

Notes on Lucretius, *De Rerum Natura*

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[I wrote these lectures in the mid-1990s. I really don't know if they resonate with how I think today. But I offer them to the Internet Commons.]

Introduction: Historical Context

The Hellenistic world created by Alexander's conquests was very different from the classical Greek world of the 6th and 5th centuries BCE, as it grafted Greek culture, which had been nourished in the *polis*, onto quite different political and economic systems. Instead of small *poleis* w/ an ideal of self-sufficient and equal citizens (remember, even w/in an oligarchy, all the oligarchs thought themselves equals: thus the distinction btw oligarchy and democracy is merely number of citizens, dictated by wealth threshold for citizenship, self-sufficiency staying the *sine qua non*: even a rich slave {and there were such} could not be a citizen), the Hellenistic world had huge kingdoms linked together in a common economic "world system" linked by trade routes.

Thus the classic Greek middle class male, the independent man, the citizen/soldier, was squeezed out: his political rights/duties taken over by kings and administrations dictating from above (rather than persuading from the side) and his military rights/duties taken over by mercenaries (fighting from below as it were).

However, even with the change of political structure from *polis* to kingdom and/or empire, the basic economic split of the ancient world between farming and trading remained in force. Recall the prestigious self-sufficient land-owners vs the disreputable traders dependent on customers. Now there was a certain stability to the *polis* system when it incorporated a good number of small farmers (remember how Solon's reforms freed the small farmers from debt to help triangulate the power struggle between big farmers and traders [often metics]). This stability was lost with growth of even larger farms due to war & renewed debt, so that as the small farm lost its viability [Romans had peasants: almost "land slaves"], social conflict intensified between farm and city.

Thus the "middle class" designation shifted from small farmers to traders: money people rather than land and stuff people. These urban trading people became the "progressive" force that allied themselves with tyrants to break the power of landed oligarchies, rather than the small farmer oppressed by debt, as had been the case in Solon's time.

Thus the urban middle class found itself at the leading edge, the very point of social conflict. A split in opinion developed: go for the gold and glory, or pull back to the "garden of earthly delights" and lead lives of individual cultivation, keeping a low profile and avoiding the lures of politics and freebooting glory. A major expression of the latter ethos was developed by Epicurus (341-271) in Athens. His followers formed one of the four major "schools" of philosophy in the Hellenistic world, the others being

Academicians (= Platonists), Peripatetics (= Aristotelians), and Stoics. (There were also Sceptics and Cynics.)

Epicurus' arguments were taken up by our author, Lucretius (@100 - @ 55 BCE). Now the first century BCE was a time of a particularly fierce struggle between the basic social forces, "progressive" traders and their people's champion, the tyrant, (in this case, Caesar), versus the landed oligarchs. The first century BCE in Rome was a time of quite regular terror and chaos, with private armies and death squads running about. Lucretius mentions "this evil hour of my country's history" (1.39).

After this historical context, let's see what Lucretius himself has to say.

Books 1-2

Science vs. Superstition (1.1-482)

The Atomic Theory (1.146-417)

Composition of bodies (1.921-1117 & 2.585ff)

The Swerve (2.1-332)

Science vs. Superstition (1.1-482)

De Rerum Natura (= *The Order of Things; On the Nature of the Universe*) is a didactic epic poem. As an epic, it begins with an invocation to the Muse, in this case, Venus. It's also dedicated to a patron, Memmius. Check the appendices for details.

After briefly mentioning the philosophical basis of his argument, "atoms" (= indivisible {pieces of matter}), L praises E for his attack on superstition: in other words, for his attack on the use of religion as a means of social control. Far from being impious, a successful attack on religious superstition will save people from evil: remember the hideous death of Iphigeneia, which was caused by nothing other than religious superstition: "Such are the heights of wickedness ..." (1.100).

The key to the power of the priests and prophets is the fear of eternal punishment to the immortal soul after death of the body. If you can see the mortality of the soul, though, you would see "a term was set to your troubles" (107), and thus you can resist the "hocus-pocus and intimidation" of the priests. This can only be done understanding nature, and positively affirming the mortality of the soul.

