

Epicurus' Garden: Physics and Epistemology

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Introduction

Epicurean “physics” (from the Greek word *phusis*, or “nature”) encompasses the study of the natural world in general. Thus, it ranges more widely than contemporary physics. It includes theorizing about the basic building blocks of the world, as well as cosmology, biology, and psychology. According to Epicurus, understanding the workings of the world is not good intrinsically, but only instrumentally, for the sake of securing peace of mind. Nonetheless, physics is invaluable, since it is impossible to have peace of mind while suffering from fear of the gods and fear of death, and natural science (*phusiologia*) is needed to dispel these fears (*Sent. Vat.* 11-13). It does so by showing us that the gods have nothing to do with the workings of the world and that death is simply annihilation, and hence neither good nor bad, rather than a hazardous transition to some afterlife. As the Epicurean poet Lucretius puts it, the terrifying darkness that envelops our mind will be dispelled not by the rays of the sun, but only by a systematic account of the principles of nature (Lucr. 1.146–8).

Epicurean physics draws its inspiration from the atomism of the pre-Socratic Democritus. With typical lack of charity, Cicero claims that Epicurus copied almost all of his principles from Democritus, and wherever he deviated from Democritus, his changes were for the worse (*Cic. Nat. D.* 1.73, 1.69-70). This assessment is unfair. Epicurus appropriates Democritus' doctrine that the world is fundamentally composed of uncuttable bodies—atoms—flying through void, with all else being the result of

purposeless atomic interactions. But Epicurus has to refurbish the Democritean world view against the challenges of later thinkers like Plato and Aristotle. Plato argues (in the *Timaeus*) that the world is the product of a beneficent divine craftsman. He also asserts (e.g. in the *Phaedo*) that a person is an immaterial soul temporarily housed in a body, which moves from body to body in a cycle of reincarnation. Aristotle argues that the functioning of organisms reveals that nature is purposive. All these errors must be rebutted.

Epicurus also works to overcome problems internal to Democritean atomism, chief among them fatalism and skepticism. Having every future occurrence settled by the past positions and motions of atoms (as Democritus does) would render us helpless, and Epicurus denies the truth of determinism to save us from this fate. And Democritus asserts that the senses systematically mislead us about what the world is like, reporting that objects have properties like heat and color, which aren't part of the furniture of the world. He concludes that attaining knowledge is difficult or impossible; Epicurus wishes to secure the reliability of the senses against such skeptical worries. The Epicureans regard epistemology—their own name for it is “canonic,” from *kanōn*, or measuring-rod—as a branch of physics (Diog. Laert. 10.30), psychology in particular. It is the study of the perceptual and other psychic processes that put us in contact with the world and allow us to make accurate judgments regarding it.

Sources

Epicurus' physics are fully laid out in his *magnum opus*, *On Nature*. Unfortunately, it's almost entirely lost to us, save for some carbonized fragments unearthed from an

Epicurean library that was buried in the eruption of Mount Vesuvius 79 AD, so we must look elsewhere for information. The philosophical biographer Diogenes Laertius includes three letters by Epicurus in his *Lives of the Philosophers*. The *Letter to Herodotus* (*Ep. Hdt.*) summarizes the basic principles of the physics, the *Letter to Pythocles* (*Ep. Pyth.*) explains celestial and meteorological phenomena, and the *Letter to Meneceus* (*Ep. Men.*) summarizes the ethics. They are invaluable but leave much unsaid. Far more extensive is *De Rerum Natura* (*On the Nature of Things*), a fervent six-book exposition of the Epicurean world-view in poetry by Lucretius (c. 94-55 BC). Another major source is the Roman statesman and philosophical enthusiast Cicero (106-43 BC), but he is deeply hostile to Epicureanism and must be handled with care.

From these sources we can usually glean a reasonably clear view of Epicurean physics, although many of the details are missing. And some major substantive questions are still unsettled, as we will see when looking at Epicurus' view on the gods, which he insists exist despite having no impact on the world. Our examination of Epicurean positive theology will close the chapter and illustrate the challenges of piecing together Epicurean doctrine from scattered and sometimes hostile reports.

Atoms and Void

Central to Epicurean physics is a simple observation: there are bodies in motion. As empiricists, the Epicureans hold that all knowledge is ultimately grounded in sense-experience. Especially key are observations of what is *enargēs*, evident or obvious, such as the phenomenon of bodily motion. This observation is uncontested by anything else that is evident, and so we should accept it as true (Sext. *Emp. Math.* 7.211-216).

But our knowledge is not limited to what is evident. On its basis, we can make inferences about what is hidden from direct observation, the *adēlon*. The Epicureans assert that the existence of void—where void is simply empty space—is a necessary condition for bodily motion. And since bodies do move, there is void. If space were a plenum, absolutely full of body, every body would be totally hemmed in by other bodies, and with nowhere for bodies to move into, they would not move at all (*Ep. Hdt.* 40, Lucr. 1.329–45).

