

philosopher who followed Heraclitus intended that it be taken very literally, and very seriously indeed.

1.4 Parmenides and Zeno

Parmenides (c. 515–450) is like Xenophanes and Heraclitus in that he expects us to think hard about the cogency of our habitual sources of evidence; but he is unlike Xenophanes insofar as he never endorses any form of skeptical attitude with respect to our evidence. Some evidence, Parmenides supposes, is rubbish, and can be shown to be so. Other forms of evidence, he maintains, provide secure knowledge, utterly immune from skeptical doubt. He also distinguishes himself from Heraclitus, however, in the manner he sets out his contentions. He is not content merely to signify them with vexing, if intriguing, aphorisms. Instead, unlike his predecessors, Parmenides takes it upon himself to *argue* directly and self-consciously for his conclusions. Indeed, in a certain way, he aims to throw down a gauntlet of sorts. He presses direct arguments whose conclusions are effectively incredible, only to challenge those who would doubt him to point out their flaws. Absent such flaws, he expects his readers to join him in abandoning common sense not only in the piecemeal way found in the earliest materialist monists. Rather, and much more radically, Parmenides expects us to reject altogether, in even its most general features, the manifest image of the world delivered by sense perception and ingrained in common sense. He expects us as well to give up all claims to knowledge by experience, insisting that all knowledge is had by the resources of reason alone.

What he denies is this: that there is change of any sort; that entities come into and go out of existence; that there is plurality; that what exists ever had a beginning or will have an end; that we can ever mention or even think of what does not exist. What he affirms is this: it is.²⁹

If we focus on just one of Parmenides' startling claims, that there is no change, we can come to appreciate both the radical nature of his thought and the surprisingly good reasons for the enormous influence he exercised on the philosophers who followed him.

If anything is manifest to sense experience, it is precisely that there is change. I see a crow fly; it changes position. I hear a symphony develop; it changes key. I smell the onions burn; they change from sweet to acrid. I taste some sour milk; my own sensations move from a neutral position to detecting something putrid. In all such cases, nothing could be more immediately obvious than that *something has changed*. Initially, at least, it hardly seems reasonable to demand that I provide evidence for such a belief.

Parmenides has little patience for such an attitude. He derides those who maintain these sorts of commonplace views as, well, common. In fact, Parmenides regards such views as effectively bovine: any human can learn,

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by using resources of pure reason, that not only *is* there no change, there *can be* no change. Change is impossible. Hence, if we think we perceive change, we must be systematically deluded. His view is roughly analogous to the attitude a parent might take toward a child who insists that she *sees* the sun moving around the earth. The parent knows that it will seem so to the child; but he will also know that the child is simply mistaken. If the child is as yet unable to learn the principles of planetary motion, then it will perhaps be best for the adult simply to patronize her until she is capable of mature understanding. If, by contrast, the parent encounters an otherwise normal adult who insists that the sun moves around the earth, or that the earth is flat, despite clear and patiently delivered evidence to the contrary, the parent might well deride that person as foolishly stubborn or imbecilic. Here too the attitude of the parent finds a counterpart in Parmenides: those mired in the manifest image of sense perception are befuddled and bedazed, wandering about the earth without the foggiest appreciation of how the world is and must be.

The world as it *must* be is incompatible with the world of sense perception, because whatever else we know *a posteriori*, we know that the world exhibits change and plurality. In effect, Parmenides means to reject *all* forms of *a posteriori* justification in favor of what can be known *a priori*. That is, if we say that some proposition *p* is known *a posteriori* if, and only if, its justification ultimately makes recourse to the data of sense perception, then we can easily appreciate that Parmenides simply means to deny that we have any such knowledge. Any knowledge we have is knowledge *a priori*.³⁰

It is worth emphasizing that Parmenides is not at all skeptical about the possibility of *a posteriori* knowledge. Rather, he thinks that the very idea of such knowledge is incoherent. His reasoning is best reconstructed as follows. He begins by employing a general principle which he supposes is not only true, but necessarily true. He then deploys this principle in what he calls his "battle-hardened proof."³¹ The principle is a *relational theory of thinking*:

(RT) Every instance of thinking involves a thinker standing in relation to something thought.

The idea is that thinking is like touching. Each time I touch something, there is something touched by me. If I try to touch you, but you move, then I have not succeeded in touching nothing; rather, I have not succeeded in touching at all. Again, to use an example a bit closer to Parmenides' own formulation, if I try to express something but fail, perhaps because I simply lack the requisite linguistic abilities, then I have not succeeded in expressing nothing; instead, I have not expressed anything at all. Maybe, for example, I know only a little Korean and when I try to say something sophisticated in that language out comes only gibberish. Have I achieved

the assertion of nothing? No, it is better to say that I have not asserted anything at all but have only emitted unintelligible sounds. The same, according to Parmenides, holds for thinking: if I try to think of something, but fail, then I have not succeeded in thinking nothing; rather, I have not thought.