Thus the battle lines are drawn: rational scientists on one side, superstition-peddling priests on the other: explanation versus mumbo-jumbo, freedom versus coerced, fearful obedience. (This is obviously a hot issue today: can science and religion co-exist? Lucretius will say yes, but only a non-superstitious religion, one with completely disinterested, totally self-contained gods--who would, not coincidentally, need no priests. In one sense, although it's not technically correct to say so, we could say for our purposes that he's taken Aristotle's prime mover seriously: a completely immanent activity, a life of pure pleasure in thought, would have no desire to help or hurt humans, would have no interest in us and our petty sacrifices. Thus Lucretius, if he has a religion, would be one of immanent activity on the human plane: how do you conduct your life regarding yourself and others: that is the key to religion, not obedience to priests and their phony rituals. This is also a perennial conflict in religious thought.)

The Atomic Theory (1.146-417)

As Lucretius begins his exposition, he lays out 4 principles of the atomic theory: 1) nothing is created by divine power from nothing; 2) no thing is completely reduced to nothing, but only down to its atoms; 3) bodies are composed of invisible atoms; 4) there is empty space between atoms.

Notice the way Lucretius always gives an argument: he always tries to persuade the reader by offering examples and explanations from everyday experience. In a way, this is more scientific than his materialism: that he tries to persuade from everyday experience, w/o appeal to mystery which can only be believed on faith. What makes all scientists materialists is not an a priori decision in favor of a doctrine, but the adherence to science as a social method: only that which passes through the test of publication, debate, independent verification, and so forth, is scientific, and the only things that can pass through that test are arguments from evidence, and the only shareable evidence we have is that which comes through the senses, and the only thing that comes through the senses is matter and its interactions.

Composition of bodies (1.921-1117 & 2.585ff)

At the end of Book 1, L draws 3 conclusions: 1) space is infinite; 2) matter is infinite; 3) there is no center of the universe. These set the stage for his explanation of the diversity of bodies: they are composed through random collision of the atoms (1.1025).

Lucretius thus paints the picture of random collisions of diverse forms of atoms forming diverse bodies. Diversity that explains identity! This is a real departure from the old picture of diversity being a degeneration from a prior identity, back to which diverse (= moving) things nostalgically strive, as in Platonic or Aristotelian thought. Rather, Lucretius positively affirms diversity, as at 2.585: "there is no visible object that consists of atoms of one kind only. Everything is composed of a mixture of elements." Or, at 2.670: "every individual animal ... various parts ... differently shaped atoms").

Bodies are then temporary conjunctions of different shaped atoms, and death is the dissolution of the temporary conjunction (2.1000). The important thing is the approach to this doctrine: chance and temporary conjunction must be affirmed rather than denigrated!

The Swerve (2.1-332)

We now know that composition of bodies via random atomic collision is improbable. Stuart Kaufmann has shown that such a brute search of the phase space of life is impossible in the time span of the universe back to the big bang. Rather we have phenomena of self-organization that crowd systems into tiny parts of their phase space and thus immeasurably shorten search times.

Now it just so turns out that Lucretius might just have put his finger, w/o knowing it, on a phenomenon of self-organization in the notorious doctrine of the "swerve" (*clinamen*) in Book 2.

The problem is this: as a scientist, Lucretius proposes universal laws of material motion to explain natural phenomena: what we see must be explicable on the basis of the movement of atoms in the void. Now one of the things we see in the world is human free action. How can the rule-bound, deterministic motion of atoms explain free action? It seems that it can't, so that you must either argue that human free action is an illusion, that deterministic laws explain human action just as other laws explain the motion of the stars OR that the world is not wholly material, that another, spiritual realm w/ its own laws of self-determination (or absence of law) is responsible for human free action. Their seemed for thousands of years no solution to this dilemma, no way to pass between the horns. Given the ingrained belief in human free action (so necessary for forms of social control that rely upon individual responsibility and punishment/reward) the spiritual option, despite the insoluble philosophical troubles that a dualistic ontology poses (just how does the soul relate to the body, the mind to the brain--some of the most hilarious episodes in philosophical history occur in answering this question, my favorite being Descartes' proposal that the pineal gland was the linchpin!), was dominant for many years, no doubt because it also offered additional opportunities for social control in that its "soul" posit fed into just the sort of immortality/eternal punishment doctrine L excoriates in Book 1.

