

Lucretius and the Memes of Prehistory

GORDON CAMPBELL (NATIONAL UNIVERSITY OF IRELAND, MAYNOOTH)

INTRODUCTORY NOTE: This paper is a work in progress, presented here as an interim discussion paper, on a topic I have been working on for the last two years or so. I plan to revise the paper thoroughly and perhaps to develop the application of meme theory to other ancient writers and areas of ancient literature. I would welcome critical comments—whether positive or negative—and I hope readers find the concept of memes as stimulating as I do.

gordon.l.campbell@may.ie

ABSTRACT: This paper examines Lucretius' use of myth and poetry, focusing on the prehistory in *DRN* 5.925-1457, and advances the argument that Richard Dawkins' theory of memes or 'viruses of the mind' may be a useful heuristic tool. Lucretius in his mission to combat superstition uses the infectious power of mythographic poetic topoi, which usually carry messages of religious falsehood, to vaccinate the reader's mind against superstition.

Meme, *n.*: An element of a culture or system of behaviour that may be considered to be passed from one individual to another by non-genetic means, esp. by imitation. (*Oxford English Dictionary s.v.*)

1. The Epicurean Prehistory of Religious Error

Notoriously Lucretius presents us with a peculiar problem in trying to disentangle the age-old argument between myth and philosophy: not only is he a philosopher writing in poetry in the first century BC, when the standard medium of philosophy had been prose for centuries, and a poet who uses myth to a considerable extent, but he is also an *Epicurean* philosopher, and as is well known, the Epicureans rejected poetry and myth as media of instruction. Further, the Epicurean philosophy seeks to set itself against myth and the mythological world-view, and indeed seeks to do away with that very mythological world-view and to replace it with a rational, reasoned, scientific account of the universe. Lucretius' use of myth and poetry are now much better understood than in the past, especially since Monica Gale's excellent study, but I think more remains to be said.¹

So Lucretius presents us with a peculiar problem, but also with a peculiar opportunity for studying how, and why, a rational philosopher could or should use

¹ M. Gale, *Myth and Poetry in Lucretius* (Cambridge 1994). An earlier version of the present paper was given at the Leeds International Latin Seminar, Friday 30th March 2001. I am grateful for the comments of all there, including Monica Gale, Barrie Hall, David Levene, Robert Maltby, David Sedley, and especially to Malcolm Heath for his detailed and thoughtful subsequent criticisms and for pointing me in the direction of Dan Sperber's work on 'The Epidemiology of Representations' (D. Sperber, *Explaining Culture: a Naturalistic Approach* (Oxford: Blackwell, 1999)) with which I have only just begun to engage. They are not of course responsible for my errors.

poetry and myth in conveying his message. First, having said that the Epicurean rejection of poetry is well known, I should outline how this rejection came about. Philodemus in *De pietate*² tells us that in book 12 of *On Nature* Epicurus says that the first humans knew that the gods existed, but that their ideas were later corrupted by prayers, sacrifices, processions, and poetic performances. For the original mistake, which led to the beginnings of religious error, we may compare *DRN* 5.1160-94: the first humans had a naturally arising form of true piety, they could see the gods as well as we can today, and knew that they were eternal and unchanging. It was only when they began to speculate about the order and regularity of the heavens that they mistakenly attributed control of the universe to the gods, thinking that such a regular system must be controlled in some way, and assuming that the gods, clearly the greatest of beings, must be the controllers. This mistake, Lucretius tells us, has been the cause of endless misery for their descendants, spreading the fear of death, which in *DRN* 3.59-86, is the cause of spiritual disturbance and of all the societal strife that it leads to. It was this original error then, that Epicurus says was promulgated by prayers and poetic performances, and so mythographic poetry, conveying false tales of the gods, is heavily implicated in the spread of *religio* and impiety at a very early stage.

Philodemus further tells us that certain philosophers and theologians invented and spread terrifying stories about the gods as a means of, depending on one's viewpoint, social control or of producing societal harmony.³ Later, others spread false stories without such aims but simply followed the fashion.⁴ Here philosophers enter the picture and continue the process started by the poets.

Philodemus continues with a critical catalogue of poets who put forward contradictory and irrational views of the gods. They are criticized just as Ennius is in *DRN* 1.117-26 for putting forward inconsistent and contradictory ideas about the gods. This is followed by a criticism of Stoic philosophers who accommodate the views of mythographic poets in their doctrine, and then finally by a history of philosophers from Thales to Diogenes of Babylon who do the same.⁵

This then, outlines the Epicurean view that poetry and philosophy have both been closely connected in the spreading of false stories about the gods and the world: the process begins with a mistake in cosmology, which is promulgated by the poets, and later the philosophers also spread mythological views through their works. Later, philosophers, especially the Stoics, even alter their systems in order to accommodate or allegorize the stories of poets. Hence, Epicurus' famous

² *De pietate* 225-31, 265-70, and 1176-1217 Obbink. For this analysis of the Epicurean theory of the rise of impiety see D. Obbink, 'How to read poetry about gods', in D. Obbink (ed.), *Philodemus and Poetry* (Oxford 1995) 189-209.