The thesis that void is necessary for motion goes back at least to the Eleatic philosopher Melissus, who uses it to argue *against* the existence of motion rather than *for* the existence of void: although void is necessary for motion, void, as nothingness, is ‘what is not,’ and what is not does not exist (*Simpl. in Phys.* 112.6 [DK30 B7]). The originators of atomism, Leucippus and Democritus, strive to reverse this inference by establishing that ‘what is not’ exists no less than ‘what is’ (*Arist. Metaph.* A.4 985b4 [DK67 A4]). Epicurus appropriates their argument for the existence of void from the existence of motion, although we have little evidence that he feels the need to establish the conceptual coherence of the existence of void. Sedley (1982) argues for a further difference: for Democritus, void is *emptiness*, a privative stuff that could move about, whereas for Epicurus void is simply unoccupied space.

The other basic constituents of the world, besides void, are atoms—literally “uncuttables,” from the alpha privative + *tomos*, “cut” or “split.” The division of compound bodies occurs when their constituent bodies are forced apart by blows. But once we get down to a noncompound body (e.g., a perfectly cubical atom) that contains no void space, blows would not cause subparts to fly apart, but simply move the body as

a whole (Lucr. 1.526–39). Furthermore, the existence of an enduring set of atomic constituents is needed to explain observed regularities at the macroscopic level (Lucr. 1.584–98), and if the process of division were able to go on indefinitely, over time all of these bodies would (supposedly) be reduced to nothingness (*Ep. Hdt.* 41, Lucr. 1.540–47). Although *physically* indivisible, atoms are *theoretically* divisible, as they have spatial sub-parts, e.g., a cubical atom has top and bottom halves. However, space itself is quantized into smallest spatial units. All magnitudes are “composed” of a finite number of these spatial minima. The Epicureans postulate minima primarily in order to solve Zeno of Elea's paradoxes against the existence of motion, which depend upon the infinite divisibility of space (*Ep. Hdt.* 57, Lucr. 1.599–634). (See “Indivisible Magnitudes” in Furley (1967) on this Epicurean innovation.)

Following Democritus, Epicurus assigns to the atoms a limited stock of properties, mostly those constitutive of being a body: size, shape, and “resistance of blows,” i.e., that atoms don’t allow other bodies to pass through them when struck but get in the way, as opposed to void, which is “yielding.” The Epicureans exclude from the atomic level what would later be dubbed “secondary qualities,” such as colors and smells (Lucr. 2.730–1022), although unlike Democritus they include such properties at the macroscopic level.

Epicurus introduces two major modifications to Democritus in his explanations for atomic motion. For Democritus, atoms eternally fly through the void in all directions. They collide with and rebound from one another, and all atomic motion is the result of past motions and collisions. Aristotle complains that Democritus has no explanation for why the atoms move at all, rather than eternally sitting still, since they have no natural

motion (*Metaph.* Λ.6 1071b31–4; *Ph.* 8.1 252a32–b2). In this way, Democritean atoms contrast with Aristotle’s elements, which have a natural motion: either toward the center of the cosmos (weight, possessed by earth and water), away from the center of the cosmos (lightness, possessed by air and fire), or around the center of the cosmos (possessed by aether, which constitutes the stars and other heavenly bodies). The Epicureans posit that atoms have weight, a natural downward motion (*Lucr.* 2.184–215)—not toward the center of the universe, as no such center exists within a spatially infinite universe (see *Lucr.* 1.958–83), but simply the direction from our head to our feet. But this raises a difficulty: if unimpeded atoms move naturally down at equal speeds (as the Epicureans also hold), they would never collide with one another to produce macroscopic bodies, as they evidently have, but instead eternally fall downwards in parallel paths like drops of rain through the void (*Lucr.* 2.221–4). To remain consistent with what is evident, the Epicureans introduce a second natural atomic motion, an occasional, random sideways ‘swerve’ that explains why they collide with one another. (Chapters 2 and 3 of Englert (1987) discuss the details of how the swerve is supposed to operate physically.)

Cosmology

The Epicureans accept Parmenides’ dictum that nothing comes to be from what is not (*Ep. Hdt.* 38) and its corollary that nothing perishes into nothing (*Ep. Hdt.* 39, *Lucr.* 1.215–64). Their atomism satisfies these constraints because there are three things that have not come into being but have existed and will exist eternally: the atoms, the empty space through which they move, and the universe, which is the totality of atoms and void. Everything else that exists comes to be from the atoms interacting with one another, and

nothing perishes into nothing *simpliciter*, as atoms composing larger bodies survive their disintegration. Our own *cosmos*, the ordered world-system of earth, sun, planets, and other celestial bodies around us, has not existed forever, but has come into being and will eventually disintegrate (*Ep. Hdt.* 73, *Lucr.* 5.351–63). With an infinite number of atoms moving through limitless void during an infinite stretch of time, there are an infinite number of world-systems (*Ep. Hdt.* 45), and life will exist on some of these other worlds, including intelligent life (*Lucr.* 2.1048–1104). (Furley (1981) explores the philosophical motivations of the atomist theory of an “infinite universe.”)