Now as with all dilemmas, all forced choices this one, between dead matter bound by deterministic laws and living spirit free to determine itself, can only be solved by reformulating the question. Perhaps what we need to think is the possibility of "living matter," that is, matter that is non-determined and can organize itself. Lucretius proposes just such material self-organization in his doctrine of the swerve.

First, the standard reading, which derides L for an *ad hoc* posit, a blatant cheating that wriggles out of the problem by merely stating that "at quite indeterminate times and places they swerve ever so little from their course" (2.219). Given the picture of pieces of stuff flying through the air that move for no reason, philosophers raised to think in terms of sufficient reason: nothing happens for "no reason," but only in response to antecedent causes, Lucretius (or Epicurus) was never taken seriously as scientists, but merely as closet dogmatists. There was no solution to the free will/determinism dilemma, people said: we just had to accept that humans were free and that science would never be able to explain that.

Now the new reading (cf. Michel Serres, *La Naissance de la physique dans le texte de Lucrece: Fleuves et turbulences* [Paris: Minuit, 1977]). The problem with the above reading is the picture of solids in air as the model for atoms in the void. If we shift to hydrodynamics, to fluids and their behavior, we can see what L is talking about and rescue him from the charge of *ad hoc* manipulation. When L introduces his discussion of the swerve, his examples are that of fluids (2.195): "Their [atoms falling downward] behavior is like that of blood released "

Now we know that the smooth flow of fluids, so called laminar flow, is an idealization: real flows always are turbulent to some degree. Now we must note three things about turbulence: 1) despite the seeming counter-intuitiveness, turbulence is more organized than laminar flow; 2) turbulence is a form of self-organization of matter [no central command, no spirit]; 3) the onset of turbulence, while we know that it WILL occur, is unpredictable: we don't know exactly when and where it will happen: it occurs "at quite indeterminate times and places."

Thus the swerve of Lucretius, rather than an *ad hoc* posit to resolve an insoluble dilemma, is really the description of the random onset of turbulence in fluids and hence a way to avoid a false dilemma: one can have both materialism and human free action. The problem with the traditional dilemma is the link of materialism and determinism. Determinism relies on dead matter, w/ no potentials of self-organization, that must be controlled by outside laws, must be rescued by an organizing spirit.

The question must be, why did Lucretius suffer the fate of being so misunderstood and vilified? One answer is the threat self-organizing matter poses to the system of social control of the ancient (and medieval) Mediterranean systems. Remember the oppositions: matter is the side of women and labor and body, and hence in need of free male spiritual guidance. It can't organize itself, so it must be rescued from above. What if women and labor and the body had untapped potentials of self-organization? What a threat to the system. Better by far to have them be the source of chaos and anarchy (remember Plato's hilarious blaming of the jealous wife for the decline from timarchy to oligarchy) and to present the false choice: either anarchy or control from above. Louis XVI: *après nous, le déluge!*

Books 3-4

Book 3 begins w/ another paean to Epicurus for revealing nature of the universe. To further his exposition, L will now explain mind and spirit.

Fear of death

First, another condemnation of fear of death by showing its ill effects: superstitious observance and greedy looting. "For abject ignominy and irksome poverty seem far away from the joy and assurance of

life, loitering already in effect at the gateway of death." Life/death here in intermingled biological and social sense: the socially "alive" man, the self-directed order-giver has indeed a more secure grip on biological life, for two reasons: 1) better health through leisure--fit and rested--body; 2) political terror that reinforces leisure system targets poor disproportionately.

"So in their greed of gain they amass a fortune out of civil bloodshed ..." Notice L gives social explanation of greed, not human nature explanation. If it's social, then reform is possible (even if L thinks it so unlikely that he counsels political withdrawal).