³ *De piet.* 1176-1217 Obbink.

⁴ *De piet.* 2145-74 Obbink.

⁵ See Obbink, 1995 (n.2) 200-209. This is the source for the criticism of Stoic allegorizing in Cicero *De natura deorum* 1.36-43. Cf. Epicurus *Ep. Men.* 123. The catalogue is introduced in *De piet.* 2480-2509 Obbink, and carries on in *De piet.* pt. 2. Obbink (forthcoming) = P.Herc. 1428 (A. Henrichs, 'Die Kritik der Stoischen Theologie im P. Herc. 1428' *Cronache Ercolanesi* 4 (1974) 5-32). See also A. Henrichs, 'Towards an edition of Philodemus' treatise *On Piety*' *GRBS* 13 (1972), 67-98.

rejection of poetry and the traditional education based on it.⁶ The process of the spread of false religious ideas then, is partly an unreflective acceptance through religious rites, prayers, sacrifices, and poetry, and partly a conscious infection of the gullible by priests and philosophers.

As has often been noted before,⁷ Epicurus himself is believed, according to Diogenes Laertius,⁸ to have begun his philosophical enquiries because of the failure of his teachers of literature to explain the meaning of *Chaos* in Hesiod's *Theogony* 116. In another version, also related by Diogenes, according to Epicurus' enemies he was himself an elementary schoolteacher who became obsessed with the Democritean analogy between letters and atoms. In both stories, Epicurus begins in literature, and then moves to philosophy. The first story is perhaps more likely to be true, fitting as it does the traditional approach to the poetry of Hesiod and of Homer as philosophical writers.⁹ Epicurus then, is portrayed as rejecting literature and poetry and the whole traditional educational syllabus in favour of a reasoned account of the universe. So, this is something of the background to Lucretius' decision to use myth and poetry as his medium of instruction. Epicurus saw mythographic poetry as instrumental in the prehistoric spreading of religious error, beginning with Orpheus and Musaeus¹⁰ and continuing with Homer, Hesiod, Euripides and others, and indeed saw it as a dangerously attractive and powerful medium for the promulgation of harmful ideas, much like the Sirens' song.¹¹ The student of Epicureanism should stop her ears to all such stuff and steer well clear of it, substituting in its stead Epicurean *vera ratio*.

⁶ Diogenes Laertius 10.121 = Epicurus frs. 568-9 Usener, and frs. 43 and 89 Arrighetti. For the arguments see Diskin Clay, 'Framing the margins of Philodemus and poetry' in Obbink (ed.), (1995) 3-14, E. Asmis, 'Epicurean poetics' *ibid.* 15-34, and Obbink, 1995 (n.2) 193-5.

⁷ See Obbink, 1995 (n.2) 189-93.

⁸ D.L. 10.2, citing as authority the *Life of Epicurus* by the second century BCE head of the Epicurean school, Apollodorus.

⁹ For this tradition M. R. Gale, 'Etymological word-Play and poetic succession in Lucretius' *Classical Philology* 96.2 (2001) 168-72, cites F. Buffière, *Les Mythes d'Homère et la Pensée Grecque* (Paris 1956), J. Pépin, *Mythe et Allégorie. Les origines Grecques et Les Contestations Judéo-Chrétiennes* (Paris 1958), and the charge of the allegorist Heraclitus that Epicurus stole his idea of pleasure as the greatest good from Homer (*Homeric Allegories* 4.2-4 = Epicurus fr. 229 Usener, see E. Asmis, 1995 (n.6) 16-17). See further, P. R. Hardie, *Cosmos and Imperium* (Oxford 1986) 6-32. See also Obbink, 1995 (n.2) 189-93, who compares Philodemus, *On the Good King According to Homer*, col. xliii 15-20 p. 109 Dorandi, for use of Homer as a starting point for philosophical enquiry (T. Dorandi, *Filodemo. Il buon re secondo Omero, Edizione, traduzione, e commento*, la scuola di Epicuro 3 (Naples 1982)).

¹⁰ Cf. the catalogue of salutary poets put forward by Aristophanes' Aeschylus in the *Frogs* 1029-36: Orpheus, Musaeus, Hesiod and Homer. To the first of these is attributed the invention of religious rites and the ending of murder.

¹¹ Cf. fr. 89 Arrighetti, in an address to Pythocles: 'Hoist the sails of your ship, and my blessed man, steer clear of all forms of conventional education' (trans. Obbink), Plutarch *De poetis audiendis* 15D discusses whether it is better to advise the student to completely avoid poetry and its falsehoods, 'hoisting the sails of an Epicurean boat', as he puts it, or to arm him with reason against it. See Asmis, 1995 (n.6) 19, and E. Kaiser, 'Odyssee-Szenen als Topoi' *MH* 21 (1964) 109-36 for the motif more generally. As Asmis argues however, Plutarch may deliberately misunderstand the Epicurean position, since Epicurus also seems to have considered that a wise person fortified by philosophy can listen to and even actively enjoy poetry.

