

The Milesian Revolution

According to convention, philosophy begins in 585 BC. This is the year of the solar eclipse Thales of Miletus foretold. This prediction was significant because it was understood as an achievement of the enlightenment tradition that had taken root in the ancient world.^a Thales was the leading figure in a new field known as the “inquiry into nature.” This inquiry sparked a set of intense reflections which gave birth to a philosophical tradition as intellectuals tried to understand the issues raised by the inquiry into nature, and the enlightenment generally.

1.1 The Milesians Turn to Nature

Thales, Anaximander, and Anaximenes are the Milesian^b *inquirers into nature*. They were “naturalists.” They did not construct explanations in

^a In the period from 1250 to 1150 there was a collapse of settled conditions caused by the fall of the Hittite Empire. Early in this “Dark Age,” as part of the resulting movement of populations, Greeks speaking the Ionic dialect settled in Asia Minor on the coast of the Aegean Sea. This part of the coast came to be called “Ionia” and it was here, particularly in Miletus, the dominant city, that the enlightenment took root. Beginning in about 700, Miletus was part of a marked increase in trade and colonization throughout the eastern Mediterranean. This brought increasing awareness of the surrounding kingdoms: Babylon, Egypt, and later, Persia. The Greeks, however, were not overwhelmed by these cultures. Instead, they assimilated them in a way that would give rise to a philosophical tradition.

^b The description “Milesian” stems from their city of origin: Thales, Anaximander, and Anaximenes were from the city of Miletus in Asia Minor on the coast of the Aegean Sea. The lines of influence are not easy to reconstruct, but subsequent intellectual activity within the Presocratic period seems to have spread out from Miletus. The use of the label “Presocratic” originates with the German scholar Hermann Diels. His magisterial collection of evidence for early Greek philosophy, first published in 1903, is entitled *Die Fragmente der Vorsokratiker* (*The Fragments of the Presocratics*). This title, however, is unfortunate because it suggests that these figures lived before Socrates. In fact he overlapped with some of them, and one at least, the atomist Democritus, seems to have outlived him.

terms of the gods, as was the practice of the older school represented by Hesiod and the “theologists.” Instead, they explained things in terms of what they called a “nature.”^c Furthermore, rather than write in verse, as was the practice of the older school, they employed a new literary form to express their investigations. They wrote prose “inquiries,” the results of their work on a variety of subjects. The investigation into the past in the *Histories* of Herodotus is perhaps now the most well-known “inquiry,”¹ but Thales and the Milesians were the first inquirers. They were inquirers into nature.

The new inquiry into nature was the most prominent example of the enlightenment attitude that had taken root in the eastern Mediterranean. It was thought that human beings could flourish, and get more and more parts of their lives under control, if they would think about things clearly and systematically, rather than rely so heavily on received wisdom and traditional ways of thinking about things. Thales and the Milesians directed this intellectual optimism to what now (in our debt to them) is said to be *naturally* occurring phenomena. They abandoned the older tradition represented by Hesiod and the theologians. In contrast, they thought that reality has a nature and that rain and other natural phenomena are manifestations of changes in this nature.^d

The details of what the Milesians had in mind are difficult to determine because so little historically reliable evidence of their thought

^c The Greek word is φύσις. It transliterates as *phusis* and is an etymological ancestor of the English word “physics.” In this way, Thales and the Milesians are the first “physicists.”

^d This has led many scholars to claim that the Milesians gave birth to science. “[A] new thing came into the world with the early Ionian teachers – the thing we call science. . . . [T]hey first pointed the way which Europe has followed ever since, . . . [and so] it is an adequate description of science to say that it is ‘thinking about the world in the Greek way.’ That is why science has never existed except among peoples who have come under the influence of Greece” (John Burnet, *Early Greek Philosophy*, 1920, v). “[Περὶ φύσεως ἱστορίαν (“inquiry into nature”)] is the oldest name for what we call ‘natural science’” (John Burnet, *Plato’s Phaedo*, 1911, 99). “All the histories of Greek philosophy, from Aristotle’s time to this day, begin with Thales of Miletus. It is generally agreed that with him something new, that we call Western science, appeared in the world . . .” (Francis Cornford, *Before and After Socrates*, 1932, 5). “Western philosophy and science trace their beginnings to . . . Miletus . . .” (Richard McKirahan, *Philosophy Before Socrates*, 1994, 20).

has survived.^c Indeed, a very substantial part of what is thought about these intellectuals depends on a report in Aristotle. He placed them within a longer history of philosophy, but he wrote this history not as history for its own sake, but as part of an introduction to a set of doctrines he presents in a work now entitled *Metaphysics*. In his report of what previous thinkers thought, Aristotle says that the “first lovers of wisdom,” by whom he means Thales and the Milesians, thought that something material is the starting point of all things:

Most of the first lovers of wisdom thought that principles in the form of matter were the only principles of all things; for the original source of all existing things, and that from which a thing first comes-into-being, and into which it is finally resolved (the substance persisting but changing in its qualities), this they declare is the element and first principle of existing things, and for this reason they consider that there is no absolute coming-to-be or passing away, on the ground that such a nature is always preserved . . . for there must be some natural substance, either one or more than one, from which the other things come-into-being, while it is preserved. Over the number, however, and the form of this kind of principle, they do not all agree; but Thales, the founder of this school, says that it is water. (*Metaphysics* I.3.983b = DK 11 A 2, A 12²)

If Aristotle is right about Thales and the Milesian “school,” the naturalists and the theologians provide their accounts against different background conceptions of reality.

Anaximenes provides an example. He offered a new and revolutionary answer to the question of why drops of water sometimes form in, and subsequently fall from, the sky:

[Anaximenes says] that the underlying nature is one and infinite . . . , for he identifies it as air; and it differs in substantial nature by rarity and density.