Mind and spirit as material and local parts of body

L's first step is to show mind and spirit are not a mere "harmony" of body, but are locally determined parts of human bodies. To our minds, he may be wrong on his physiology, but at least he offers arguments, and thus, as a scientist, he's more than happy to accept another explanation, as long as it is accessible and not mysterious.

He gives 2 major principles to account for the accepted facts: 1) mind and spirit are interconnected; 2) mind and spirit are material (spirit is small, fine atoms dispersed throughout body, which is made of larger, coarser atoms). Again, his physiology is not as important as his principles. Body and spirit together make life--but for L, spirit is material! Thus life is the conjunction of groups of different size and shape atoms (3.323-347).

Mortality of the soul

Next, L will demonstrate the birth and death of the soul: that mind and spirit are "neither birthless nor deathless" (3.418). "Birthless" refers to believe in reincarnation. L is ruthlessly satiric against reincarnation: "Again, it is surely ludicrous ..." (3.778-82).

His arguments for mortality of the soul, which mostly revolve around the observed facts of physical effects on mental processes--disease, alcohol, medicine--aren't as interesting as the fact that he makes them (a fact that wrecks the common postulation of the immortality of the soul as a perennial philosophical problem), and what he thinks acceptance of the mortality of the soul will do: free people from manipulation by superstition-mongering priests working as agents of social control.

Mortality of soul frees us of fear of eternal punishment after death

The end of Book 3 (830-1094) shows that death, as dissolution of consciousness and personality, can hold no terrors, as only a subject, a conscious person can suffer. "If the future holds misery ..." (862-68). L then goes on to make fun of people who worry about the state of their corpse. Everyone is terrified that vultures will pick their bones, but they don't seem to mind being torched on a pyre or stuffed into a box! But this is pure projection of a conscious self onto a dead body coupled with a gross ethnocentric preference for one set of customs rather than another (870-92).

Next, L gives a fascinating "demythologizing" of stories about torments after death. He shows they are really just projections of evils that living people suffer on earth: punishment after death is just a projection of punishments suffered in prisons: hell is fiery, so it branding! (1017). (By the way, current demythologizations would locate many of the punishments after death as displaced images of the anxieties provoked by current torments visited upon slaves. For example, Tantalus, the one who couldn't eat the fruit just past his grasp, is the everyday life of the kitchen slave.)

Finally, L cites the inevitability of death: all the great ones, even Epicurus himself, died: who are you to complain, then?

Sex

Book 4 has a long discussion of sensation: something only wretched philosophers could find of interest. The end discussion of sex is disappointing. Its model is a male hydraulic model, all about buildup and discharge. To avoid turmoil, the advice is promiscuity. He at least recognizes mutual pleasure in sex, but that need not be progressive: for millennia, it was women's alleged sexual insatiability that reinforced patriarchy.

Books 5-6

Cosmology (5.91-508)

After more praise of Epicurus and a forecast of Book 5, L details his cosmology.

First, *negative arguments* against a divinely created and immortal world.

First, the world is mortal: it will "crash" (95). To have his readers follow him, L must dissuade them of the belief that the celestial beings are immortal because they are divine intelligent bodies. But among the world's diverse bodies, only a few are fit to become conscious (125), and these do not include sun, moon, stars, etc.

Nor was the world produced by the gods. For what future reward would they perform such labor? (166) Here we see L attack the production model of divine creation. If one is going to project human production onto the gods, why not project the entire social act, including reward? But given the complete self-sufficiency of the gods, they are not in need of any reward. (Here production to make up lack--the alienated labor model of production, as it were.)

Other arguments against divine production: 1) what were the models? (180); 2) what about the imperfections of the world? (199ff).

Next L seeks to prove the mortality of the world. He shows that the elements: earth, water, air, and fire are themselves temporary atomic compositions (235ff). If the elements are temporary compositions, so must be larger bodies made of them, and so must be the world, the collection of bodies.

Other arguments follow, among them: 1) the limits of human history suggest the world is new (323-36); and 2) the strife of the elements suggests an apocalypse sometime (380).