Lucretius singles out Homer and Ennius as the chief examples of poets who have spread false religious ideas through their poetry.¹² They are linked to the *vates* who will terrify Memmius with their stories of punishment in the afterlife, and of the transmigration of the soul. On the other hand, it has long been recognized that they are two of the most important poetic models for Lucretius, and so the picture becomes even more confusing. However, one well-known example in particular of Lucretius' use of Homer in *DRN* may be instructive as a starting point. In *DRN* 3.18-22, Lucretius gives a near translation of *Odyssey* 6.42-6.¹³

apparet divum numen sedesque quietae
 quas neque concutiunt venti nec nubila nimbis
 aspergunt neque nix acri concreta pruina
 cana cadens violat semperque innubilis aether
 integit, et large diffuso lumine ridet.

The divinity of the gods appears and their peaceful homes, which no winds shake nor clouds sprinkle with rains nor snow hardened with bitter frost assaults falling white, and the ever cloudless aether covers, and laughs with broad-diffused light.

The Lucretian passage argues directly against the Homeric conception of the gods as active in human affairs: Epicurus' *aurea dicta* enable us to employ our reason to see things invisible to the eye, and we can see that there is no Acheron below us, and that the gods abide in perfect peace outside the elements and troubles of this world, and the description of the perfection of the peace of the gods' abode is lifted, almost word for word, from Homer's description of the ideal peaceful life of the gods on Olympus. In this case Lucretius' use of myth and poetry is usefully illustrated: Homer's description of the life of the gods active in the world is generally false, but this passage which paradoxically describes their life as one of perfect peace and retirement, is correct and so available for use, and may be turned *against* the Homeric mythological world view: the very view that the Epicurean philosophy seems to have come into being to oppose.¹⁴ By the simple recontextualization of Homer's lines into a passage of rational argument, they now give an anti-Homeric rational message. Lucretius has gone well beyond Epicurus' simple rejection of poetry and myth as carriers of religion, and uses them against themselves.

2. Memes

All the preceding may be now well-known in Lucretian studies but I suggest, partly because the Epicureans explain the ubiquity of false religion in terms of the prehistoric development of human culture, that it may be useful to examine the

¹² *DRN* 1.117-26. See further below 7-10

¹³ The passage is well discussed by Gale, 1994 (n.1) 56, 106, 111, 126, 207.

¹⁴ This is the sort of passage that Philodemus uses to criticise the inconsistency of poets. Cf. a very fragmentary section of *De pietate* pt. 2 Obbink (forthcoming) cols. 5A-12 gods mortal, 19-25 gods desiring rule, 34-6 gods in conflict, 37 Prometheus suffering from heat and storms, 38-9 labours of gods, 58-82 affairs with mortals, 83-94(?) habitations of gods. At present see Henrichs, 1974 (n.5).

technique Lucretius uses to reverse the process through modern evolutionary theories. Such passages of Homer as *Odyssey* 6.42-6 would be so familiar to ancient readers that they would hardly need to be told where they came from: they are the sort of motifs that are, as it were, imprinted in an ancient reader or listener's mind, and that form part of what W. Spoërrri refers to as the *Bildungsgut*, the background tradition of ancient thought, and P. Schrijvers terms 'idées reçues'.¹⁵ Some readers would be able to place the passage in context, others would recognise the passage just as Homer, others again would simply recognise it as a generally Homeric motif. I think it may be valuable to term such ideas and individual passages 'memes'.¹⁶ Meme theory is hardly uncontroversial in evolutionary theory, but it may be a very useful heuristic method to use it to view the writing of prehistory itself. Richard Dawkins invented the term memes to describe something he saw as analogous to genes. Genes are concrete parcels of genetic information passed from creature to creature, memes are abstract parcels of information. Both appear to exist, have a life of their own independent of any particular organism, and to evolve in their own right. Of course, this is to turn reality on its head: neither genes nor memes can possibly exist or evolve independently of organisms, but it may be heuristically useful to think of them as if they did. Dawkins, sensing that genes, while they may possibly be sufficient to account for physical evolution, on their own could hardly account for the evolution of culture, posited another sort of 'replicator', i.e. something that could be copied and passed from organism to organism just as genes are, would be subject to natural selection just as genes are, and would behave just as genes do, evolving and affecting the organisms they inhabit, and informing the evolution of those organisms and their culture, but that would be, unlike genes, abstract rather than concrete entities: that is ideas. Human culture then could be seen as evolving in a similar way to human physiognomy: ideas would be subject to a similar process of selection as are genes. As Dawkins puts it:¹⁷

Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene-pool by leaping from body to body via sperm or egg, so memes propagate themselves in the meme-pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation.

Dennett has a similar list:¹⁸

Arch, wheel, wearing clothes, vendetta, right triangle, alphabet, calendar, *The Odyssey*, calculus, chess, perspective drawing, evolution by natural selection, impressionism, 'Greensleeves', deconstructionism.

¹⁵ W. Spoërrri, *Späthellenistische Berichte über Welt, Kultur und Götter* (Basel 1959), P. Schrijvers, *Lucretius et Les Sciences de la Vie, Mnemosyne* Suppl. 186 (Leiden 1999) 145.