^c This problem holds for the Presocratics generally. The evidence for what they wrote depends on discussions in the surviving works of subsequent authors, many of whom lived much later and had very different views of the world. “Our knowledge of the Presocratics, then, unlike our knowledge of Plato and Aristotle, is not gained directly from the books they wrote” (Jonathan Barnes, *Early Greek Philosophy*, 1987, 24). Furthermore, there was no tradition of writing history for the sake of history. “The modern concept of ‘history of philosophy’ did not exist in the Greco-Roman antiquity. Philosophers turned to their predecessors in order to throw light on the problems they themselves were dealing with or in order to reject competing views, not because they were interested in the historical development of human thinking” (Jorgen Mejer, “Ancient philosophy and the doxographical tradition,” 2006, 23.) For these reasons, it is exceedingly difficult to have much confidence in any very detailed theory of what the Presocratics thought.

Being made finer it becomes fire; being made thicker it becomes wind, then cloud, and when (thickened still more) it becomes water, then earth, then stones, and the rest come into being from these. He too makes motion eternal and says that change also comes to be through it.³ (DK 13 A 5; Simplicius,^f *Commentary on Aristotle's Physics*)

The older theological answer to the question, the answer Hesiod gives in his poem *Works and Days*, takes the form of an explanation in terms of the mind of the god, Zeus. According to this account of the phenomenon, rain is a manifestation of Zeus' stormy mood:

1. Rain falls when Zeus the Storm King is stormy in mood.
 2. Zeus the Storm King is stormy in mood.
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3. It is raining.

Anaximenes, by contrast, shows no interest in any such answer that makes reference to the traditional pantheon of gods. Instead, he adopts the style of explanation that defines the new school of Thales and the Milesian naturalists. Anaximenes tries to explain rain as a condensed

^f Simplicius (late-fourth to mid-fifth century AD) was one of the last of the Neoplatonists, and he is the only source for some of the texts of the Presocratic philosophers. Without Simplicius, some of these philosophers would be mere names. The details of his connection to the texts are complicated, but the primary points are these. The Neoplatonists for the most part thought of themselves as recovering the true philosophy which Plato had been the last to see at all clearly. The object was philosophical truth, not historical fact. To understand Aristotle, who was obviously influenced by Plato, but who also criticized Plato, the Neoplatonists settled for a middle ground that allowed them to treat Aristotle as an authority on logic and physics, but not on the higher realms of reality. Simplicius, in discussing Aristotle, quotes some of the earlier philosophers Aristotle mentions and discusses. For these quotations, Simplicius seems to have relied on summaries of Theophrastus' writings on the Presocratic philosophers. Theophrastus (370–285) succeeded Aristotle as head of the Lyceum, the school Aristotle had founded in 335. Theophrastus' own writings have almost entirely been lost, but they were summarized by Alexander of Aphrodisias. These summaries themselves have been lost, but some extracts are preserved in Simplicius' commentaries on Aristotle's works. Alexander of Aphrodisias (second to third century AD) was an Aristotelian commentator who aimed to articulate and defend Aristotle's philosophy. The Neoplatonist commentators knew and consulted Alexander's work in their attempt to incorporate Aristotle's work into their reconstruction of the true philosophy that Plato had been the last to glimpse.

state of air. Put more formally, his explanation of rain may be recast as follows:

1. Rain is a state of the nature of reality: rain is condensed air.
 2. The air here is condensed now.
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3. It is raining.

On this account, the condition in the world that makes the sentence “It is raining” true is a state of nature with a certain history. In opposition to the theologians, rather than conceive of the signs for the coming of rain as an indication of Zeus’ mood, Anaximenes seems to have thought of these signs as an indication of a sequence of events ending in the condensation of air.^g

The Milesians left no record of how they arrived at the conception of reality Aristotle takes to underlie their explanations, but perhaps it was natural for them to think that the older explanations in terms of the traditional pantheon of gods were inadequate because really the behavior of the gods is determined by local customs and tradition.⁴ A more objective conception of reality was necessary. The question would be how to construct it, and a natural strategy would have been to revise the theological conception so that the pantheon is replaced by something independent of tradition. This might be accomplished by stripping the personal attributes from the notion of a responsible agent and applying the remaining idea of causation directly to reality.^h Reality would have a “nature,” and whether it rains, for example, would be up to reality, not

^g Richard McKirahan stresses just how “revolutionary” this was. “[W]here Homer and Hesiod worked within traditional frameworks, the early Ionians rejected tradition as a source of knowledge It is hard to underrate . . . the intellectual courage it took to make this step [Thales and the Milesians] rejected Homer’s and Hesiod’s authority and challenged a way of looking at the world that was universal both among the Greeks and among all the foreign peoples known to the Greeks at the time” (*Philosophy before Socrates*, 1994, 73).

^h This change did not happen all at once. Anaxamander, for example, says that “the source of coming-to-be for existing things is that into which destruction, too, happens, ‘according to necessity; for they pay the penalty and retribution to each other for their injustice, according to the assessment of Time’” (DK 12 B 1). In this fragment, he still seems to be thinking of the natural order in terms of agency. As Heraclitus would later observe, the steering principle in the universe “does not and does consent to be called by the name of Zeus” (DK 22 B 32).

because it has a mind and makes choices,⁵ but because rain is a function of changes in the “nature” of reality.⁶

This new conception of reality must have occurred as part of a more general attempt to reach a more secure understanding of things once people noticed and were bothered by the different theological traditions and their conflicts with one another. Since it is now difficult to take the accounts of Hesiod and the theologians seriously, it is necessary to keep in mind that the Milesian solution was not an immediate success. Reality did not appear the way they claimed it is. This, in turn, raised the question of how they *knew* that reality has a nature and that naturally occurring phenomena are manifestations of changes in this nature. The theologians had relied on a traditional source to validate their stories. They relied on the Muses.ⁱ Hesiod relies on them in *Works and Days* and *Theogony*. This appeal to divine authority had traditionally gone unchallenged, but the new enlightenment attitude that had taken root in this part of the ancient world was making it increasingly difficult for intellectuals to have confidence in the traditional ways. Thales and the Milesians might have capitalized on this skepticism if they had offered arguments for their new inquiry into nature and its novel conception of reality, but this is something they apparently did not do.