The Epicureans account for the formation of our cosmos in exclusively non-purposive terms. A *cosmos* forms when matter happens to be greatly concentrated in one region of space. The *cosmos* starts as a turbulent mass, with earth, water, air and fiery aether all mixed together. But over time they begin to separate out, with like element uniting with like, as particles of earth settle towards the middle of the *cosmos*, squeezing out other elements. So eventually we get layers of earth, water, air, and aether (*Lucr.* 5.416–508). The Epicureans give similar non-purposive explanations of celestial and meteorological phenomena: for example, lightning occurs when clouds collide and strike out numerous seeds of fire, analogous to how two stones or a stone and a chunk of iron strike one another and make sparks (*Lucr.* 6.160–218).

Being able to explain natural phenomena in such terms provides the key practical benefit of natural science, which is excluding explanations that appeal to the divine, since superstitious beliefs regarding the gods are a primary cause of human misery. As Lucretius puts it, human life was groveling in the dust, crushed beneath the weight of superstition, until Epicurus discovered the truth about what could be and what could not,

and with this knowledge cast down and trampled superstition underfoot and raised us to the heavens in victory (Lucretius 1.62–79).

The Epicureans also give positive arguments against assigning to the gods responsibility for natural occurrences. They are the first philosophers we know of to have raised the Problem of Evil against the existence of (a certain sort of) God. According to the early Christian writer Lactantius, the Epicureans lay out four possibilities. Either God (i) wishes to eliminate evil but cannot, or (ii) can eliminate evil but does not wish it, or (iii) neither can nor wishes to prevent evil, or (iv) both can and wishes to prevent evil. But on (i) God is weak, on (ii) God is spiteful and on (iii) God is both weak and spiteful. So the only option left that is fitting for God is (iv), but this is inconsistent with the existence of evil, since, if God both wishes to and can eliminate evil, there would be no evil (Lactantius *De Ira Dei* 13.20–22).

Lactantius' report shows why we need to be cautious with later sources on Epicureanism (and other ancient philosophers), as they often use the ancient material for their own purposes rather than giving scrupulously accurate depictions of their sources. As a Christian, Lactantius is concerned with defending the existence of an all-powerful and beneficent God, and so he naturally frames Epicurus' arguments as directed against such a god, and as presupposing that any being worthy of the appellation God would possess perfections like power and goodness to their maximal possible degree. But predecessors and contemporaries of Epicurus who had proposed that a beneficent deity created the *cosmos* (such as Plato and the Stoics) did not view god as omnipotent, but simply as an extremely powerful and skillful, yet still needing to work within the limitations posed by matter. For instance, the Stoics claim that the relative thinness and

fragility of the skull is a foreseen but unintended concomitant of god's beneficent plan, as he could not make it thicker without compromising our rationality (Gell. *NA* 7.1.1–13), a problem that would not concern an omnipotent deity limited only by what is metaphysically possible. Likewise, the Epicureans would not accept that an inability to alleviate our suffering is inconsistent with divinity.

Still, even though an omnipotent, omniscient, and all-good god creating the world *ex nihilo* is not their particular target, the argument's basic form is the same as in the classic Problem of Evil, although aimed at the wider class of powerful, wise, and caring craftsmen deities. The world is far too flawed to have been devised by them for our benefit (Lucr. 5.195-9), as shown by diseases, droughts, predators, and the other problems that confront us. Besides such beneficent craftsmen gods, the Epicureans also wish to banish the capricious Olympian gods. They do so by asserting that having non-purposive explanations for phenomena like thunderbolts renders otiose appeals to things like Zeus' anger. They also note that the distribution of thunderbolts—randomly striking deserted deserts and the sea, believers and non-believers in the gods, and the gods' own temples—appears to fit no plan at all. (Lucr. 6.379–422).

As noted, having non-purposive explanations of natural phenomena is valuable only instrumentally, for the sake of dispelling the fear of meddling gods. Thus, although in many cases we will be unable to know the exact explanation for some celestial phenomenon, that's perfectly satisfactory. The arguments for the atomistic world-view and against divine influence on the world are supposed to be rock-solid, and having this knowledge is crucial for attaining a blessed life (*Ep. Hdt.* 76–8). Once this is secured, however, knowing the precise cause of some particular natural phenomenon isn't

important, so long as we have available some plausible explanation (or explanations) that lets us remain confident that it does have an atomic cause. According to the Epicurean doctrine of multiple explanations, in cases where we cannot infer the correct explanation for some phenomenon, we should just list the possible causes and remain content with that: in fact, trying to find out which explanation is the actual one would be pointless (*Ep. Hdt.* 79–80; *Ep. Pyth.* 85–8). The *Letter to Pythocles* remains true to this program, going through a large list of phenomena such as eclipses and giving disjunctive listings of their possible explanations, while warning that anybody insisting on accepting one theory while others are equally consistent with the phenomena has blundered from physics into mythology (*Ep. Pyth.* 87). (For more on the theory of multiple explanations plus the rest of Epicurean epistemology, see Asmis (1984).)

Biology

The Epicureans need to fit organisms and their functioning into their anti-teleological world view. The apparently skillful adaptation of organs to serve their functions has long served as the basis for arguing that that they are the product of a beneficent divine craftsman, from Paley's analogizing the eye to a watch back to Socrates' observation that the gods kindly placed the anus far from the nose (*Xen. Mem.* 1.4.2-7). Aristotle does not believe in a craftsman god, but he accepts that organs are functional items whose purpose is part of their nature: to view the heart merely as a beating, muscly thing in the chest is inadequate, as the heart is made of muscle (rather than bone) and is located in the chest (rather than the ankle) in order for it to do its job of pumping blood and thereby keeping the organism alive. In this way, organs are analogous to artifacts.