L's *positive account* begins at 416. Infinite time, space, and matter allows for all possible combinations via atomic collisions to form diverse bodies and test their viability. At first a "raging hurricane" (435), the atomic cloud sorted itself out by the principle of "like combining with like" (442). Once again, it's not the details we're interested in, but the scientific method, the appeal to argument: principles deduced from observed facts used to explain other facts.

Social Contract (5.925-1240)

Lucretius' account of human social evolution conforms to the "social contract" model we saw in Plato's incomplete cities, and was resuscitated in 17th C Europe. Postulating a time of individuality, with chance coupling of male and female, is mere fantasy. Almost assuredly, humans have always been social. The real question is how do certain societies produce effects of individuality, not how do individuals come together to form societies.

In any event, L conforms to the logic of the model by postulating a time of "no thought of the common good, no notion of the mutual restraint of morals and laws" (960). As with all such models, there's no differentiation of technological and social complexity, and no explanation of increasing social complexity. Rather, we have merely the statement, "As time went by, men began to build huts and to

use skins and fire. Woman mated with man, moved into a single home ..." (1010). Then, again, inexplicably, the "neighbors began to form mutual alliances, wishing neither to do nor to suffer violence among themselves" (1020).

The interesting parts of the story come next, in the accounts of language and fire acquisition. We see L attempting naturalistic explanations, demythologizing the traditional accounts. Later he will do the same with "reverence for the gods" (1162ff). First, the image of gods come from dream images, onto which men project what they do not have in their society: a secure and powerful life. The gods were then credited with responsibility for celestial movement, for which ignorant men had to explanation (1186). True piety, L explains, is removing such ignorance by scientific investigation, not obeying superstition-mongering priests and their ridiculous rituals (1203).

Serenity and pleasure (5.1105ff)

Then another account of interest, as L intersperses his account of kingship with Epicurean advice to avoid pursuit of wealth and power in economics and politics in order to cultivate serenity (*ataraxia*). For money: "if a man would guide his life by true philosophy, he will find ample riches in a modest livelihood enjoyed with a tranquil mind" (1117). For politics: "Far better to lead a quiet life in subjection than to long for sovereign authority and lordship over kingdoms" (1128). Notice two things here. Re: economy, the question here is of appropriate level of money gained via trade, not of self-sufficient land ownership, the small farm having lost its viability. Re: politics, the choice is between quiet subjection or striving for rule over a kingdom, the citizen equal to others deciding course of the *polis* having disappeared.

Here's the place to discuss Lucretius and Epicurus' *hedonism*. The term refers to an explanatory theory of human--and animal--action: pursue pleasure and avoid pain. These must be balanced: a little pain now for modest but secure pleasures later? or risk big pains to shoot for big and refined pleasures? In a historical irony--or bcs of ascetic propaganda--"Epicureanism" became a word for pursuit of refined pleasures. The real picture is the pursuit of serenity (again, note the chaotic social background), which is best done by minimizing tastes, not refining them! The Epicurean (and implied Lucretian) advice would always be to secure modest pleasures by minimizing tastes (see Intro xvii-xx).

Celestial phenomena (6.379-422)

In Book 6 Lucretius sets out to explain celestial phenomena, because not knowing the causes of these is such a source of superstition. The details aren't as important, once again, as the attempt. One shouldn't miss, however, the delicious sarcasm of 6.379-422, where L mercilessly debunks the priestly interpretation of Jove's (Zeus') lightning bolts.

Disease and the Athenian plague (6.1090-1286)

This is a famously troubling passage, a strangely pessimistic end to such an affirmative work. Deleuze says somewhere, only partially joking, that he always wanted to write an article showing L could not have written it, but that it was a slanderous later addition by the pessimism-mongering Christians.

Whatever your thoughts here, the account is interestingly and thoroughly ecological and naturalistic, without a hint of moralizing: it is by no means a punishment for Athenian *hubris* or whatever. In a complex world, situations can develop that are inimical to human life: but that just shows that human life is not the pinnacle of a divinely-guided and protected and/or punished creation. Rather, we are only a non-privileged part of nature.