This lack of justification prompted *philosophical* questions, both about the inquiry into nature and about the enlightenment assumption generally. To understand the case for the new inquiry into nature and its novel conception of reality, intellectuals began to ask epistemological and ontological questions. They asked questions about the kinds of cognition involved in knowledge, and they appealed to their answer to this question to help settle the original question of what really exists. In the surviving reports of what they wrote, Thales and the Milesian naturalists themselves do not explicitly engage in this philosophical project. Yet, it is clear as a matter of history that a deep and sustained interest in various philosophical questions soon emerged and took center stage as the intellectuals who followed the Milesians tried to understand both the inquiry into nature and the enlightenment assumptions. In this way, although Thales and the Milesians may have been more scientists than philosophers,⁷ their inquiry into nature gave birth to a philosophical tradition.

ⁱ The Muses are characters of mythology. According to the myth, before Hera became his wife, Zeus took the form of a shepherd and consorted with Mnemosyne. She gave birth to nine daughters, the Muses. In the cultural tradition that created and was informed by this myth, all inspired knowledge was transmitted to human beings by the Muses. Hence it became a standard practice to invoke the Muses to confirm the content of what was about to be said. Hesiod begins his *Works and Days* this way: “Muses of the sacred spring . . . Who give glory in song, Come sing Zeus’ praises . . .”

1.2 Parmenides

Parmenides of Elea^j is a towering figure in the new philosophical tradition.^k He took some of the first steps to understand the enlightenment contrast between thinking clearly on the one hand, and relying on habit and tradition on the other. He used his understanding to answer the question of what exists, the question to which the Milesians had given such a revolutionary answer.

In his poem, certain parts of which are difficult to understand, Parmenides distinguishes three *paths for inquiry* in the search for knowledge. He identifies the path to knowledge as “the path of Persuasion” that “attends Truth.” This is the path corresponding to “it is”:

And the goddess greeted me kindly, and took my right hand in hers, and addressed me with these words: Young man, you who come to my house in the company of immortal charioteers with the mares which bear you, greetings. No ill fate has sent you to travel this road – far indeed does it lie from the steps of men – but right and justice. It is proper that you should

^j Elea was a Greek city in what is now southern Italy. This city is far removed from Miletus, which was located in what is now Turkey. The connection is not known, but the link from Parmenides to Thales and the Milesians may have run through Xenophanes. Xenophanes came from Colophon, near Miletus, and he may have moved to southern Italy. Parmenides himself, in his surviving work, does not mention any of his predecessors by name.

^k Although Parmenides is one of the most important of the early philosophers, he is not the first philosopher in the ancient philosophical tradition. Xenophanes, who preceded Parmenides, said that “[n]o man knows, or ever will know, the truth about the gods and about everything I speak of; for even if one chanced to say a complete truth, yet oneself knows it not; but seeming is wrought over all things” (DK 21 B 34). In the light of this and similar remarks about the nature of knowledge, Edward Hussey calls Xenophanes “the first Greek philosopher”: “The supporters of the theoretical approach in cosmology were forced henceforward to apply that same approach to higher-order questions about knowledge, about reasoning and reasonableness, about the epistemic status of the theoretical approach itself. The person whom our evidence shows unambiguously to have been concerned with these problems is Xenophanes of Colophon (active before and around 500 BCE). It is Xenophanes, then, who has the best claim to the title of ‘the first Greek philosopher.’” (Edward Hussey, “The Beginnings of science and philosophy,” 2006, 13.) Xenophanes, nevertheless, despite being first, had much less influence than Parmenides. “Parmenides had, through the medium of Plato, an unrivaled influence on the course of Western philosophy” (Jonathan Barnes, *Early Greek Philosophy*, 2006, 130).

learn all things, both the unshaken heart of well-rounded truth, and the opinions of mortals, in which there is no true reliance. (DK 28 B 1; Sextus Empiricus,¹ *Against the Professors* VII; Simplicius, *Commentary on Aristotle's On the Heavens*)

Come now, I will tell you (and you must carry my account away with you when you have heard it) the only ways of inquiry there are for knowing.⁸ The one, that it is and that it is impossible for it not to be, is the path of Persuasion (for she attends upon Truth); the other, that it is not and that is needful that it is not, that I declare to you is an altogether indiscernible track; for you could know what is not . . . (DK 28 B 2; Proclus,^m *Commentary on Plato's Timaeus*; Simplicius, *Commentary on Aristotle's Physics*)

It is not at all clear what Parmenides means by “it is,” but the main line of thought is reasonably straightforward. He thinks that “it is” corresponds to the path to knowledge but that the inquirers into nature have taken a different path. Their path is not the path of persuasion and hence their inquiries do not result in knowledge. Their path, to use Parmenides’ word, is “backward-turning”:

I hold you back [from this way of inquiry, that it is not, and next from the way] on which mortals wander knowing nothing, two-headed; for helplessness guides the wandering thought in their breasts, and they are carried along, deaf and blind at once, dazed, indiscriminating hordes, who believe that to be and not to be are the same and not the same; and the path taken by them all is backward-turning. (DK 28 B 6; Simplicius, *Commentary on Aristotle's Physics*)

¹ Sextus Empiricus (second to third century AD) was an empiricist physician and philosopher in the Pyrrhonian skeptical school. Very little is known about him. Three of his philosophical works have survived. Two of these works are grouped together under the title *Adversus Mathematicos* (*M*), which translates as *Against the Professors*. This work is a comprehensive criticism of the ancient schools of thought and hence an important source of information about the ancient philosophical tradition. The other philosophical work is *Outlines of Pyrrhonism* (*PH*). In addition to his philosophical works he also wrote some medical works, which have not survived.

^m Proclus (412–485) was a Neoplatonist and the last major Greek philosopher to work before the Christian Emperor Justinian forbade the pagans from teaching in the schools in 529 AD. Proclus’ interest in early Greek philosophy is driven by his interest in Platonism. “Proclus is inclined to give a positive, though neoplatonically coloured account of those early Greek philosophers whom he believes to be important forerunners of a dogmatic Plato. His selection is restricted to individuals who figure in Plato’s dialogues . . .” (Jaap Mansfeld, “Sources,” 1999, 37).