¹⁶ For memes, see esp. R. Dawkins, *The Blind Watchmaker* (Harlow 1986) ch. 5, and id. 'Viruses of the mind' in B. Dahlbom (ed.), *Dennett and his Critics: Demystifying Mind* (Cambridge, Mass. 1993), also available online at <http://www.santafe.edu/~shalizi/Dawkins/viruses-of-the-mind.html>, D. Dennett, *Darwin's Dangerous Idea* (New York 1995) 335-69, S. Blackmore, *The Meme Machine* (Oxford 1999), and D. Hart-Davis and S. Blackmore, *UK Memes Central* online at <http://www.memes.org.uk/index.html>.

¹⁷ *The Selfish Gene* 206.

¹⁸ 1995 (n.16) 344.

Meme theory has had a rough ride in the last twenty five years, not least because it appears to reinforce the sort of determinism implicit in Dawkins' 'Selfish Gene' idea: that we are simply machines for the replication of the genes or memes we carry, and are their puppets, with no free will or even self of our own independent of the 'will' of the genes or memes. However, Dawkins himself introduced the idea of memes as an attempt, as he put it in the *Selfish Gene*, 'to overthrow the tyranny of the replicators'.¹⁹ He saw that genetic theory could lead us down a sterile deterministic cul-de-sac, and that something else was needed to explain human culture, and allow us free will. I find any sort of determinism deeply repugnant, whether physical, genetic or memetic, and so I would not be discussing memes unless I thought that they may offer us a way out of such determinism. Already in meme theory deeply entrenched positions have been taken up by determinists and the enemies of determinism, but there have been attempts to reconcile the two positions. At the heart of the argument is the question of whether we are simply machines for the transmission of memes, just as some biologists see us as machines for the transmission of genes, or whether we do have an ability to control, edit and transform the memes we encounter. As I see it we are able to control memes, and as Lucretius shows, able to use them in a conscious way in order to direct the path of human cultural evolution.

If memes are analogous to genes then, and if they are subject to the same sort of natural selection, we might expect each meme to be selected for its usefulness in enhancing our well-being and thus our reproductive fitness, and that harmful memes will be filtered out and become extinct. However this is far from the case. The meme that celibacy is a good idea for example is very powerful and remarkably resilient even though it is clearly deleterious to the reproductive fitness of those infected with it, and thus harmful to their genes. As Dennett shows, in extreme cases, such as that of the Shakers, this particular meme can in fact very nearly destroy an entire community. If it is holier not to have sex than to have sex, then the holiest of all will be those who refrain from sex completely, even in marriage. Other even more extreme examples can be seen in the various suicidal religious cults of recent years.²⁰ So, clearly memes behave in a self-interested way rather than consulting the well-being of their hosts. They behave in a very similar way to viruses. It may not be a good idea for a virus to be too virulent or act too quickly. It will have a deleterious effect, but it must allow its host to survive long enough at least to spread it to others.²¹

¹⁹ *The Selfish Gene* 215: 'We have the power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination ... We are built to turn against our creators. We, alone on earth, can rebel against the tyranny of the selfish replicators.'

²⁰ Dennett, 1995 (n.16) 362-8.

²¹ Such as the meme that smoking is cool, by which I was infected at the age of eighteen. In a similar way it may often be a mistake to see every gene and every genetically heritable characteristic as an adaptive feature. As Gould and Lewontin famously argue, certain characteristics however common are the result of design constraints produced by the prehistory of the evolution of a creature, rather than serving any real adaptive function. See S. J. Gould and R. C. Lewontin, 'The spandrels of San Marco and the panglossian paradigm: a critique of the adaptationist programme' *Proceedings of the Royal Society of London* B205 (1979) 581-98. Alternatively a gene may be deleterious to its carrier in one way but beneficial in another, such as

To explain how even ideas that are harmful to those who hold them are transferred from person to person, Dawkins²² uses the analogy of computer viruses. The human mind is ‘hard-wired’ to absorb information, and ideas are copied, and passed on intact from one person to another unreflectively, in much the same way as a computer will copy a virus unknowingly and infect other computers. This is a very useful process, and is for the most part, how we, especially as children, learn the large amounts of information we need to survive. However, it is also problematic. Certain ideas, especially religious ones, are so attractive that they will rapidly infect entire populations. As Dawkins puts it:²³

A human child is shaped by evolution to soak up the culture of her people. Most obviously, she learns the essentials of their language in a matter of months. A large dictionary of words to speak, an encyclopedia of information to speak about, complicated syntactic and semantic rules to order the speaking, are all transferred from older brains into hers well before she reaches half her adult size. When you are pre-programmed to absorb useful information at a high rate, it is hard to shut out pernicious or damaging information at the same time. With so many mindbytes to be downloaded, so many mental codons to be replicated, it is no wonder that child brains are gullible, open to almost any suggestion, vulnerable to subversion, easy prey to Moonies, Scientologists and nuns. Like immune-deficient patients, children are wide open to mental infections that adults might brush off without effort.