One might want to counter that I can think *of* nothing. For example, I might think that nothing in the bank is worse than something in the bank. Or, again, I might think more abstractly that nothingness is a topic about which only philosophers and mathematicians think; everyone else thinks about something or other. But in that case, philosophers and mathematicians *do* think about nothing; and indeed I too am thinking about it in thinking about their thinking of it. A defender of Parmenides will now aver that if they have actually thought at all, then somehow they have thought of the *concept* of nothingness, which is something after all. If every thought really does involve a relation between a thinker and something thought, if every thought must be contentful, then in these cases we are not really imagining someone who thinks nothing. Instead, if we are thinking, we are thinking something or other.

At any rate, armed with (RT), Parmenides supposes he can derive a sort of corollary, which serves as a *bridge principle* between thinking and existing:

(BP) It is possible to think any arbitrary x if, and only if, x exists.³²

Note that (BP) says more than (RT). (BP) makes two distinct claims: (1) for any x which exists, it is possible to think x ; and (2) for any x which can be thought, x exists. It would follow from (BP), together with Parmenides' claim that *nothing does not exist*, that it is impossible to think nothing. So, if I catch myself seeming to think nothing, then I must be mistaken. The case is similar to this one: if I catch myself supposing that I am just now thinking of a prime number between 14 and 19 other than 17, then I am not only wrong, but necessarily wrong. What seems to me to be true is false, and must be false. It is not a contingent matter that 17 is the only prime number between 14 and 19. So, if I think I am thinking about some number with the specified features other than 17, I am mistaken about what I take myself to be thinking. Similarly, if I think I am thinking nothing, then I am mistaken – and simply confused.

Now, with this much in place, Parmenides can conduct his assault on *a posteriori* knowledge (AAPK). He argues as follows, in two stages:

- 1 If we have any *a posteriori* knowledge, then we are able to know that there are plurality and change.
- 2 We are not able to know that there are plurality and change.
- 3 Hence, we have no *a posteriori* knowledge.

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The argument is simple enough and clearly valid. (AAPK-1) seems plausibly true. It seems reasonable, that is, to suppose that if we know anything *a posteriori*, then we also have an ability to detect change and to observe the discreteness of things. After all, if I know that I am now perceiving something blue, then I also know that there is some *region* in my visual field; or we are at least able to know that what is blue is not some other region in my visual field which is black, and not blue. What if, though, my visual field were a sea of undifferentiated blueness? Even then it seems plausible to suppose that I could focus on one half of my visual field and to distinguish it from the other half. Similarly, if I come to know that a leaf has fallen, then I am also in a position to know that the leaf has changed its position. Because these examples are more or less randomly selected, Parmenides is able to think, by extension, that for any given bit of *a posteriori* knowledge you might consider, you will find that your ability to have such knowledge implicates you in one way or another in the ability to know that there are plurality and change in the world of sense perception. So, we can grant (AAPK-1).

It is in any case (AAPK-2) which is the startling and preposterous-sounding premise in this argument. Why should Parmenides think that we cannot know that there are plurality and change? Can we not simply *see* a variety of distinct things, a plurality, changing at virtually every moment we look out into the world? It is here he thinks that *a priori* knowledge trumps *what seems to be a posteriori* knowledge. It is here, in defense of (AAPK-2), that he offers a startling argument, one which relies crucially on (BP), his bridge principle between thinking and existing. There seem to be two sorts of change, generation and simple alteration. Generation involves something coming into existence which has not formerly existed. Alteration, by contrast, involves something which already exists changing from one state into another. Putative examples of generation and alteration are the birth of a new human and that boy's getting a stylish haircut at age 17. Of course, Parmenides thinks that these are merely *putative* examples of alteration, since he thinks, for related reasons, that both of these notions are incoherent. His argument against change is this (AAC):

- 1 It is not possible to think nothing.
- 2 It is possible to conceive of generation only if it is possible to think nothing.
- 3 Hence, it is not possible to conceive of generation.
- 4 It is possible to conceive of alteration only if it is possible to conceive of generation.
- 5 It is, by (3), not possible to conceive of generation.
- 6 Hence, it is not possible to conceive of alteration.

With that much shown, Parmenides needs only to add two simple thoughts to derive half of his preposterous-sounding claim, that we are not able to know that there are plurality and change:

- 7 All change is either an instance of generation or of alteration.
- 8 If it is possible to know that there is change, it must be at least possible to conceive of generation and alteration.
- 9 Hence, by (3) and (6), it is not possible to know that there is change.

This is then half of Parmenides' claim.

