells us something important not only about those two opposite properties, but also about seawater and about fishes and humans as well.

It is important to point out that Heraclitus never states simply that any pair of opposites is "the same." He always gives examples, and he states them so as to make clear how to resolve the apparent paradox. Indeed, as soon as we identify any such paradox in the world we must already have solved it. Also, the way Heraclitus states these apparent paradoxes makes it clear that he is using them as teaching devices to illustrate the workings of the *logos* in the world, so that we can gain experience in understanding how the world works and in due course go on to conduct our own investigations. When we fully understand the world (if we ever do), we will also understand everything in the world and how it all fits together and works together to make up the world. And despite the apparent diversity and discord, or rather *because of* it, we will understand how the world is a harmonious whole.

Such a message is open to attack on two fronts. First, it may seem too general to have any concrete content: nothing could possibly count as disproof of the claim, so the claim tells us nothing in particular about the world. Second, it may seem to counsel a kind of blind and fatuous idleness and optimism in the face of the world's disasters: everything fits together to make a harmonious world, so don't try to

change how things are and don't be distressed by misfortune because it is all part of a happy bigger picture. As to the first objection, we should begin by recalling that even if it is valid, Heraclitus fares no worse on this count than the other thinkers we have considered, whose theories were, as noted above, not easily open to empirical tests. But more important is that Heraclitus put forward this general principle as something that can be confirmed, and confirmed only with effort, imagination, and dedication:

> Men who are lovers of wisdom must be inquirers into many things indeed. (frag. 35)

> Unless he hopes for the unhoped for, he will not find it, since it is not to be hunted out and is impassible. (frag. 18)

> The enquiry needed to discover the workings of the principle in the world is partly empirical, partly introspective:
> All that can be seen, heard, experienced – these are what I prefer. (frag. 55)

> I searched myself. (frag. 101)

> and few are able to carry it out:
> Eyes and ears are bad witnesses to people if they have souls that do not understand the language. (frag. 107)

> For many, in fact all that come upon them, do not understand such things, nor when they have noticed them do they know them, but they seem to themselves to do so. (frag. 17)

> They are at odds with the *logos*, with which above all they are in continuous contact, and the things they meet every day appear strange to them. (frag. 72)

> He offered many examples of how the *logos* applies in widely differing situations, and made it plain that some phenomena are difficult to explain.
> Nature loves to hide. (frag. 123)

> The Lord whose oracle is at Delphi neither speaks nor conceals, but gives a sign. (frag. 93)

Further, the proper explanations will appear confusing to those who do not understand (frag. 1, quoted above). He even suggests that we should devote our lives to understanding the principle:

> Wisdom is one thing, to be skilled in true judgment, how all things are steered through all things. (frag. 41)

> Right thinking is the greatest excellence, and wisdom is to speak the truth and act in accordance with nature, while paying attention to it. (frag. 112)

As to the second objection raised above, we should first notice that the counsel to understand and accept one's place in the world and not fight against destiny need not be shallow and need not be intended as comforting, as the following fragments (which are probably intended to convey symbolic as well as literal meanings) indicate:

> It is necessary to know that war is common and justice is strife and that all things happen in accordance with strife and necessity. (frag. 80)

> War is the father of all and king of all, and some he shows as gods, others as humans; some he makes slaves, others free. (frag. 53)

> And Heraclitus is explicit that some things are worth striving for.
> The people must fight for the law as for their city wall. (frag. 44)

> It belongs to all people to know themselves and to think rightly. (frag. 116)

> The best renounce all for one thing, the eternal fame of mortals, but the many stuff themselves like cattle. (frag. 29)

In concentrating on the one – many principle this brief sketch has omitted many important aspects of Heraclitus' thought. I will mention three very briefly, first the prominence of fire:

> The *kosmos*, the same for all, none of the gods nor of humans has made, but it was always and is and shall be: an ever-living fire being kindled in measures and being extinguished in measures. (frag. 30)

> All things are an exchange for fire and fire for all things, as goods for gold and gold for goods. (frag. 90)

These and other fragments establish that fire is the basic material of the world in somewhat the same way as air was for Anaximenes. But fire has an active, violent nature absent from the material principles of Heraclitus' predecessors which makes it more suitable for directing and controlling events in a dynamically active world:

> For fire will advance and judge and convict all things. (frag. 66)

> Thunderbolt steers all things. (frag. 64)

Second, the river fragments:

> Upon those who step into the same rivers, different and again different waters flow. (frag. 12)

> It is not possible to step twice into the same river. (frag. 91)

As the basis of the doctrine of "Heraclitean flux," that there is no stability in the world but all things are constantly changing in all respects, the second of these statements has enjoyed a great deal of attention from the time of Plato, who discussed it critically in his dialogues *Cratylus* and *Theaetetus*. However, many scholars believe that fragment 91 is unauthentic, a misremembered and misquoted version of fragment 12, which has the appearance of a typical Heraclitean fragment on the unity of opposites (here "same" and "different") and in which there is no difficulty about stepping more than once into the same river.