The Epicureans reject this analogy: an artifact is created with a purpose in mind, and so we can genuinely explain its form by reference to its function. But organs merely happen to be useful to serve certain ends, which is far different from having that end as their purpose (Lucretius, *De Rerum Natura* 4.823–57). Generally speaking, in order for something to exist for the sake of a goal, it must be the result of an agent's intention (Simpl. *in Phys.* 372.9–20). So the Epicureans reject the possibility of Aristotelian intrinsic teleology, and as they also believe no craftsman god exists, they conclude that organs and organisms have no purpose.

But the Epicureans still need to explain the apparent design in nature: that the heart is in the chest seems to be no coincidence. They do so by propounding a theory of natural selection, which was first put forward by the pre-Socratic Empedocles. In the past, a much wider variety of organisms existed, but many were not fit to survive and reproduce. Some were utterly unsuitable to live, lacking feet or reproductive organs, while some were driven to extinction by competition with other animals (Lucretius, *De Rerum Natura* 5.837–77). The survival of creatures well-adapted to live and reproduce was the product, but not the purpose, of this process.

Unlike in Darwin's theory, there is no evolution of new species from old ones. Instead, all of the species currently existing, plus countless more, were vomited forth from 'wombs' attached to the earth when it was in a fertile period, far hotter and moister than now (Lucretius, *De Rerum Natura* 5.772–825). This story seems incredible, but the Epicureans (like many others of the time) believe in spontaneous generation; Lucretius appeals to the (supposed) generation of new creatures such as worms even now in muddy areas to render plausible the generation of more complicated creatures during the earth's fertile period. (Campbell

(2003) is a detailed commentary on the sections of *De rerum natura* dealing with the origins of species, society and language.

Psychology

The Epicureans want to fit the mind and its operations within their materialistic worldview and to secure the thesis that death is annihilation, in order to relieve the fear of death. (Nothingness is neither good nor bad, and the future eternity of post-mortem non-existence will distress us no more than did our past eternity of prenatal non-existence.)

The Greek term *psychē* (and Latin terms *animus* and *anima*, both of which I am translating as ‘mind’) can range considerably in meaning. The usual translation is “soul,” and this translation fits well the way Plato uses the term in dialogues such as the *Phaedo*: the *psychē* is the immaterial seat of our intellectual functions, which is temporarily trapped in our body but will survive death and move from body to body in a cycle of reincarnation. More broadly, the *psychē* can mean the “life-principle” (perhaps the “animator,” noting the Latin word), the thing that causes living things to live and distinguishes them from non-living things: Aristotle uses the term this way when he speaks of plants having “souls” that organize their bodies to perform functions of nutrition and reproduction. For Epicurus, our *psychē* is what is responsible for sensation, thought, and memory, i.e., close to our use of “mind.”

Epicurus asserts that the mind is a bodily organ. He locates this organ in the chest (not the skull), as the chest is where Greeks commonly thought we feel emotions like fear, dread and joy (Lucr. 3.136–44), composed of four different sorts of particles: heat, air, wind and a nameless fourth element (Lucr. 3.231–57). The mind’s ability to interact causally with the rest of the body proves that it is bodily. The mind moves the body, e.g.,

when you decide to walk, and you walk, and the mind is moved by the body, e.g., when a spear being thrust into your body causes pain (Lucretius 3.163–87). But only bodies can move and be moved by other bodies, so the mind is corporeal. Some suppose that the mind is incorporeal, but the only incorporeal thing is void, which neither *does* nor *undergoes* anything, but simply allows bodies to pass through it (*Ep. Hdt.* 67).

Lucretius catalogs particular ways in which the mind and body are closely interrelated both to underline that the mind is bodily and to press the point that the mind was born with the rest of the body and will die with it. The mind grows with the body, declines with the body, and is subject to diseases just as the body is (Lucretius 3.445–525). We can now add to this catalog our understanding of how the physiological changes of diseases like Alzheimer’s lead to profound changes in one’s thinking and personality. All of this is precisely what we would expect if the mind is a bodily organ, and not at all how things should be if we have an immaterial “soul” somehow temporarily housed within but separate from our body.

Because the mind is a bodily organ, death is annihilation. The mind is a group of fine atoms trapped in the chest. On death, the “container” of the body cannot hold those atoms in as it did before, and the mind disintegrates, as the atoms constituting it escape into the surrounding air (Lucretius 3.425–44). An eye or nose detached from the body cannot sense anything, or even really exist as an eye or nose. Instead, they quickly decompose. Likewise, the mind can engage in “sensory motions” only when suitably confined in a living body (Lucretius 3.548–79). Nowadays, it would be widely accepted that, barring some miracle of God or cryogenic technology, death is annihilation if the mind is a bodily organ such as the brain. But the Stoics, for example, accept that the *psychē* is corporeal

and that death is the separation of *psychē* and body, but hold that human *psychai* survive this separation though they are not immortal (Euseb. *Praep. evang.* 15.20.6). So Lucretius goes into great detail about the fineness of the particles that compose the mind and how it is physically impossible for them to hang together and retain their coherence as a living, thinking thing once released from the body.