The “mortals,” including Thales and the Milesians,⁹ turn back from the path of persuasion when they draw conclusions for which “there is no true reliance” and hence which are not knowledge. Rather than stay on the path of “it is,” they allow that “it is and is not” is true of things.

An example helps illustrate what Parmenides has in mind. Consider Anaximenes’ inquiry into the nature of rain. The impressions to which he assents have “no true reliance.” He says that air is the nature of reality and that drops of water come into and go out of existence as a state of air when it rains. For his knowledge of rain, Anaximenes relies on ordinary experience. He does not make the point explicitly, at least not in the extant fragments, but presumably he expects his readers to think that they know from experience *that* water droplets sometimes form in the sky and subsequently fall to the ground. What they do not know, and what he tries to explain, is *why* this happens. Anaximenes explains why this happens by saying that air is the nature of reality and that a droplet of water is air in a condensed state. In this way, as Parmenides understands the explanation, Anaximenes does not stay on the path defined by “it is.” He allows that “it is and it is not” is true of water droplets: they come into and go out of existence in terms of air.

Parmenides himself was convinced that experience is misleading and that the inquirer should make judgments in terms of cognition he describes very vaguely as “reason.” He insists that the inquirer should “judge by reason,” not lapse into habits enforced by “much experience”:

For never shall this be forcibly maintained, that things that are not are, but you must hold back your thought from this way of inquiry, nor let habit, born from much experience, force you down this way, by making you use an aimless eye or an ear and a tongue full of meaningless sound: judge by reason the strife-encompassed refutation spoken by me. (DK 28 B 7; Plato, *Sophist*; Sextus Empiricus, *Against the Professors* VII)

Anaximenes, accordingly, does lapse into such habits. His conclusion about what exists depends partly on what Parmenides describes as “much experience.” Anaximenes concludes that drops of water *come into* and subsequently *go out of existence*. In the language of the three paths of inquiry, Anaximenes says of rain that “it is and it is not.”

Parmenides thought that neither drops of water nor anything else comes into or goes out of existence. He thought that the widespread belief to the contrary has its basis, not in “reason” and cognition that follow the path of persuasion (the path that issues in knowledge), but in the “habit born of much experience,” a habit that manifests itself in the customary use of

names. In truth, according to Parmenides, the things that names suggest are “real” are in fact just names:

For there neither is nor will be anything else besides what is, since Fate fettered it to be whole and changeless. Therefore it has been named all the names which mortals have laid down, believing them to be true-coming-into-being and perishing, being and not being, changing place and altering bright color. (DK 28 B 8; Simplicius, *Commentary on Aristotle’s Physics*)

The details in this passage are not easy to grasp, but the rough idea is that people use names on the false presupposition that they experience objects that come into and go out of existence. This use of names is what underwrites the mistaken “habit, born of much experience.”¹⁰

Parmenides supposes that he himself, because he employs “reason,” has the truth about existence. The poem, however, shows that he is keenly aware that to follow “it is” is to insist on a paradoxical conception of reality. This conception, as he says, is far from “the steps of men,” but nevertheless Parmenides is convinced that the path of persuasion that attends truth, the path that ends with knowledge, begins with and strictly adheres to the consequences of the principle that “it is”:

There still remains just one account of a way, that it is. On this way there are verymany signs, being uncreated and imperishable it is, whole and of a single kind and unshaken and perfect. (D 28 B 8; Simplicius, *Commentary on Aristotle’s Physics*)

Parmenides thinks that “reason” shows that reality is not how the inquirers into nature think it is. If they had taken the path to knowledge, they would conclude that nothing comes into or goes out of existence, and that reality is “whole and of a single kind and unshaken and perfect.”

One premise in Parmenides’ argument for this paradoxical conclusion is that whatever exists is both “uncreated and imperishable.” The reasoning for the two conjuncts is symmetrical. In each case, it proceeds by *reductio ad absurdum*. It is assumed, in the first case, that something has come into existence. Given this assumption, it is supposed to follow that “it is not” is true of the thing in question at the times before it came into existence. This consequence, however, is supposed to be absurd. According to Parmenides, “it is not” cannot be true of anything. Otherwise, something would both exist and be nothing at all. Hence, he concludes that “coming to be is extinguished”:

It never was nor will be, since it is now, all together, one, continuous. For what birth will you seek for it? How and whence did it grow? I shall not allow you to say nor to think from not being: for it is not to be said nor thought that it is not; and what need would have driven it later rather than earlier, beginning from nothing, to grow? Thus it must either be completely or not all. Nor will the force of conviction allow anything besides it to come to be ever from not being. Therefore Justice has never loosed her fetters to allow it to come to be or to perish, but holds it fast. And the decision about these things lies in this: it is or it is not. But it has in fact been decided, as is necessary, to leave the one way unthought and nameless (for it is no true way), but that the other is and is genuine. And how could what is be in the future? How could it come to be? For if it came into being, it is not: nor is it if it is ever going to be in the future. Thus coming to be is extinguished and perishing unheard of. (DK 28 B 8; Simplicius, *Commentary on Aristotle's Physics*)

Parmenides realized that people believe they experience objects that come into and go out of existence, but he was convinced that such thinking is confused. It is the unfortunate judgments of “mortals.” These confused mortals (“knowing nothing wander, two-headed,” as he unflatteringly describes them) wrongly persist in the common but false thought that reality consists in objects that come into existence, change in various ways, and go out of existence.

This argument against the “mortals” is central for understanding Parmenides and his importance. His work is an early and seminal effort to identify the kind of cognition involved in knowledge of the structure of reality. He does not identify judgment in accordance with “reason” or with “much experience,” with a determinate set of cognitive procedures. He seems instead to understand the contrast imprecisely, but he does provide an example. The argument against coming into and going out of existence is an example of judgment in accordance with “reason.”

In this way, Parmenides’ work figures in a line of thought that runs through much of the ancient philosophical tradition. Subsequent philosophers, beginning with his successors in the Presocratic period, see Parmenides’ project as central for philosophy. To get beyond traditional thinking, and hence to gain control over more of the world, they thought it was necessary to distinguish the way things *appear* from the way things *are* (and would appear from an objective point of view). For Parmenides, and the philosophical tradition that depends on him, this distinction turns on the difference between two kinds of cognition: “experience” and “reason.”