Third, two puzzling fragments about the soul, which may show that Heraclitus had grasped the paradoxical nature of self-consciousness.

> You would not discover the limits of the soul although you travelled every road: it has so deep a *logos*. (frag. 45)

> The soul has a self-increasing *logos*. (frag. 115)

Parmenides

Parmenides (c. 515 to after 450 BC) and Zeno (born c.490), both from Elea, a Greek city in southern Italy, together with Melissus (probably a little younger than Zeno), from the Aegean island of Samos, are known as the exponents of a new style of philosophy called Eleatic after the birthplace of its founder. The two principal innovations of Eleatic philosophy are its use of deductive argument and its subject matter. Until this time, as far as we can tell, the Greek philosophers had presented their theories without arguing for them. The Milesians told "likely stories" about how the world came into being and how it functions, and even though we can detect some ways in which one account might be thought more likely than another, and can construct arguments they might have used to show the superiority of their views over others, there is in fact no trace of argument in the source materials. Even Xenophanes' attacks on traditional views of the gods are not stated in the form of arguments, although we can supply the additional premises needed to reach the conclusions he intended, and Heraclitus' brief and frequently cryptic pronouncements are devoid of the logical connective tissue found in philosophy from Parmenides onward.

One reason why the Eleatics may have chosen to employ arguments is that their views needed this kind of support because they go so strongly against what people deeply believe. A basic characteristic of deductive reasoning, in which one or more premises are stated and a conclusion is declared to follow from them, is that if we

believe that the premises are true and if we also believe that the conclusion does follow from the premises, then we have no choice but to accept the conclusion as true. Consequently, while referring to an obvious fact of experience will tend to convince people, and while telling a story may be sufficient to recommend it to people who find it likely, when what we want to maintain directly conflicts with our audience's experience and well-established beliefs, simply asserting our view will probably not make them change their minds. They will need to be convinced, and a well-constructed argument, whose premises they cannot fault and whose reasoning they find impeccable or at least irrefutable, is an excellent tool for this purpose.

In what follows I shall consider only Parmenides, the founder of Eleatic philosophy and the most important of its proponents. Melissus used different arguments for mostly the same conclusions as Parmenides, and Zeno constructed arguments, most famously the one known as "Achilles and the Tortoise," that supported Parmenides by showing that the deep-set beliefs which make us hostile to Parmenides' conclusions in fact are riddled with contradictions: If Achilles gives the tortoise a head start in a race, he must first reach the point from which the tortoise started, by which time the tortoise has gone some (smaller) distance ahead, and by the time Achilles has reached that point, the tortoise has again gone ahead some (even smaller) distance. Thus the tortoise must always be some distance ahead, so that Achilles can never catch it.

In a carefully constructed sequence of arguments Parmenides claims to prove the following theses: there is no coming to be or perishing, no change or motion; what is has all possible parts and attributes; it is undivided and continuous; only one thing exists; only one thought or statement is intelligible: "it is"; consequently, our senses are wholly misleading and our ordinary ways of thinking and talking are false, incoherent, and incomprehensible.

Interestingly, Parmenides presents his philosophy as truth revealed to him by a goddess and sets forth his arguments in the epic meter of the Homeric *Iliad* and *Odyssey*, which had connotations of solemnity and authority. While we may regard these features of his writing as mere rhetorical ploys and irrelevant to the philosophical content of the work and to the soundness of the arguments, we will do well to remember that Parmenides' hearers and readers were unfamiliar with the use of argument in philosophy, and Parmenides will have done well to emphasize the seriousness which his arguments were put forth and the almost divine binding power of sound argument.