Lucretius also argues that, even if the *animus* were somehow to survive death, that would not mean that *I* survive death, for I am a living animal, a union of *animus* and body, not an *animus* alone (Lucr. 3.843–6). And if somehow all the particles that make me up were to reassemble into “me,” that wouldn’t amount to my being reborn or surviving death. That’s because in death the particles scatter widely, and there is a huge gap in time, so that when they reassemble, they create a new being—a duplicate of me, not me—one with whom, moreover, I will have no links of memory or other consciousness (Lucr. 3.847–61). (An influential discussion of the supposedly therapeutic benefits of believing that death is annihilation, along with criticisms of it, is Nagel (1979).)

Sensation and Knowledge

Objects throw off a continuous flow of “images” (*eidōla*) from their surfaces, and visual sensations result from those images entering our eyes. Other sensations are also analyzed as the effects of atomic interactions between objects and our sense-organs; for example, bitter tastes result from barbed atoms tearing at our tongue, whereas sweet tastes result from large, smooth atoms caressing our tongue (Lucr. 4.615–626). The Epicurean explanation of how sensations occur is largely the same as Democritus’.

Democritus derives skeptical implications from this explanation. He notes that the same sort of object can cause different sorts of sensations to different percipients, depending on their bodily state, position relative to the object, and the like. The same wine that tastes sweet to me may taste bitter to somebody with an illness, and a dog will not see objects as having the colors I do. From this, Democritus concludes that the wine is no more sweet than bitter, because in itself the object is neither (Sext. Emp. *Pyr.* 1.213), and that these sensible qualities are not part of the nature of the objects themselves, but merely affections of the sense-organs (Theophrastus *Sens.* 63-4). Sweetness, bitterness and color exist only “by convention,” whereas in reality there are only atoms and the void, and because of this, we know nothing in reality. (Sext. Emp. *Math.* 7.135 [DK68 B9]). (See O’Keefe (1997) for more on Democritus and Epicurus on sensible qualities.)

The Epicureans think such skepticism is untenable. Their main reason for rejecting skepticism is its disastrous practical consequences. Lucretius writes that if you lose confidence in your senses’ trustworthiness, life would collapse, as you would have no reason to do things such as avoid cliffs and other hazards (Lucretius 4.500–510). After all, if the senses were unreliable, that it *looks as though* there is a cliff ahead would give no reason to believe that there *is* a cliff ahead. Furthermore, the skeptical position is self-refuting. If somebody thinks that nothing can be known, it follows from his position that he cannot know that nothing can be known. So there is no point in arguing with him (Lucretius 4.469–72; see Burnyeat (1978) for more on this anti-skeptical argument). Finally, the consistent skeptic could not even formulate his own thesis. In order to state “nothing can be known” and to give arguments to support his position, the skeptic will have to

understand the meanings of terms such as “knowledge,” “true,” “false,” and “doubtful” (Lucr. 4.473–7). So the act of stating the skeptical position demonstrates its falsity.

The Epicureans hold that, once the truth of one’s sensations is cast into doubt, no criterion can be found whereby to distinguish the true from the false ones. We cannot use reason to determine which sensations are true and which false, as reason itself is a product of sensation (*Sent. Vat.* 23, Lucr. 4.480–85). So given that skepticism is untenable and that one cannot hold to the truth of just some sensations and avoid skepticism, the Epicureans heroically embrace the thesis that all sensations are true (*alēthēs*): not just my sensation of the wine’s sweetness and the ill fellow’s sensation of its bitterness, but even the figments of dreamers and madmen (Diog. Laert. 10.32). To make this apparently lunatic thesis plausible, the Epicureans sharply distinguish between the sensations themselves, which are “non-rational” (*alogos*), and the judgments about the world that we make on their basis. It is only at the latter stage that error enters in (*Ep. Hdt.* 50). When we see a “bent” oar in the water, the sensation does not tell us *that* the oar itself is bent. The bent-shaped patch in our visual field is just the impression we are receiving from the oar, and *we* make a mistake when we infer that the oar itself is bent. As Lucretius puts it, it is the mind’s business to make such judgments (e.g. about the oar’s shape) on the basis of the information the senses furnish, and so we should not blame the eyes for the mind’s shortcomings (Lucr. 4.379–86). Likewise, that this wine tastes sweet to me or warms me is true, but Epicurus says that it would be a mistake to think that wine generally has heating or cooling properties. Instead, it has a mixture of powers, such that a certain quantity of it would be heating for certain individuals with a certain bodily condition and cooling for others under different circumstances. And he

says that the same sort of thing applies to colors, which are produced by the ordering and positioning of the atoms in relation to our sight (Plut. *Adv. Col.* 1109e–1110d).