If this argument is successful, a parallel argument may be taken to show that there cannot be plurality, since plurality implicates us in thinking that there is *nothing* separating a proposed pair of distinct entities. Together these arguments will yield precisely Parmenides' (AAPK-2), that we are not able to know that there are plurality and change. If we accept (AAPK-2), then given the plausibility of his (AAPK-1), that if we have any *a posteriori* knowledge at all we are able to know that there are plurality and change, Parmenides seems licensed to draw the conclusion that we in fact have no *a posteriori* knowledge at all. He would have effected a triumph of the *a priori* over the *a posteriori*.

How successful is this argument? As a historical matter, it was successful enough to command considerable attention in antiquity, eventually receiving different sorts of refutations from Plato and Aristotle. As a more purely philosophical matter, it will suffice for the present to sketch how Parmenides might have some surprisingly good backing for his crucial moves. To begin, all of the important argumentation comes in the argument against change, since if it is sound, then (AAPK-2) will be established, which with (AAPK-1) really does yield Parmenides' conclusion. (AAC-1) receives such support as it has from Parmenides' wholly defensible commitment to (RT), the relational theory of thinking, coupled with his more problematic bridge principle (BP). So, the argument has initially however much credibility these claims have.

The second premise of this argument (AAC-2) requires comment. According to this claim, it is possible to think of generation only if it is possible to think of nothing. The idea here is this: if we are thinking of real generation, and not just a covert case of alteration, then we are thinking of something *coming from nothing*. We are thinking, that is, of generation *ex nihilo*. Now, it may or may not be possible for *something* to suddenly pop into existence from absolutely nothing, though Parmenides rightly wonders how this could be so. Still, even if it were possible, we could not conceive of its being so, since in that case we would have to think of something coming from *nothing*. Thinking of nothing, however, is something we cannot do, if at any rate (BP) is correct. For that principle holds that we can think only of what exists, of what is, then, something or other; nothing, though, is, well, nothing. Nothing does not exist. So, we cannot think of genuine generation.

As a matter of fact, are we not tempted to say that when we conceive of ourselves as thinking of generation, we are really thinking of instances of alteration? A table is generated. What really happens is that some wood is

put into a table shape. That is, what really happens is that some wood is altered in a certain way. So too with the "generation" of an infant. What happens in that case is rather that an egg and sperm join and begin to divide and grow along a largely programmed path by the accretion of ambient matter. Here too we have not generation, but alteration by addition. So, perhaps we cannot conceive of real generation. This is a case in which, upon reflection, we have not been thinking about what we thought we were thinking about. More to the point, we did not realize that in thinking about generation, real generation, we must have been thinking about nothing, which, we now know, we cannot do.

Surely, then, if we grant the interim conclusion (AAC-3), we will not want to go along all the way to (AAC-6). If generation is really alteration, then we can think of generation by thinking of alteration. After all, alteration is the very sort of change to which we have just reduced generation.

Parmenides thinks otherwise. He evidently supposes we have effected no such reduction. Instead, we have seen that generation is inconceivable. Now we see something additional, that for the same reason, alteration is inconceivable, because, as (AAC-4) asserts, it is possible to conceive of alteration only if it is possible to conceive of generation. That is, it is not generation which reduces to alteration; on the contrary, all alteration is really disguised generation. When a woman learns to play the piano, something new comes onto the scene, a piano-playing woman where there had been none before. Looked at in Parmenides' way, each time we have a seeming instance of alteration, we have the generation of something new, something which had not been before. But that too lands us in a problem, since in that case we can conceive of alteration only if we can conceive of generation, something we have just seen we cannot do. If that is correct, then we are after all stuck with the result that we cannot even conceive of alteration. With that conclusion, Parmenides would be entitled to his most radical and revisionary conclusions.

Naturally enough, there are quite a few places where one might want to scrutinize this argument. Beginning with (RT) and (BP), questions arise. Other sorts of questions might give us pause regarding a number of other premises, including most notably (AAC-2) and (AAC-4), premises about which we have only begun a conversation. We have not completed this conversation because there are different and non-equivalent ways of challenging these premises, each with their own advantages and costs. In fact, as indicated, different philosophers in antiquity responded in different ways. We shall see, in due course, how Parmenides' striking and strident argument met with several different refutations at the hands of Plato and Aristotle, refutations which in their turn occasioned some surprising and highly valuable positive developments.

For now, though, it is worth reflecting upon what sort of attitude one ought to adopt to this sort of argument in general. In a certain way, it is like a series of arguments owing to another philosopher from Elea, a bit younger

than Parmenides, Zeno (born *c.* 490), who was thought in antiquity to be Parmenides' student and defender. Zeno left four paradoxes of motion, preserved by Aristotle, each with the arresting conclusion that motion is impossible. In one way, then, Zeno may be taken as supporting the Parmenidean contention that we have no *a posteriori* knowledge; for, again, if we cannot know even that anything moves, then we can hardly rely on our senses to know anything at all.