The poem has three parts: an introduction (frag. 1) which tells of Parmenides' mystical journey to the goddess and her promise to reveal to him "all things – both the unshaken heart of persuasive truth and the opinions of mortals, in which there is no true reliance" (frag. 1, lines 28–30), which is followed by sections on each of these two headings, the Way of Truth (frags. 2–7 and frag. 8, lines 1–49) and the Way of Mortal Opinions (frag. 8, lines 50–61 and frags. 9–18). It is a matter of dispute why Parmenides wrote the Way of Mortal Opinions, which contained an account of the origin and functioning of the world that is along the lines of other Presocratic accounts of these phenomena, since he declares it to be deceitful and fundamentally mistaken (frag. 8, lines 52–3).

The rest of this discussion will concentrate on the Way of Truth, of which many think almost all (we have almost eighty lines) has survived. The goddess begins (frag. 2) by identifying "the only ways of inquiry there are to think." The first is "the path of persuasion (for it attends upon truth)" and it is described as the way "that it is and that it is not possible for it not to be." The second way, "that it is not and that it is necessary for it not to be," is "a path completely unlearnable." In fragment 6 we find that the subject of these clauses is "that which is there to be spoken and thought of." The claim, then, is that anything that is an appropriate subject of thought and speech is and must be, and conversely that it is impossible to conceive of or to express in language that which is not and which cannot be. And this claim is based on the short and difficult argument that goes as follows:

> That which is there to be spoken and thought of must be. For it is possible for it to be, but not possible for nothing to be. I bid you consider this. For I bar your way from this first way of inquiry. (frag. 6, lines 1–3)

Parmenides holds that what is not cannot be coherently thought of. Any account of reality that makes mention of or depends in any way on what is not is thereby proved unacceptable. In deducing his account of the nature of reality, Parmenides applies this principle time and again:

> But the decision about these matters lies in this:
> it is or it is not. But it has been decided, as is necessary,
> to let go the one way as unthinkable and nameless (for it is not
> a true way) and that the other is and is real. (frag. 8, lines 15–18)

This consideration also tells against another way of inquiry, which is the way of thinking we ordinarily employ:

> but next [I bar your way from] the way on which mortals, knowing nothing,
> two-headed, wander. For helplessness
> in their breasts guides their wandering mind. But they are carried on
> equally deaf and blind, amazed, hordes without judgment,
> for whom both to be and not to be are judged the same and
> not the same, and the path of all is backward-turning. (frag. 6, lines 4–9)

We mortals think in a confused way, one that combines the two paths previously identified. In ways we will see below, our normal way of thinking and talking involves reference to what is not, and so by Parmenides' principle it is not a possible way to follow.

In the lengthy fragment 8 we find the arguments that establish the true nature of reality. Parmenides identifies "signs exceedingly many" on the only path that is left to pursue. The "signs," or attributes that any existing thing has, are the following:

being ungenerated it is also imperishable,
whole and of a single kind and unshaken and complete.
Nor was it ever nor will it be, since it is now, all together,
one, continuous. (frag. 8, lines 3–6)

In this way Parmenides asserts that anything we can coherently think of or speak of exists, but also that it did not come to be and will not cease to be (he argues this in lines 6–21). Further, it is undivided, unique, changeless and uniform (lines 22–5), motionless (lines 26–33), and to it belong whatever attributes can be coherently conceived to apply to anything (lines 22–5, 42–9). The lines quoted above, then, set the agenda for most of the remainder of the Way of Truth.

Further, some of the arguments may be systematically related to one another. The argument at lines 22–5 seems to take as its premise the conclusion of lines 6–21, that there is no generation or perishing; motionlessness, argued for in lines 26–33, follows from changelessness, proved in lines 22–5. However, Parmenides' obscure language makes it unclear how far this line of interpretation can be maintained.

To turn to some of the actual arguments, coming to be is eliminated in a series of arguments, one of which runs as follows:

For what birth will you seek for it?
How and from where did it grow? I will not permit you to say
or to think that it grew from what is not; for it is not be said or thought
that it is not. (frag. 8, lines 6–9)

Since perishing can be eliminated by parallel reasoning it follows that what is did not come to be and will not be destroyed. Parmenides likewise argues that what is is undivided, continuous, and complete in the sense that it has all possible parts and attributes:

It is right for what is to be not incomplete;
for it is not lacking; if it were lacking, it would lack everything. (frag. 8, lines 32–3)

If it lacked some part or attribute, a description of it would require mentioning what is not. It follows also that there is only one thing, since if there were more than one, each of them would have some attributes that the others lack (e.g., being here rather than there, or being this thing rather than another). For similar reasons what is cannot change, since change would involve acquiring or losing some part or attribute, or move, since motion would imply moving from where it is to where it is not, and yet since there is only one thing it is identical with its place:

Remaining the same in the same and by itself it lies
and so stays there fixed; for mighty Necessity
holds it in the bonds of a limit, which pens it in all round. (frag. 8, lines 29–31)

Perhaps the most difficult point in this extraordinarily difficult text is the claim that only one thought is possible, "it is."