But if sensations themselves do not say *that* the objects in the environment are this way or that, in what sense they are all “true” becomes obscure. And indeed, the Greek term in the Epicurean thesis, *alēthēs*, can mean either “true” or “real,” and some of the proofs that the Epicureans give of it comport better with “real” than “true.” For example, they prove that all sensations are *alētheis* because they cause movement, whereas what does not exist moves nothing (Diog. Laert. 10.32). But the Epicureans cannot mean merely that sensations are *alētheis* in the sense that they exist, as this thesis would be beside the point in combatting skepticism. How precisely the Epicureans propose to thread this needle, so that their thesis is neither ludicrous nor unhelpful, is not entirely clear. (Striker (1996) and Taylor (1980) are good discussions of the issues involved.) But certainly central to their position is that sensations are effects of external causes, and as such, are *informative* about their causes, even if they don’t themselves state *that* the world is this way or that. As Sextus Empiricus puts it, in reporting the Epicurean doctrine that every sensation is *alēthēs*, “every impression is the product of something existent and is *like the thing which moves the sense*” (*Math.* 7.63).

And so, the Epicureans assert that sensations are one of the criteria of truth. The second criterion is “preconception,” or *prolēpsis*. Epicurus agrees with Socrates, in the *Meno*, that enquiry requires previous knowledge. I cannot ask “Is that thing over there a horse or a cow?” unless I already know what a horse and a cow are (Diog. Laert. 10.33). And requiring that all words be defined in terms of other words would engender an infinite regress. So we grasp the meanings of some words without need of additional

proof (*Ep. Hdt.* 37–8). But this knowledge is itself grounded in sensation, as these basic ideas are formed via repeated sense-experiences of the same sort of thing, which gives us a memory of what has often appeared, the universal idea or preconception (Diog. Laert. 10.33).

Feelings of pleasure and pain are the criteria of choice and avoidance (Diog. Laert. 10.34). The goodness of pleasure and the badness of pain are obvious in our experience of them, analogous to how the heat of fire is obvious in our experience of it, and to establish that pleasure is good and pain bad we need only remember what each is like (Cic. *Fin.* 1.30). (For more on how Epicurean ethics is founded on our experience, see Sedley (1998).)

Freedom

As noted above, the Epicureans posit a random swerving atomic motion to account for atomic collisions and the formation of compound bodies. A second role for the swerve is to save us from “the decrees of fate,” as Lucretius puts it. Unfortunately, how it is supposed to do so is unclear, in large part because the swerve is mentioned nowhere in Epicurus’ extant texts, and the later texts we possess don’t describe the swerve’s precise role. Nothing resembling a consensus or even a mainstream position has emerged in the scholarly literature.

Lucretius presents the most extended consideration we have by an Epicurean of the swerve and freedom (Lucr. 2.251–93). Lucretius writes that an occasional random atomic swerve initiates new motion, which prevents the existence of an endless chain of atomic causation, of new motion unalterably arising out of old. This swerve annuls the decrees the fate and allows us to have *libera voluntas*, most commonly translated as “free

will.” Lucretius draws an analogy between atomic swerves and our actions: just as the atoms can initiate new motion by swerving, so too we can swerve off our course at no fixed time or place, wherever we wish. A natural way to read this analogy is that our actions are like atomic swerves in this way because, at the atomic level of our minds, our free decisions just *are* constituted by atomic swerves, and these swerves initiate our actions.

How would this help preserve our freedom? Contemporary discussions of free will and determinism often focus on the so-called “Principle of Alternate Possibilities” (PAP), which is that in order for a person to be morally responsible for an action, she must have had the ability to do otherwise than she did. If the Epicureans accept PAP and think that determinism is incompatible with PAP, having our decisions constituted by random swerves would allow them to accommodate PAP within their atomism. These random swerves didn’t have to occur when they did, and if they had not, our decisions and actions would have been different than they in fact were.

This interpretation is popular (see Purinton (1999) for a representative statement of it). But it faces problems. A random atomic swerving in one’s mind is an unpromising basis for the production of free and responsible actions, instead of random and blameless twitches. It would sever actions from the beliefs, desires, and deliberations that prompt them and undercut our control over our actions. Furthermore, Lucretius’ description of *libera voluntas* does not square with the idea that he is concerned with preserving human’s ability to do otherwise as a necessary condition on moral responsibility. Instead, *libera voluntas* is possessed by creatures throughout the earth, both human and non-human, and allows them to do what they want and to advance wherever pleasure leads

them. To establish that *libera voluntas* exists, Lucretius gives examples of the body following the mind's desire, such as racehorses wishing to burst from a starting-gate and a person striving to push back against a jostling crowd. The ability to act as you wish in order to get what you desire is quite different from the ability to do otherwise than one does, and not having this ability would render one *helpless*, rather than simply morally blameless.

Cicero's *De Fato* explains why Epicurus would regard determinism as rendering us helpless in this way. According to the so-called "lazy (*argos*) argument," if what will occur in the future has been settled for all eternity—e.g., it is now true and has always been true that I will recover from a disease, or it is now false and has always been false that I will recover—there is not any point now in deliberating and acting in a way such as *to make it the case* one way or the other. Whether or not I will recover has already been settled. Epicurus rejects this conclusion and asserts that such statements are at present neither true nor false. The outcome is not yet settled, and it is up to us which becomes the case. But Epicurus thinks there must be a physical mechanism in order for outcomes not to be predetermined in this way, and the swerve allows the future to remain open. (See O'Keefe (2005) for further elaboration and defense of this view, as well as for other interpretations not presented within this brief overview.