Thus, Dawkins compares religion to a particularly virulent virus. Unscrupulous people may actively seek to infect others, the practice especially of the religious in infecting the more receptive minds of the young, and will use an idea they know to be especially attractive as a carrier for the virus they wish to spread. This may be seen perhaps most clearly in the television Evangelist’s conveyance of the virus ‘give me your money’ by using the carrier meme ‘blessed are the poor’. The Epicureans seem to see a similar process going on. As I say above, Philodemus argues that philosophers and theologians invented false stories about the gods with which to terrify the gullible, and Lucretius similarly charges the *vates* with inventing false stories, *DRN* 1.102-6:

tutemet a nobis iam quovis tempore, vatun
 terriloquis victus dictis, desciscere quaeres.
 quippe etenim quam multa tibi iam fingere possunt
 somnia, quae vitae rationes vertere possint
 fortunasque tuas omnis turbare timore.

the gene for sickle-cell anaemia which helps protect the carrier against malaria. Or again, a gene may have no adaptive function at all and may be simply the product of genetic drift: if a shoal of a particular species of fish, half of which carry the allele for spottiness and half the allele for stripeyness, swim out to make a new home on an uninhabited reef, and by sheer chance one day all the stripy fish are eaten by a shark, leaving only the spotty fish, the allele for stripeyness will have disappeared from the species but, despite appearances, the allele for spottiness will not necessarily be a more adaptive allele than that for stripeyness was.

²² ‘Viruses of the mind’ 2-5.

²³ ‘Viruses of the mind’ 1.

You yourself will seek some day to depart from us, overcome by the terrifying words of the *vates*. And indeed how many fictions are they able to invent for you, which are able to overturn the rationale of your life and to throw all your fortunes into disarray through fear!

In this case it is Memmius who is addressed: an adult rather than a child as in Dawkins' example. But as has often been noted, Lucretius explicitly compares his readers to children, *DRN* 2.55-8:²⁴

nam veluti pueri trepidant atque omnia caecis
in tenebris metuunt, sic nos in luce timemus
interdum nilo quae sunt metuenda magis quam
quae pueri in tenebris pavitant finguntque futura.

For just as children tremble and fear everything in the blind darkness, so we sometimes fear things in the daylight that are no more to be feared than the things children shudder at in the dark and imagine are about to happen.

For Lucretius as well religion is a kind of disease, his mission is a therapeutic cleansing and healing of the mind, and for him adults too are vulnerable to the infectious stories of the *vates*.²⁵ Adults then are in need of the same treatment as children in order to remove their false notions and replace them with healing reason. But as Dawkins argues, adults are able to brush off infectious memes which pass straight through the guard of children. Dennett²⁶ puts it in terms of 'meme filters'. We are simply unable to evaluate every notion, piece of information, or meme that comes our way—we are constantly bombarded with information—so we must then develop some sort of resistance, some sort of filter which will automatically and unreflectively reject ideas that are distasteful or harmful to us. The rational-minded will tend to automatically filter out religious memes, but the religious-minded will in turn tend to filter out rational and scientific memes. If then we develop meme filters as we grow and learn, as adults we are inevitably going to be more difficult to convert than as children. If I hear a hell-fire preacher in the street telling me that unless I repent I will burn eternally in hell, I will smile politely, pass on and put the idea from my mind, having long ago dismissed the notion as ludicrous. I could not function as a human being if every time I heard suchlike notions I had to suffer the sort of mental and spiritual anguish I suffered at the age of eleven when I rejected them. On the other hand, I could lecture a fundamentalist creationist on theories of Darwinian evolution until I was blue in the face with very little chance of changing their firm belief that God put the dinosaur fossils in the earth as a sort of test to see if our faith was strong enough to disbelieve the evidence of our own eyes. So as long as Epicureanism is retained in the language of reason—prose—there is little chance of it penetrating

²⁴ 2.55-61 = 3.87-91, 6.35-41. 2.59-61 = 1.146-8.

²⁵ See esp. M. Nussbaum, *The Therapy of Desire: Theory and Practice in Hellenistic Ethics* (Princeton 1994) 102-139. The plague at the end of *DRN* 6 has often been seen as an analogy for the spiritual sickness caused by the fear of death. See Gale, 1994 (n.1) 225-8, who notes Lucretius' use of similar imagery for the manner of the transfer of the plague and the transfer of human spiritual evils (cf. 6.30 *volaret*). The most dramatic example of vatic persuasion is at 1.84-101.

²⁶ 1995 (n.16) 342-52.

the anti rational-meme filters of the religious.²⁷ As Lucretius puts it, *DRN* 1.943-50:

sic ego nunc, quoniam haec ratio plerumque videtur
 tristior esse quibus non tractata, retroque
 volgus abhorret ab hac, volui tibi suaviloquenti
 carmine Pierio rationem exponere nostram
 et quasi musaeo dulci contingere melle,
 si tibi forte animum tali ratione tenere
 versibus in nostris possem, dum perspicis omnem
 naturam rerum qua constet compta figura.