> Thinking and the thought that it is are the same.
> For not without what is, in which it is expressed,
> will you find thinking; for nothing else either is or will be
> except that which is, since Fate shackled it
> to be whole and unchanging; wherefore it has been named all names
> mortals have established, persuaded that they are true –
> to come to be and to perish, to be and not to be,
> and to change place and alter bright color. (frag. 8, lines 34–41)

This too depends on the principle stated above. Ordinary thinking and language are unreliable, since they contain such illegitimate words and concepts as "change," "coming to be" and "is not." But this is only the beginning. Thinking and talking about ordinary physical objects are eliminated because such things cannot exist since they are thought to undergo change, to have different parts, and the like. And the same holds for the attributes ordinarily ascribed to such things. Contrastive terms such as colors, numbers and shapes cannot be admitted into the proper language, since being yellow involves not being red, being square involves not being round, being three involves not being two, and so on.

The conclusion of Parmenides' reasoning is that there is only one possible thing and only one possible thought, which is expressed in only one word, *esti*, the Greek word translated "it is." Any other thought or expression in language would inevitably involve reference, directly or indirectly, to what is not. Other thoughts we have are illusions; other words we use are nonsense; the world we see about us does not exist as such. Since our belief that it does is founded on the reports of our senses, it follows that our senses are systematically and grossly deceptive, since they tell us that the world contains many things, and that those things are different from one another and change and move and pass into and out of existence. But, Parmenides warns us in words that may reflect the strenuous resistance his arguments evidently encountered, reason should prevail over the senses; since the senses are fallible and can lead us astray, our criterion for truth should be founded not on them but on arguments that stand up to critical examination:

> Do not let habit born from much experience compel you along this way
> to direct your sightless eye and sounding ear and tongue,
> but judge by reason the heavily contested refutation
> spoken by me. (frag. 7, lines 3–6)

Fifth-Century Atomism

The Eleatic legacy to philosophy and science consisted in a "heavily contested refutation" of our ordinary ways of thinking about the world, and the immediate

task for philosophy and science was to meet this challenge one way or another. In order to establish the reality of the world we experience and to give an acceptable account of that world, it was necessary either to refute Parmenides' arguments or to find an acceptable way around them. No one challenged his reasoning, but the alternative approach was undertaken in the following generation by Empedocles, by Anaxagoras, and by Leucippus and Democritus, who were the first proponents of the ancient atomic theory. All of these thinkers accepted some Eleatic claims – notably that nothing can be generated out of sheer nonbeing and that something that is cannot perish into sheer nonbeing either. On the other hand, they all denied the Eleatic theses that there is only one thing in existence and that motion cannot exist. They all distinguished between two realms of reality, which we can call the basic realm and the phenomenal realm. The phenomenal realm is the world we see around us, which includes plurality, change, motion, coming to be and perishing, while the basic realm consists of other entities – atoms and void for Democritus, fire, air, water, and earth for Empedocles, an apparently unlimited variety of stuffs and attributes for Anaxagoras. At the basic level we have entities that are not created nor destroyed and that in other ways satisfy to a lesser or greater degree the conditions the Eleatics established for existing things. The phenomenal world is then accounted for in terms of the behavior of the basic entities. The rest of this section will explore fifth-century atomism, which in addition to being the ancestor of modern atomic theory claims our interest for its own sake as a particularly successful reply to the Eleatics and as the first attempt to work out the fine details of a physical system, as opposed to sketching out a theory in broad strokes.

Leucippus is said to be the inventor of the atomic theory. It seems that he expounded it in general terms and used it to account for the origin and present constitution of the world in a typical Presocratic manner. Democritus accepted the theory and used it to explain a wide variety of natural phenomena. He wrote many works (we have the titles of about seventy) which were on topics as diverse as mathematics, meteorology, the mind, and music, and many of which presumably explained their subject matter in terms of the behavior of atoms. More fragments attributed to Democritus survive than do for any other Presocratic philosopher, but most of them have to do with ethics and their genuineness is uncertain as well as what relation they have (if any) to the atomic theory.