The Gods

As we saw above, the Epicureans unequivocally maintain that the gods have no role at all in the workings of world, which are explicable entirely in terms of the purposeless interactions of atoms in the void. Nonetheless, they insist that there are gods. In fact, Epicurus says that the gods' existence is obvious—*enargēs*, the same word he uses for

phenomena like bodily motion and effective animal action. But the beliefs of most people regarding the gods are impious. Our preconception of a god is of a blessed and immortal being (*Ep. Men.* 123–4; *Cic. Nat. D.* 1.45). Most people have beliefs about the gods that conflict with this basic grasp of their nature—for instance, they conceive of the gods as feeling anger or gratitude, and as giving trouble to others. These are signs of weakness inconsistent with blessedness (*Sent. Vat.* 1). And administering the cosmos, which the Stoics think god does, would be high-stress, hard work (*Cic. Nat. D.* 1.52).

Instead, the gods live perfectly untroubled lives. As exalted beings, the gods should be most beautiful, and hence they will be human in shape, as no creature can be more beautiful than human kind (*Cic. Nat. D.* 1.47–8). As for their abodes, they live in perfect peace, far removed from our world (*Lucret.* 2.646–51), in calm, radiant realms with no storms, frosty snow or other disturbances (*Lucret.* 3.18–22).

What are we to make of all this? Our evidence is muddled. One option is to take the gods as literal biological beings, like you and me, but immortal. (This is usually dubbed the “realist” view, as on it the gods have a mind-independent existence; see Konstan (2011) for a recent defense.) And because the gods have no impact on our world, and are supposed to live untroubled lives far from us, their abode is in the *intermundia*, the space between the world-systems. (Some Epicureans apparently espoused this: see *Cic. Nat. D.* 1.18 and—perhaps—*Lucret.* 5.146–55, though Konstan opts for a realist view without intermundial existence.) This rarefied realm also would also supposedly help explain how the gods can live eternally, escaping the buffeting troubles that eventually will cause you and me to fall apart and cease to exist.

How would we come to know so clearly that such immortal extraterrestrials exist?

Many sources confirm that we view the gods not with our sense-organs, but with the intellect (Cic. *Nat. D.* 1.49; Lucretius 5.146-55). Some of our preconceptions arise directly from sensing examples of the item in question, for example the concept of “cow” arises from seeing Bessie, Daisy, Clover and so on. But not all of our ideas are like this, and these include some preconceptions, such as “truth” and “usefulness.” “God” is in this latter category. Lucretius reports (Lucretius 5.1161-1182) that we derived our idea of the gods from seeing in our imagination, and especially in our dreams, humans who are splendid, strong, and blessed. The Epicureans have the unfortunate theory (Lucretius 4. 722–822) that imagination and dreaming are a matter of the mind “tuning in,” like a radio or television, to some of the fine *eidōla* that are constantly impinging directly on the mind, bypassing the senses. On the realist view, although we cannot sense with our eyes the gods who live between the worlds, their fine images still manage to travel to us from their abodes and impinge directly on our minds, from which arises our preconception of them.

Although probably the majority view among scholars today, the “realist” interpretation faces formidable difficulties beyond its apparent strangeness. Most seriously, the Epicureans hold that *all* compound bodies eventually cease to exist, since they have void spaces that allow their constituents to be forced apart (Lucretius 1.526–39). Only three things can exist eternally: (i) impenetrable elements that can repel blows, that is, individual atoms; (ii) things that are immune to blows, that is, void, which simply allows objects through it; and (iii) things that have no surrounding empty space into which their constituents may disperse, that is, the universe considered as a whole (Lucretius 3.806–18). Putting the gods in a relatively tranquil area like the *intermundia* or saying that they’re made of especially fine atoms that ordinary atoms somehow cannot touch and

disrupt (as does Konstan (2011) 57-8) doesn't suffice to overcome this difficulty. Furthermore, the existence of organisms existing eternally contradicts Lucretius' account of biological development, on which fully grown creatures come to be as the result of a process of biological development in which "seeds" unfold within the womb (Lucretius 5.877–924).

A second interpretation seeks to avoid these problems. It starts from Lucretius' claim that we get our idea of the gods from dreams of splendid and blessed humans. Sextus Empiricus (*Math.* 9.43–7) states the theory in more detail. We begin with dream impressions of happy people and get from this idea to the idea of "god" by analogy to how we get the idea of "Cyclops." Both processes involve "transition." In the case of a Cyclops we start with the idea of a human being, enlarge him, and subtract an eye. For the gods, we start with the idea of a happy and long-lived human being, then intensify and make perfect his happiness, and extend his lifespan endlessly. In the case of gods, however, this process of concept-formation occurs naturally and automatically, among all people. On the second interpretation, Epicurean gods just *are* such idealizations of the most blessed human life. (This is usually dubbed the "idealist" view, as on it the gods exist as thought-constructs; see Sedley (2011) for a recent defense and Long and Sedley (1987) section 23 for an influential exposition.)