1.3 A Defense of the Inquiry into Nature

Empedocles, Anaxagoras, Leucippus, and Democritusⁿ figure in the last of the three parts into which the Presocratic period naturally subdivides. These Presocratics are united by their attempt to work out in more detail Parmenides' analysis of the enlightenment contrast between clear and traditional thinking as a matter of "reason" versus "experience." They appeal to the result of this work to answer the question of what exists and to defend the inquiry into nature.

On the question of what exists, these Presocratics suppose that the nature of reality consists in a *plurality* of objects. These objects come together and come apart. Empedocles says that four things come together and separate according to what he terms "Love" and "Strife":

A twofold tale I shall tell: at one time they grew to be one alone out of many, at another again they grew apart to be many out of one. Double is the birth of mortal things and double is their failing; for the one is brought to birth and destroyed by the coming together of all things, the other is nurtured and flies apart when they grow apart again. And these never cease their continual interchanging, now through Love all coming together into one, now again each carried apart by the hatred of Strife. (DK 31 B 17; Simplicius, *Commentary on Aristotle's Physics*)

Come now, I shall tell you first what in the beginning the sun and all those others which we now see became distinct – earth and swelling sea and moist air and Titan sky. (DK 31 B 38; Clement, *Miscellanies*^o)

Empedocles' language now sounds particularly archaic, but there are more modern-sounding examples. Democritus thinks that atoms and void are the nature of reality:

Democritus believes that the nature of the eternal things is small substances unlimited in multitude. As a place for these he hypothesizes something else, unlimited in size, and he calls the place by the names of

ⁿ These Presocratics are mixed geographically. Empedocles came from Acragas in southern Italy, but the others were from the east. Anaxagoras came from Clazomenae, and Democritus came from Abdera. Clazomenae is north of Miletus, and Abdera is further north and east. Leucippus is an obscure figure whose life is unknown.

^o Clement of Alexandria (second to third century AD) was an early Christian theologian. In his *Miscellanies*, he allows a place for philosophy but emphasizes the superiority of faith over philosophy.

“void,” “nothing,” . . . He holds that the substances are so small that they escape our senses. They have all kinds of forms and shapes and differences in size. Out of these as elements he generates and combines visible and perceptible bodies. The substances contend with one another and move in the void on account of their dissimilarity and the other differences I mentioned, and as they move they strike against one another and become entangled in a way that makes them be in contact and close to one another.¹¹ (DK 68 A 37; Simplicius, *Commentary on Aristotle’s On the Heavens*)

But what does Democritus say? – That substances infinite in quantity, indivisible and indestructible, and also qualityless and impassive, are carried about scattered in the void. When they approach one another or collide or are entangled, the aggregates appear as water or fire or plants or men, but all things really are what he calls these indivisible forms and nothing else. For there is no generation from what does not exist, while from the things that exist nothing can be generated in virtue of the fact that, because of their hardness, the atoms neither are affected nor change.¹² (Plutarch, *Against Colotes*, 1110f–1111a)^P

Democritus supposes that atoms move through the limitless void and that groups of these atoms sometimes hold together or separate upon becoming entangled or disentangled.

Although these Presocratics recognized certain forms of change, they remained in agreement with Parmenides about the impossibility of coming into and going out of existence. So, for example, according to Anaxagoras, when something is said to come into or go out of existence what *really* happens is that certain “things that are” become mixed together or separated apart:

The Greeks are wrong to recognize coming into being and perishing; for nothing comes into being nor perishes, but is rather compounded or dissolved from things that are. So they would be right to say coming into being is composition and perishing dissolution. (DK 59 B 17; Simplicius, *Commentary on Aristotle’s Physics*)

To say that something comes into or goes out of existence is to say something false. As Anaxagoras puts the point, the “Greeks are wrong to recognize coming into being and perishing.”

^P Plutarch (46–c. 122) was a Greek biographer and essayist. Colotes was a student of Epicurus.

This rejection of coming into and going out of existence was not thought to entail that ordinary assertions must be rejected completely. Nothing really comes into or goes out of existence, but these Presocratics thought that this way of talking, although “not far-reaching,” was part of a “custom” acceptable for everyday purposes. Empedocles makes the point:

Another thing I will tell you: of all mortal things none has birth, nor any end in accursed death, but only mingling and interchange of what is mingled – birth is the name given to these by men (DK 31 B 8). And when they are mixed in the form of a man or of plants or of birds, then they say that this comes into being; but when they are separated, they call this wretched fate: they do not name them as is right, but I myself comply with their custom (DK 31 B 9). Fools – for they have no far-reaching thoughts, since they think that what before did not exist comes into being, or that a thing dies and is completely destroyed (DK 31 B 11). (These three fragments are from Plutarch’s *Against Colotes*)

In “wretched fate,” or death, nothing has really gone out of existence. Death is not a matter of going out of existence. Rather, according to Empedocles, what really happens in what is called “death” is that certain objects become arranged differently. This fact about reality is obscured by the customary practice of referring to this sort of rearrangement among objects by saying that the dead man “is no longer,” and by thinking of death as a way of going out of existence.

The atomists make a similar point about “custom.” Democritus supposes that the ordinary belief in sweetness stems from the customary way to talk about features of the atoms and void. When experience issues in the judgment that something is sweet, the judgment is supposed to be false because “in truth” there are only “atoms and void” in a certain arrangement:

He says that “. . . in reality we know nothing about anything; but for each of us there is a reshaping-belief,” and further that “. . . to know in reality what each thing is in character is baffling” (DK 68 B 7, 8). Democritus sometimes does away with what appears to the senses, and says that none of these appears according to truth but only according to opinion: the truth in real things is that there are atoms and void. “By custom, sweet,” he says, “by custom, bitter; by custom, hot; by custom, cold; by custom, color; but in truth, atoms and void” (DK 68 B 9). He says there are two kinds of knowing, one through the senses and the other through the intellect. Of these he calls the one through the intellect “legitimate,”

attesting its trustworthiness for the judgment of truth, and that through the senses he names “bastard,” denying it inerrancy in the discrimination of what is true. To quote his actual words: “Of knowledge there are two forms, one legitimate and the other bastard. To the bastard belong all this group: sight, hearing, smell, taste, touch. The other is legitimate and is separate from this” (DK 78 B 11). (These fragments are from Sextus Empiricus, *Against the Professors* VII)

People in everyday life use their tongues to detect certain arrangements of atoms and void, and it is their custom to express their judgment by saying that some object is, or is not, sweet. They think that sweetness is a property of objects and that they can detect its presence, but, in fact, according to Democritus, there really are no objects that have the property of being sweet.