The atomic theory is based on the idea that things in the phenomenal world are composed of tiny, indivisible bodies called atoms, which move in the void. In Greek, *atomos* means "uncuttable." There are an infinite number of atoms which differ from one another only in size and shape. Some are spherical, others have rough edges, others hooks, and so on. There are an unlimited number of shapes, on the grounds that there is no more reason for them to have any one shape than any other. They are ungenerated, indestructible, and unchanging. They are too small to see. They are solid but have no color nor other qualities. They are all made of the same stuff. In between atoms is void or emptiness, which allows them to preserve their identity. (If there were no void between atoms, they would unite to form one atom, which would violate the ban on generation and destruction at the atomic level.) The atoms move through the void. As they move they sometimes bump into

one another and when this happens they sometimes intertwine: their hooks become entangled or their rough edges interlock. When this happens they form a compound. When enough atoms combine in these ways the compound is big enough to be visible. Unlike their constituent atoms, compounds are generated, and they perish when struck by other compounds or atoms in such a way as to undo the tangling of atoms that holds them together. Also compounds have qualities such as colors and textures, on account of the arrangements of their atoms, and compounds can undergo change, as they take on or lose atoms or as the atoms that make them up are rearranged. In this way the observed features of the phenomenal world are accounted for in terms of the unobserved features of the atoms and void, and this constitutes the basis of the atomists' answer to the Eleatics.

However, even at the atomic level, the theory as stated violates several tenets of Eleatic philosophy. It is fundamental to atomism that there be many atoms and that they move, but the Eleatics had argued that there is no motion and no plurality. Also the atomists held that there are two basically different kinds of entities: atoms and void. Where the Eleatics had argued that anything that exists has all possible attributes, the atomists held that atoms have attributes that void lacks and vice versa. Atoms are "full" or solid, while void is "empty"; atoms are "compact" while void is "rare." And worst of all from the Eleatic point of view, atoms are called "what is" and "being" while void is called "what is not," "not-being" and "nothing." Where Parmenides had asserted that "it is not possible for nothing to be," the atomists said that what is is no more than what is not, because void is no less than atoms are. In fact, this last point of disagreement is the key to the atomists' response to the Eleatics because it is the void that permits the motion and the plurality of atoms, so the disagreement reduces to the single question whether the void (alias what is not) can be. And the interesting point here is that the nonexistence of what is not is no more and no less fundamental to Parmenides' arguments than its existence is to the atomic theory. As we have seen, Parmenides bases much of his argumentation on this principle, but the principle itself is (as is appropriate for a basic principle) undefended, only asserted. In these circumstances the atomists had a free hand to construct a system based on its denial. If they could construct a coherent system that accounts for the phenomenal world, that would constitute a positive reason to accept that system and to reject the implausible rival views of the Eleatics. Moreover, they did offer positive arguments that void (alias nothing) exists, the most interesting of which is simply

> There is no more reason for the thing to be than the nothing. (Democritus, frag. 156)

Among the phenomena the atomists treated were sensory qualities, which they accounted for in ways that may appear crude to us but which show how this theory could be applied to the phenomenal world. "Some bodies come to be hot and fiery – those composed of rather sharp and minute primary bodies situated in a similar position, while others come to be cold and watery – those composed of the opposite kinds of bodies." "He makes sweet that which is round and good-sized; astringent

that which is large, rough, polygonal, and not rounded; sharp tasting, as its name indicates, that which is sharp in body, and angular, bent and not rounded." "Iron is hard and lead is heavier, since iron has its atoms arranged unevenly and has large quantities of void in many places, while lead has less void but its atoms are arranged evenly throughout. This is why it is heavier but softer than iron." "We see that the same continuous body is sometimes liquid and sometimes solid – not suffering this change by means of separation and combination or by turning and touching as Democritus says; for it did not become solid from liquid by being transposed or changing its nature." There are four basic colors: white, black, red, and yellow. Black, for example, is produced by atoms that are rough, uneven and irregular, red by the same kinds of atoms that produce heat, but larger.