[As doctors sweeten bitter medicine with honey] so now, since this philosophy seems too bitter to those who have not used it, and people shy away from it, I want to expound our philosophy in sweet-speaking Pierian song and, as it were, to touch it with the sweet honey of the Muses, if perhaps in such a way I might engage your mind in my verses while you perceive in what form the whole nature of the universe consists.

So for Lucretius the path to engaging Memmius'—and our—intellects lies through the senses—here the analogy between tasting the sweetness of honey and hearing the sweetness of poetry. If we hear or read Epicurean prose the message seems bitter to us because our senses have been conditioned to find such rational arguments unpalatable. However commonplace this motif of 'verses sweet as honey' may be, for Lucretius this analogy with sense perception has more point than it would in any other poet, as illustrated by the way he describes the process by which false notions are passed from person to person, *DRN* 5.1131-4:

proinde sine incassum defessi sanguine sudent,
 angustum per iter luctantes ambitionis,
 quandoquidem sapiunt alieno ex ore petuntque
 res ex auditis potius quam sensibus ipsis.

So let them sweat, worn out in vain, bloodless, struggling along the narrow path of ambition, since they are wise [they taste] from another's mouth and they seek reality from hearsay rather than from their own senses.

People struggle up the steep and narrow path of ambition because they do not use the evidence of their senses to interpret the world around them, but get their ideas from the mouths of others. With *alieno ex ore* Lucretius deliberately disinters the dead 'tasting' metaphor in *sapiunt*, and allies the notion of tasting to that of hearing: people fail to apply the correct Epicurean epistemological procedure for finding the truth and dispelling superstitious fears as outlined at 1.146-8: *naturae species ratioque*, 'looking at nature and reasoning about it'.²⁸ Their wisdom comes

²⁷ This may be more true of Epicureanism than of any other philosophy. As a consequence of Epicurus' rejection of traditional learning and education, there is a long history of Epicurean writings being seen as coarse, unlearned and unattractive. See Asmis, 1995 (n.6).

²⁸ = 2.59-61, 3.91-3, and 6.39-41. Thus D. Sedley, *Lucretius and the Transformation of Greek Wisdom* (Cambridge 1998) 37-8. He sees it as a translation of φυσιολογία and compares Cic. *ND* 1.20 where Velleius says: *physiologiam, id est naturae rationem*. He also allows the additional reading 'the appearance and rationale of nature', both seemingly within the compass of φυσιολογία.

from what others say, just as if they were using someone else's sense organs to taste with: inevitably the truth is distorted, and what they receive is the false opinion of others.²⁹ If they were to trust their own senses, false superstitious notions would never arise. In this context the notion of using poetry to fool the senses of the listener, just as the honey on the cup of medicine fools the senses of the patient, becomes more pointed: this is the deliberate application of the same mechanism whereby false opinion usually arises, in order to replace it with correct opinion. People have a tendency to make mistakes in the interpretation of sense-perceptions and so to be fooled by the attractive persuasive false opinions of others. So, the disease, as it were, of superstition is spread, just as in the case of sacrifices, religious processions and poetic performances, and the philosopher may legitimately use this tendency and reverse the process. Dawkins again describes the process in terms of computer viruses: 'Returning to possible uses of viruses for positive purposes, there are proposals to exploit the 'poacher turned gamekeeper' principle, and 'set a thief to catch a thief.'³⁰ A virus may be deliberately introduced into an infected system in order to combat the effects of harmful viruses.

For Lucretius then, reason and the scientific world-view may be administered in just the same way as superstition, as a virus, but to pass through the meme filters of the superstitious it must be made to look and taste the same as the religion virus. In computing terms such viruses are known as 'Trojan horses', because they rely on their attractiveness to fool the target into accepting them. The software engineer or the doctor faced with an infected system—a computer, or a human mind—may follow certain different paths to cleanse the system. The system may be vaccinated against the virus by taking it, hollowing it out leaving the shell intact, and filling it with new, healing information, as Philip Hardie describes Lucretius doing.³¹ Alternatively, the virus may simply be hollowed out and left empty, as Dawkins relates he has done successfully with a computer virus: the virus is still highly infective because of its attractiveness, but it can no longer do any harm, and by its presence in the system will also prevent the system being re-infected by the 'live' form of the virus.

A third method of vaccination may be described with reference to biology. As Dawkins says, cellular machinery is extremely good at copying DNA, and seems 'eager' to copy it. Viruses or mutant genes make use of this eagerness, and disguise themselves as the DNA of their host, thus multiplying. They achieve their success by being very nearly indistinguishable from the 'real thing', only a small part of the mutant gene will have a subtly different string of DNA. In the same way, Lucretius will present topoi in very nearly their original form, but with only

²⁹ Lucretius' analogy between sense-perception and the reception of ideas tempts me to see a closer parallel between the two. In Epicureanism, after all, ideas will be atomic entities which will lodge in the mind in physical form. It may not be too far-fetched then to see the process of the reception of ideas as fundamentally similar to the reception of other externally-gathered sense-stimuli. But for the time being I shall leave this as a suggestion.

³⁰ 'Viruses of the Mind' 4.