This ontology is far more radical than it may first appear. In reality, as it is usually conceived, objects come into existence, persist through change, and eventually go out of existence. According to Empedocles and Democritus, there are *no such objects*. The only objects are ones that exist eternally. They do not come into or go out of existence. They become arranged in various ways, but nothing comes into or goes out of existence because arrangements of objects are not themselves objects and hence are not objects that come into or go out of existence.¹³

To explain why reality appears otherwise, Democritus seems to have tried to build on the prior suggestion in Pamenides that “much experience” can make false propositions appear true. The atomists thought that sense experience is a “bastard” form of judgment. Things appear as they do because these appearances are generated by beliefs formed and retained in this illegitimate form of judgment. Such judgments are perfectly good for getting along in most circumstances in ordinary life, but this “bastard” form of judgment *does not produce “legitimate” knowledge*. According to Democritus, judgment in terms of “reason” is somehow “separate” from judgment in terms of sense experience. This “separate” judgment provides “legitimate” knowledge of what exists.¹⁴

The atomist epistemology is some improvement over Parmenides’ suggestive remarks, but clearly serious problems remain. First of all, Democritus has not identified his two forms of judgment with a precise set of cognitive procedures. He characterizes judgment in terms of “reason” by negation: he says only that it is not judgment in terms of sense experience. Secondly, one may well wonder whether “reason” can be more legitimate than “experience” since “reason” would seem to

depend on such experience for information. Democritus himself makes the point:

Wretched mind, do you take your assurances from us and then overthrow us?
Our overthrow is your downfall. (DK 68 B 125; Galen, *Outline of medical empiricism*)⁹

Throwing down the senses is a fall for “reason” because any persuasive argument to undermine judgment produced in sense experience must be based on more reliable judgments. Yet, in the absence of a precise characterization of reason, it is not clear that such judgments are more reliable. Indeed, the suggestion in the passage is that they are not more reliable. This worry threatens to undermine the atomist thesis that in reality only atoms and the void exist.

In spite of these problems, it is possible to see how this epistemology is supposed to provide a defense of the enlightenment tradition in general and of the inquiry into nature in particular. The Milesians may have followed a “backward-turning” method of inquiry, as Parmenides argued. Nothing essential, however, is supposed to be wrong with the inquiry into nature itself. Traditional judgments about what exists are false, just as Parmenides thought, but it is supposed to be unnecessary to reject the ordinary forms of speech used to make these judgments. The inquiry into nature is supposed to describe reality, not by supposing that objects in the traditional conception of reality exist in terms of some underlying nature, such as water, as the first inquirers into nature may have thought, but by supposing that the traditional way to talk about objects as coming into and going out of existence is a confused way to describe the various arrangements of objects that constitute the nature of

⁹ Galen (c. 129–200) is a physician, second in fame in antiquity only to Hippocrates (c. 460–370), the father of the art of medicine. But like Sextus Empiricus, Galen also was a philosopher. Galen’s *Outline of Medical Empiricism* concerns a philosophical debate among Hellenistic doctors over knowledge in connection with medicine: “This debate, which arose towards the middle of the third century BC, concerns first of all the nature of medical knowledge. But though the debate also addresses questions which are due to the specific nature of medical knowledge, what is at issue for the most part is the nature of expert or scientific knowledge quite generally, even if this issue is discussed almost exclusively in terms of medicine. It was in this debate that, for the first time, a sharp and clear contrast was developed between rationalism and empiricism. In fact the very terms *empiricist* and *rationalist* have their origins in this debate” (Michael Frede, “Introduction” in *Galen. Three Treatises on the Nature of Science*, 1985, ix).

reality.^f This insight into existence and the structure of reality is supposed to be known in the cognition that constitutes the judgments of “reason,” not the habits “born from much experience,” habits that impede human understanding and progress.

Notes

1. The Greek noun ἱστορία (“inquiry”) transliterates into English as *historia*, but it was not originally restricted to investigations into the past. John Burnet and Charles Kahn explain the etymology: “The restriction of the term to what we call ‘history’ is due to the fact that Herodotus followed his predecessors in calling his work ἱστορίη, and his predecessors belong to Miletus, where all science went by that term. The term ‘Natural History’ partly preserves the ancient sense of the word, a circumstance due to the title of Aristotle’s Περὶ τῶ ζῶα ἱστορία (*Historiae Animalium*)” (John Burnet, *Plato’s Phaedo*, 1911, 99–100). “Greek prose was at first employed primarily for the publication of Ionian ἱστορίη: for presenting the results for systematic ‘inquiry’ or ‘research’ on a variety of subjects from astronomy to biology, including historical research in connection with the description of lands and people (as in the travel book of Hecataeus, a Milesian contemporary of Heraclitus). The old Ionic term ἱστορίη soon became fixed in its narrow application to ‘history’ in our sense, because it was this type of investigation that first gave birth to major works of prose literature: the *Histories* of Herodotus and Thucydides” (Charles Kahn, *The Art and Thought of Heraclitus*, 1979, 96).
2. The abbreviation “DK” refers to *Die Fragmente der Vorsokratiker* by H. Diels and W. Kranz (1952), which is a standard edition of the ancient writings about the Presocratics. To each Presocratic, DK assign a numbered chapter divided into testimony (A) and quotation (B). So, for example, ‘DK 11 A 2’ refers to the second entry in the testimony in the chapter devoted to Thales. In this way, for the first time, virtually all the material on the Presocratics was collected together

^f “[T]here is a real world in which we are contained, and appearances result from our interaction with the rest of it. We cannot accept those appearances uncritically, but must try to understand what our own constitution contributes to them. To do this we try to develop an idea of the world with ourselves in it, an account of both ourselves and the world that includes an explanation of why it initially appears to us as it does” (Thomas Nagel, *The View from Nowhere*, 1986, 68). Cf. Brad Inwood, *The Poem of Empedocles*: “Empedocles concludes that no mortal thing, that is, none of the compounded objects of our ordinary experience, ever really comes into being in . . . the strictest sense possible, which would mean that they came to be from nothing. Reference to birth and death, coming-to-be and passing-away, is a natural human failing, the crystallization in conventional language of the limited perceptions of men. . . . What really happens in such cases is a mixture and ‘interchange’ of basic entities” (2001, 34).