The simplest of these paradoxes relies on two uncomplicated thoughts. First, before I go anywhere, I must go halfway there. That is, whenever an object traverses a distance from point A to point B, it first traverses half the distance. Second, for any distance D, I can divide D in half. So, for the distance D, from A to B, there is a half distance, $1/2$ (D); and there is a half of that distance, equal to $1/4$ (D); and so on into infinity. There is, it would seem, no minimal distance which cannot be divided yet again. Taken individually, neither of these thoughts seems problematic. Still, together, they seem to yield the absurd conclusion that I can never arrive anywhere: I will forever be on my way, first traversing half of the distance to my destination before arriving, and then again traversing half of the distance to my interim destination before arriving there, and then again traversing half of the distance before to my new interim destination ... and so on without end.

Similarly, suppose Achilles is in a race with a tortoise. Realizing that he is much faster than the tortoise, Achilles decides to make things interesting by giving the tortoise a head start of ten meters. That, contends Zeno, was a mistake. For now he can never overtake or even catch him, so long as the tortoise keeps moving. Before he catches the tortoise, Achilles must arrive at position p_1 , the position at which the tortoise began. By that time, however, the tortoise will have moved on to p_2 , which now Achilles must reach before reaching the tortoise, who is now at p_3 . With the altogether humble thought that so long as the tortoise is moving, he does not remain in the same position, this series of events will carry on forever, and Achilles will never catch the tortoise.

In these and other such paradoxes, we are invited to reflect on the tenability of widespread assumptions, often deeply intuitive, about space, time, and motion. If we respond with self-indulgent derision, by demanding that if Zeno is so sure that Achilles *cannot* overtake the tortoise then he ought to be willing to bet his life savings on the tortoise, we will certainly miss what the paradoxes have to teach us about actual and potential infinities; about the infinite divisibility of space and time; about infinite sets and their relations to the infinite divisions of finite lengths; about convergence; and about the summing of infinite series. Indeed, insofar as there are completely satisfactory solutions available to these paradoxes, they were not developed until the twentieth century, some 2,500 years after their first formulations. It is surely noteworthy that these paradoxes were first formulated in the wake of Parmenides' doubts about plurality and change.

In the same way, then, if we are to reject Parmenides' argument as somehow obviously incorrect, then we ought to be in a position to point to those obvious failures. It will turn out that by uncovering its weaknesses – and it does have several – we will at a minimum have learnt something about the nature and limitations of *a posteriori* knowledge, a form of knowledge whose principles of justification turn out to be abidingly elusive. Perhaps Parmenides' argument, despite such flaws as it may have, does after all succeed in showing that we would be mistaken to privilege *a posteriori* knowledge as unassailable or even as somehow more surely secure in its justificatory moorings than is *a priori* knowledge. Is it after all so clear that we see plurality and change?

1.5 Democritus and fifth-century atomism

The question of what is immediately evident to sense perception took on a new dimension and an added importance with the advent of fifth-century atomism. Whatever one makes of Parmenides' arguments against *a posteriori* knowledge, it remains true that their conclusions are incredible: it is difficult even to fathom how one might come to believe that there is absolutely no plurality, or that nothing has ever changed. It seems, on the contrary, that the person who is reading this book began to read it at some point in time, and so changed in at least one respect at that moment, or that (so long as the author refrains from reading his own book) the person who is reading this book is not the same as the person who wrote it, and so there is at least that much plurality. Insofar as Parmenides means to deny these commonplaces, his reasoning is bound to seem radically divorced from the data of our lived lives. Of course, he may well want it that way; but that hardly makes his conclusions more palatable.

Parmenides' remarkable contentions might be less jarring if he were at least to explain why it is that the manifest image of the world differs so sharply from the world as it is in fact, in itself. He makes no such effort, however. Instead, one finds in his writings only a stern and uncompromising castigation of those unable or unwilling to follow his lead. On this score, at any rate, some philosophers who followed in his wake fare better. The atomists of the fifth century, Leucippus and Democritus, held views akin to Parmenides in the sense that they all agreed with him in maintaining that the world described by science and philosophy differs sharply from the world of common sense and sense experience. At the same time, according to some ancient accounts, they seemed keen to explain why there should be so great a divergence between what we sense and what we come to believe about the world behind our image of it. They offered *atomism* as a conceptual palliative to Parmenidean monism: although the phenomenal world does not represent the world as it is in itself, there are good reasons why the world should appear as it does. The phenomenal world results from the imperceptible interactions of tiny atoms swirling in the void.