Democritus declared that a human being is a small world, a *mikros kosmos*, and treated this "microcosm" as just one more compound of atoms and void. The soul, which for the Greeks was above all the principle of life, that whose presence distinguishes the living from the nonliving, was composed of tiny spherical atoms which caused vital motions by their great mobility. Like other compounds, the soul can be destroyed, and this is what occurs upon the death of the animal. Democritus also developed a way to account for sensation and thought by means of the theory. Physical objects constantly emit films of atoms that go in all directions. Those which hit our sense organs may interact with the organs to produce sensation. Atoms of certain sizes and shapes will affect the eye and lead us to see the object; atoms of other sizes and shapes will affect the ear, the nose, and so forth. Likewise thought "takes place when images enter from outside" – presumably films of atoms that are of a different size and shape again. Dreams were explained similarly. Again, the naiveté of these accounts may make us smile, but they are important as the first attempt to explore a materialistic theory of cognition, and in some cases they seem to be on the right track: most of us would have a hard time thinking of a better type of explanation of how we smell than to suppose that the object smelled emits tiny invisible particles that go through the air to our nose and interact with the matter there in such a way as to excite our sense of smell.

Democritus also explored the consequences his theory had for the nature of knowledge:

> There are two kinds of judgment, one legitimate and the other bastard. All the following belong to the bastard: sight, hearing, smell, taste, touch. The other is legitimate and is separated from this. When the bastard one is unable to see or hear or smell or taste or grasp by touch any further in the direction of smallness, but <we need to go still further> towards what is fine, <then the legitimate one enables us to do so.> (Democritus, frag. 11)

> By convention, sweet; by convention, bitter; by convention, hot; by convention, cold; by convention, color; but in reality, atoms and void. (Democritus, frag. 9)

Knowledge of atoms and void is legitimate because it is based in reality and objective, whereas the senses give rise to merely bastard judgment because the perceptible

qualities they reveal are properties not of atoms but of compounds. In addition, they are subjective because they depend on the varying states of the sense organs of individuals. Reflecting on our epistemologically challenged situation Democritus sometimes sounds like a thoroughgoing skeptic:

> In reality we know nothing about anything, but for each person opinion is a reshaping [of the soul atoms by the atoms entering from without]. (Democritus, frag. 7)

> Either nothing is true, or at least to us it is unclear. (Democritus, reported by Aristotle)

But he also held the apparently unskeptical view that truth is in the appearance, what appears to our senses must be true. If these claims can be reconciled it will be by distinguishing as before between "legitimate" and "bastard" judgment, and supposing that whereas the latter is not knowledge, still it comes at least in part from the objective reality of the atoms which strike the sense organs. In any case, Democritus clearly acknowledged the tension between the subjectivity of the senses and the objective truth which he claimed for his theory. In an imagined dialogue between the senses and the mind he has the senses complain:

> Wretched mind, after taking your evidence from us do you throw us down? Throwing us down is a fall for you. (Democritus, frag. 125)

Conclusion

Although it is the scientific views of the Presocratics that sometimes receive more attention than their philosophical thoughts, any attempt to identify two separate sides of their thought is mistaken. Their aim as they conceived it was to understand everything that is, and this included not only the nature of the physical world but also the method for learning about the world, which led to an interest in deep issues in epistemology and metaphysics, which continued to exercise later Greek philosophers. Concern with questions of ethics and political and social philosophy, while not entirely absent, did not have the centrality they would have in the thought of Socrates, Plato, and the Stoics and Epicureans. However, philosophers' interest in the study of nature did not end in the ancient world with the close of the Presocratic era, as the works of Aristotle and also the physical thought of the Stoics and Epicureans would bear out in later generations.

References and Recommended Reading

Bracketed numbers refer to entries in the general bibliography at the end of the volume.

Primary Sources

Diels, H., *Die Fragmente der Vorsokratiker*. 6th ed. revised by Walter Kranz (Weidmann: 1951).

For a selection of Presocratic fragments in Greek with English translations and helpful commentary, the best source is

Kirk, G. S., Raven, J. E., Schofield, M., *The Presocratic Philosophers*, 2nd ed. (Cambridge University Press: 1983).

Secondary Sources

For clear and accessible introductions to the Presocratics:

McKirahan, R., *Philosophy before Socrates: an Introduction with Texts and Commentary* (Hackett: 1994).
Hussey, E., *The Presocratics* (Duckworth: 1972).
Burnet, J., *Early Greek Philosophy* (London: A. & C. Black, 1908, 1963).
Guthrie, W., *A History of Greek Philosophy*, vols. 1–2 (Cambridge University Press: 1962, 1965).

A full and lively though somewhat less accessible treatment:

Barnes, J., *The Presocratic Philosophers* (Routledge: 1982).

Two good collections of articles:

Furley, D., and Allen, R., eds., *Studies in Presocratic Philosophy* (Routledge: 1970, 1975).
Mourelatos, A., *The Presocratics* (Anchor Press: 1974).