³¹ 1986 (n.9) 11.

a slight twist. This enables the rejigged and recontextualized topoi to infect the reader and to vaccinate her mind against future infection.

3. The Memes of Prehistory

One of the most remarkable aspects of Lucretius' prehistory in *DRN* 5.772-1457 is the great number of intertextual points of contact with other ancient accounts of prehistory, ethnography, the Isles of the Blessed, blessed lands and so on. Indeed ancient prehistories in general have remarkable similarities to one another. It seems almost as if this topic in particular is constructed from a broad collection of topoi that move freely between writers, both philosophical and mythographical, constantly being recontextualized. Some of the main prehistory topoi that turn up again and again are:³²

- Greater size of early humans.
- Living a life like wild beasts.
- No agriculture.
- No technology.
- No clothing.
- Wearing animal skins.
- Eating acorns.
- Streams of plenty.
- No seafaring.
- No law.
- No property / communism.
- No land boundaries.
- No fire.
- Fire from lightning.

Hesiod's myth of the Golden Age especially turns up almost everywhere, and indeed it seems very difficult to avoid it. This myth seems to be one of the most attractive of all and is available for use by both primitivist and progressivist writers. The topoi, or memes as I see them, of prehistory do not however have one fixed meaning that they carry with them. recontextualized in one place they may carry quite a different meaning than in another. Due to the ubiquity, attractiveness, and resonance of the memes that form the background to it, the topic of prehistory presents Lucretius with a peculiar problem, but also a great opportunity. Just as our minds are infected by the Darwin meme, or rather by the pack of memes surrounding Darwinism that make up our *Bildungsgut* of prehistory, so that we will automatically tend to think in terms of hairy hominids engaged in a violent 'struggle for life', so the minds of Lucretius' readers were heavily infected by a range of memes, some of them similar to ours, and some quite different. Very roughly and inaccurately, two strains of meme stand out: on the one hand, the Golden Age and associated primitivist ideas, and on the other, a rational

³² This is just a small selection. For a fuller survey, see the table of the memes of prehistory in the appendix below. This sameyness of ancient prehistories has led some scholars to posit a common source. See T. Cole, *Democritus and the Sources of Greek Anthropology* (Atlanta 1990) who considers Democritus is the source.

progressivist view, in some way similar to ours, with tough, bestial hairy early humans fighting and struggling to survive in an unfriendly world without technology, and developing arts and technologies gradually by trial and error. These are certainly not mutually exclusive, and are often closely intertwined as shown by Lovejoy and Boas' eccentric collection in which the same writer and indeed the same work will be found under both primitivism and anti-primitivism.³³

Accordingly, on the one hand Lucretius has a field of prehistory laid out for him already heavily infected with both mythological and rationalist memes, and so he can hardly avoid discussing prehistory in traditional terms. On the other, the very large stock of traditional memes and their attractiveness, gives him a great opportunity to practice his honeyed cup / sugared pill vaccination techniques upon prehistory, and to appropriate, and debunk mythological themes, and so to vaccinate his readers against mythology, and at the same time use the infective power of mythology as a carrier for the virus *vera ratio*.

I consider that this technique of using comfortably accepted background ideas to construct his prehistory is what gives it the strange patch-work quilt appearance of seeming primitivist and anti-primitivist topoi presented alongside one another, that has puzzled so many scholars.³⁴ whole sections of the prehistory are composed of pieces lifted from elsewhere, and slotted into place in order to produce an attractive vehicle for a rational account of the gradual development of culture, and to refute any idea of culture as a divine gift. A prose account of such a rationalist prehistory may well be a straightforward and plain description of the gradual development of culture, but Lucretius' poetic account is far more powerful, and far less dull and prosaic, precisely because it utilizes motifs that usually argue quite the opposite—that culture is a divine gift. In this, Lucretius' technique of appropriation and recontextualization of such memetic themes is both highly effective, and also potentially confusing to the reader: we may be misled into thinking that Lucretius 'believes' in the myth of the first age of humanity as a Golden Age, when the myth of the Golden Age is more nearly the hollowed out shell of the Hesiodic model.

Lucretius, all his sources, and our own minds are conduits for ideas that have in some way an independent existence, but are expressed as texts. These are what we study, and indeed are all that we can study, the minds of their authors being unavailable to us. Both he and his sources will be similarly infected by the memes of prehistory, and will tend to reproduce them partly in an unreflective way, and

³³ A. Lovejoy and G. Boas, *Primitivism and Related Ideas in Antiquity* (Baltimore 1935).