- in a source book. It became the standard work for research and went through several editions, four in Diels' lifetime and two posthumously directed by Kranz. It is somewhat dated now, but it still provides the standard reference.
3. Except when otherwise noted, my translations diverge little if at all from those in *The Presocratic Philosophers* by G. S. Kirk, J. E. Raven, and M. Schofield (1983).
 4. This is the generally accepted explanation for the break with the older school of thought. For a recent statement, see Richard McKirahan, *Philosophy before Socrates*, 1994, 74. "[The Greeks] faced two . . . [prestigious] civilizations, the Egyptian and the Mesopotamian, each with its own pantheon, mythology, and views on the origin of the world. In this unusual if not historically unique situation, it is understandable that a few highly intelligent and reflective people should have come to question their own religious tradition and the others as well, inventing and developing ways of examining beliefs for their plausibility and intelligibility. It is also understandable that this examination should have led to dissatisfaction with all known religions, mythologies, and world systems, and to a desire to replace them with more satisfactory accounts. . . ." Cf. Xenophanes, DK 21 B 5: "If cattle and horses or lions had hands, or were able to draw with their hands and do the works that men can do, horses would draw the forms of gods like horses, and cattle like cattle and they would make their bodies such that they each had themselves."
 5. One of the important consequences of the Milesian revolution, important especially in the development of physical science, is the introduction of geometric models for the heavens and the motions of celestial bodies. These models replace the older ones in terms of mind. Charles Kahn makes this point: "Now the important thing is not that the early models were so crude – that is only to be expected. What was important was that a geometric model for celestial motions had been proposed, with explanatory intent. At the technical level, it is this model that essentially defines the new philosophical view of the natural world as a κόσμος, a system governed by regularity and order. And it is this same model that brings into existence scientific astronomy in a new sense: a structured theory capable of explaining (or trying to explain) the observed phenomena of the heavens. In this sense the cosmology of Anaximander and Parmenides is closer in principle to that of Ptolemy and Copernicus than it is to Hesiod or to any of the predecessors – unless one finds a geometric model in Babylon" ("The origins of Greek science and philosophy," 1991, 3–4).
 6. "In the earliest Greek literature the word αἴτιος is used in reference to responsibility, usually with the added connotation of blame. The extension of the notion of responsibility to all the objects and events of experience marks the beginning of the study of causation. The early Greek philosophers, so far as we know, did not speak specifically of causes; yet their systems may be considered as attempts to place the ultimate responsibility for the nature of things" (Philip DeLacy, "The problem of causation in Plato's philosophy," 1939, 97–98). Cf. William Heidel, *The Heroic Age of Science*, 1933, 6: "What is undoubtedly true of primitive man is that, while he can not strictly be said to

regard the world as composed or controlled by persons, because ‘person’ conveys a more clearly defined idea than he himself has framed, he looks upon all that occurs about and within him as the result of agencies akin to himself. The means he employs in the effort to control nature are essentially the same as those which he finds effective in dealing with his fellows. According to the stage which he attains in the organization of his world, his procedure may be described as magic or religion; but it is practically impossible, even at the highest stage yet reached by man, to divest the concept of causation, which underlies every effort at explaining the world, of its primal associations of nature. And when one speaks of processes of nature the analogy which from the first held the interest of man is no less apparent.”

7. “There does not seem to be anything philosophical about Thales’ views, at least the way we understand philosophy . . .” (Michael Frede, “Aristotle’s account of the origins of philosophy,” 2004, 28). “No doubt, *as we use the terms today*, the Milesians were scientists (‘physicists’ and ‘physiologers,’ as Aristotle called them, those who studied *physis*, ‘nature’), not philosophers. That is to say, the kinds of issues with which they were concerned are what we today would all agree to be scientific issues, problems to be dealt with by the specialists we call *scientists*” (Merrill Ring, *Beginning with the Pre-Socratics*, 2000, 32). “Many people have turned expectantly to the beginnings of Greek philosophy, only to find that the first philosopher they meet, Thales in the sixth century BC, held, apparently, that ‘everything is water.’ Anyone teaching ancient philosophy has to cope with the bafflement that this discovery tends to produce. It is an odd beginning to a philosophical tradition. Yet *something* happens in the sixth century, later to acquire the name *philosophia* or love of wisdom, which we can recognize as philosophical. What exactly is it? It is in keeping with what we have seen of the varied and disputatious nature of ancient philosophy that this question is quite hard to answer” (Julia Annas, *Ancient Philosophy. A Very Short Introduction*, 2000, 94). Part of the reason for this difference of opinion among scholars is tied to a lack of agreement about the nature of philosophy itself. Edward Hussey makes the point: “In general, any particular understanding of ‘early Greek science and philosophy’ inevitably involves some general conception of *science* and of *philosophy*. It is hardly surprising, given the contestability of any such conceptions, that many different kinds of answer to these two questions are to be found in recent scholarship” (Edward Hussey, “The beginnings of science and philosophy,” 2006, 17).
8. A more usual translation of $\nu\omicron\eta\sigma\alpha\iota$ here is “to be thought of,” or “thinking,” but I follow Charles Kahn by translating the word as “knowing.” The primary question with which Parmenides concerns himself in the poem is what sort of thinking or cognition results in the grasp of truth, and this makes “knowing” the right translation, not the more general “thinking.” Kahn himself puts the point as follows: “The problem which Parmenides raises *from the beginning of his poem* is . . . the problem of knowledge, more exactly, the problem of the search for