A vexed passage from Cicero's *On the nature of the gods* supports the idealist interpretation:

...it must be admitted that the gods are of human appearance. However, that appearance is not body but quasi-body, and it does not have blood but quasi-blood. (Although these discoveries of Epicurus' are too acute, and his words too subtle, to be appreciated by just anyone, I am relying on your powers of understanding and expounding them more briefly than my case requires.) Epicurus ... teaches that the force and nature of the gods is of such a kind that it is, primarily, viewed not by

sensation but by the mind, possessing neither the kind of solidity nor the numerical distinctness of those things which because of their concreteness he calls *stremnia*; but that we apprehend images by their similarity and by a process of transition, since an endless series of extremely similar images arises from the countless atoms and flows to the gods [*ad deos adfluat*] and that our mind, by focusing intently on those images with the greatest feelings of pleasure, gains understanding of what a blessed and everlasting nature is. (Cic. *Nat. D.* 1.48-49, trans. from Long and Sedley (1987) vol. 1 23E.)

As noted above, Cicero is deeply hostile to Epicureanism, so he can often be uncharitable in his interpretation and criticisms. Nonetheless, in this case his report can be trusted. Cicero wrote his philosophical dialogues in order to bequeath to his countrymen in Latin the arguments of prominent philosophical schools (the Epicureans, Stoics, and skeptical academy) on topics such as fate, ethics, and the gods, and he customarily used the handbooks of the various schools themselves in presenting their views, lightly clothing them in the dialogue format and improving their style (Cic. *Fin.* 1.1-13, *Att.* 12.52). It is evident that Cicero was doing that here: he faithfully reports that the gods have only “quasi-body” and “quasi-blood,” but has his Epicurean spokesman Velleius admit that he isn’t expounding the doctrine clearly, reflecting Cicero’s own incomprehension: later in the dialogue, he has the Academic spokesman Cotta attack the doctrine as not merely obscure but as nonsensical flimflam (Cic. *Nat. D.* 1.74-75).

But if the gods are just idealizations of the most blessed life for us, the obscure doctrine makes sense as an answer to the question of whether the gods have bodies. To say that they do in the same way as we do would be mistaken—as Velleius later says, the gods don’t have the same sort of solidity or numerical distinction as concrete bodies like you and I. But to say that they’re bodiless would be misleading, suggesting that the gods are incorporeal disembodied intelligences, such as Plato’s Craftsman in the *Timaeus*. As idealizations of the best human life, our idea of the gods is an idea *of* a being with a body,

blood, and human appearance. And if the gods are ideas, this would also make sense of the reports that the gods' substance is tenuous, since, according to the Epicureans, our minds (and our ideas) are both atomic, but neither is solid: the mind is a fine-structured and flimsy body diffused throughout the rest of the body, and both images and ideas are delicate (*Ep. Hdt.* 63, *Lucretius* 4.745-756). Finally, Cicero's report of how we form our idea of the gods via "transition" from images of blessed people has these images flowing *to* the gods. Usually this is thought to be a scribal error and is emended, e.g. so that the images flow *from* the gods (*a deis*), but on the idealist view the received text may well be right, as the gods simply are the idea of human blessedness we form from such images.

The Aftermath

With the rise of Christianity, the Epicurean world-view went into decline, with Plato and later Aristotle providing philosophical inspiration for those thinkers who wanted to draw from the wisdom of the ancients. By late in the middle ages, a broadly Aristotelian physics was ascendant. But Lucretius' *De Rerum Natura* was rediscovered in the Renaissance, and Epicurean physics helped shape the scientific revolution. (See Greenblatt (2011) for a polemical recounting of the rediscovery of Lucretius and its impact, and Wilson (2009) for a brief overview of Epicureanism in modern philosophy.) Although they were careful to restrict their Epicureanism to the natural world, exempting God and the soul from its purview, thinkers such as Pierre Gassendi (1592–1655 AD) and Robert Boyle (1627–91 AD) formulated versions of atomism explicitly based on Epicureanism, and even a non-atomist like René Descartes had a broadly Epicurean view of the natural world, whose processes occur because of the mechanical interactions of bits of extended stuff, with no recourse to purposes in nature or to irreducible powers.

References and Further Reading

As noted above, the primary sources on Epicureanism are widely scattered. *The Epicurus Reader* (eds. and trans. B. Inwood and L. Gerson, Hackett 1994) cheaply gathers together the most important texts, and *The Hellenistic Philosophers vol. 1* (eds. and trans. A. Long and D. Sedley, Cambridge University Press 1987) does so more expensively but with useful commentary. There are a large number of fine translations of Lucretius; one is A. Stallings' *The Nature of Things* (Penguin 2007).

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Related chapters

- 5. Leucippus and Democritus
- 16. Plato: Cosmology
- 22. Aristotle: Philosophy of nature
- 33. Epicurus' garden: ethics and politics
- 34. The Hellenistic Academy

Portions of this chapter are abridged from my *Epicureanism*, Acumen/University of California Press, 2009.

BIOGRAPHICAL NOTE

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