- knowledge, the choice between alternative ways for thought and cognition to travel on in pursuit of Truth” (“The thesis of Parmenides,” 1968, 703).
9. Charles Kahn stresses the importance of this point: “Most historians have followed Plato and Aristotle in seeing Parmenides against the background of earlier Greek cosmology. Thus they interpret his doctrine of the one Being as a response to, and criticism of, the various Ionian monisms which sought to explain the natural universe on the basis of a single cosmic principle: air, water, fire, the unlimited. . . . For my part, I am convinced that there is a very intimate connection between Parmenides’ argument and the doctrines of his Ionian predecessors, and I doubt whether we can understand him properly if this historical continuity is lost sight of” (“The thesis of Parmenides,” 1968, 702).
 10. Despite the obscurity of the texts, this general interpretation is standard. Cf. Charles Kahn: “Language and ontology in Plato’s *Cratylus*,” 1973, 154: “In considering the νόμος-φύσις antithesis in connection with the theory of names, it should be borne in mind that the philosophically relevant sense of νόμος goes back to Parmenides, and is fairly constant in the post-Eleatic tradition down to Democritus. The point is not only that names are ‘conventional’ and man-made, but that they express a false theory of reality. That is very clear in Parmenides . . .”
 11. Richard D. McKirahan, Jr., *Philosophy Before Socrates*, 1994, 305.
 12. Jonathan Barnes, *Early Greek Philosophy*, 1987, 252.
 13. Christopher Shields makes the point: “[Democritus] understands his atomism to render great stretches of sensory data non-objective and merely conventional. He says directly that in reality there are *only* atoms and the void; whatever else exists does so only by convention, as a sort of convenient fiction” (*Classical Philosophy*, 2003, 22). “There are in fact change and plurality; but all change is merely alteration and not generation; and all plurality is a plurality of atoms swirling in the void. We do perceive the world; but our perceptions yield only bastard judgments which cut us off from all that exists in reality, atoms in the void” (*Classical Philosophy*, 2003, 24). Cf. David Roochnik, *Retrieving the Ancients*: “Ordinary experience suggests that the book you are holding in your hand is a real object in and of itself. As a result, if someone asked you, ‘what is it that you are holding?’ you would quickly answer, ‘a book.’ . . . But according to Democritus, you would be wrong. What you hold in your hands is not really a book at all. Instead, it is a collection of atoms moving through the void that happened to clump together and will soon separate” (2004, 51).
 14. Michael Frede puts this point in historical context: “[H]ow does it come about that, if reality is the way Parmenides describes it, we nevertheless perceive it the way we do? It was Democritus who took up this problem, and, in taking it up, had to face the question of the relative roles of thought and perception in cognition. He thus, instead of having a vague and indefinite notion of some cognitive power of thought, came nearer to having a notion of reason by trying to determine more precisely the relative role of thought in cognition. Unfortunately Democritus’ thought is preserved highly selectively, and there is not

much evidence concerning his views on the soul. But given that he thought of philosophy as providing therapy for the afflictions of the soul, it would seem that he, too, had a substantive notion of the soul integrating perception, thought, belief, and desire in some systematic way. And so we, finally, come at least fairly close to a notion of reason, as we find it from Socrates onward” (“Introduction” in *Rationality in Greek Thought*, 1996a, 21–22). Cf. Charles Kahn, “Democritus and the origins of moral psychology,” 1985, 23: “The ordinary, pre-theoretical notion of reason is . . . [given] by the opposition between acting reasonably or foolishly, with foresight or without. This practical notion of rationality is then given an entirely new content by the philosophers (beginning with Heraclitus and Parmenides) who develop a notion of mind or intelligence as a theoretical capacity to understand the nature of things. It is this notion which Democritus has identified by the contrast with sense perception. And once he has done so, the concept of mind or reason is in a state of creative fermentation and confusion. It will have to be clarified by a systematic account of the parts or faculties of the psyche, in which the epistemic and prudential roles of reason are somehow distinguished and reconciled. That will be the work of Plato and Aristotle.”

Further Reading for Part I

1. *Early Greek Philosophy*, Jonathan Barnes, 1987
This is a collection of “English translations of all the surviving philosophical fragments of the Presocratic thinkers” (31). It includes translations of extracts from the doxographies in which many of the fragments occur. There is also an insightful introduction and synopsis.
2. *The Presocratic Philosophers* (in two volumes), Jonathan Barnes, 1979
This discussion is more philosophical than historical. The primary aim is to assess the Presocratics, to determine “whether they spoke truly” and “whether their sayings rested on sound arguments” (vol. I, ix). The Sophists are included among the Presocratics. The notes and bibliography are especially valuable.
3. *A History of Greek Philosophy*, W. K. C. Guthrie, 1971
Guthrie published six volumes before his death. The first two volumes are *The Earlier Presocratics and Pythagoreans* and *The Presocratic Tradition from Parmenides to Democritus*. As Jonathan Barnes observes in his bibliography, “English readers will find a treasury of humane scholarship” in these volumes (1979, vol. II, 319).
4. *The Presocratics*, Edward Hussey, 1972
This is a general introduction to “the history of ancient Greek thought between approximately 600 and 400 BC” (vii). The discussion is both historical and philosophical.
5. *The Presocratic Philosophers*, G. S. Kirk, J. E. Raven, and M. Schofield, 1983
This book is the now orthodox scholarly discussion of the “chief Presocratic ‘physicists’ and their forerunners, whose main preoccupation was with the nature (*physis*) and coherence of things as a whole” (xi). It contains texts both in translation and in Greek. As the authors note, the commentary is “for those who have more than a casual interest in the history of early Greek thought” (xi).
6. *Philosophy Before Socrates*, Richard D. McKirahan, Jr., 1994
This is an introduction with both translations of the texts and extensive commentary. It is a source book, like *The Presocratic Philosophers*, but the discussion is more accessible. In addition, McKirahan includes a discussion of the fifth-century sophists and of the *nomos-physis* debate.