³⁴ The bibliography on Lucretius prehistory is extensive, but see E. Bertoli, *Tempora Rerum: Modalite del Progresso Umano in Lucrezio* (Verona 1980), D. R. Blickman, 'Lucretius, Epicurus and prehistory' *Harvard Studies in Classical Philology* 92 (1989) 157-89; P. Boyancé, *Lucrece et l'épicurisme* (Paris 1963) 236-61; D. J. Furley, 'Lucretius the Epicurean on the history of man', in *Fondation Hardt Entretiens* 24 (Geneva 1978) 1-27, E. J. Kenney, 'The historical imagination of Lucretius' *Greece and Rome* 19 (1972) 12-24, B. Manuwald, *Der Aufbau der Lukrezischen Kulturentstehungslehre* (Mainz 1980), L. Perelli, 'La Storia dell'Umanità nel 5 libro di Lucrezio' *Atti della Accademia delle Scienze di Torino* 101 (1967) 117-285, A. Schiesaro, *Simulacrum et Imago* (Pisa 1990) 91-168, P. H. Schrijvers, *Lucrece et Les Sciences de la Vie, Mnemosyne Suppl.* 186 (Leiden 1999) 1-118.

also each will identify, adopt, and intentionally use many of them, and each will give them an individual twist that will suit their own purposes. Further, our own minds are heavily infected by prehistory memes, and this fact forces us to examine our own preconceptions, as well as those of Lucretius and his sources, before we can begin to construct a clear picture of Lucretius' prehistory. The table of the memes of prehistory in the appendix represents something of the common heritage of Lucretius and his sources. Our own common heritage is sometimes very similar, and sometimes quite different. Lucretius' appropriation and recontextualization of memes from mythological sources to present his essentially rationalist account, brings with it a strong Golden Age flavour, since accretions of meaning will still attach to each meme from its former context. Certain memes will be so familiar and so resonant, that even Lucretius' aptitude for: 'getting inside his opponents' positions and then evacuating them of their prior content to refill them with Epicurean doctrine',³⁵ will not remove all of their former associations. It is now a well known aspect of intertextuality that recontextualization of a topos does not cleanse it of all the accretions of meaning it gained from its former context, and as topoi move through literature they will gain new associations and resonances and carry these with them.³⁶ However, Lucretius uses this fact and allows the positive Golden Age associations of his appropriations to work for him, adding an ethical dimension to his prehistory. In this way, Lucretius will take a mythological topos and 'debunk' it, in Gale's phrase³⁷ replacing the former message with a rationalizing one, but leaving the appearance of the topos intact, while at the same time using the external appearance of the topos as well as part of his message. Thus, he presents the reader as if with a brightly coloured sugared pill, the outer coating of the myth intact and attractive, but with Epicurean medicine inside—the Trojan horse technique—but goes beyond this vaccination allowing the medium also to be part of his message.

I think this can be seen particularly clearly in Lucretius' treatment of one of the memes of prehistory, the 'streams of plenty'. I have collected the following references to various kinds of streams, or rivers, of plenty in ancient accounts of prehistory, blessed lands, the Isles of the Blessed, and the lands of noble savages.³⁸ I expect there are many more I have missed:

Exodus 3:8 and 13:5, Euripides *Bacch.* 704ff and *Hipp.* 741ff, Pherecrates *PCG* fr. 113, Plato *Ion* 534A and *Rep.* 363A 6ff, Theocr. 5.124ff, Vergil *G.* 1.132 and 2.136-8, *E.* 4, 15.1.64, Tibullus 1.3.35ff, *Aetna* 9ff, Horace *Carm.* 1.33.7-8, 2.19.9ff and *Ep.* 16, Ovid *Met.* 1.111-12 and *Am.* 3.8.35ff, Statius *Silv.* 1.6.39ff, Lucian *V. Hist.* 1.7, 2.6, and 2.11-14, *Orac. Sib.* 3.741ff, Philostrat. *Imag.* 1.14.3 and 1.18.1, Lactantius *Div. Inst.* 7.24, Claudian *Rapt. Pros.* 3.18.

³⁵ Hardie, 1986 (n.9) 11.

³⁶ See D. Fowler, 'Philosophy and literature in Lucretian intertextuality', in id. *Roman Constructions* (Oxford 2000) 138-55.

³⁷ 1994 (n.1) 168.

³⁸ Many of these are from Bodo Gatz's very useful table of themes in the Golden Age, B. Gatz, *Weltalter, goldene Zeit und sinnverwandte Vorstellungen* (Hildesheim 1967).

This topos is so common that I think, if anything does, it fully deserves to be called a meme of prehistory. Lucretius then can hardly avoid it and must address it if only to debunk the notion that rivers of wine, milk or honey used to flow across the primeval landscape. He takes two approaches to the problem, beginning with a straightforward rejection of the notion, *DRN* 5.907-15:

Quare etiam tellure nova caeloque recenti
 talia qui fingit potuisse animalia gigni,
 nixus in hoc uno novitatis nomine inani,
 multa licet simili ratione effutiat ore,
 aurea tum dicat per terras flumina vulgo
 fluxisse, et gemmis florere arbusta suesse,
 aut hominem tanto membrorum esse impete natum,
 trans maria alta pedum nisus ut ponere posset
 et manibus totum circum se vertere caelum.

And so as well, someone who pretends that such animals [Centaur etc.] could have been born from the new earth and fresh sky, relying on this one empty word ‘newness’, is likely to babble many such things from a similar argument, saying that golden rivers used commonly to flow at that time over the lands, and that trees used to flower with jewels, or that a man was born with such stretch of limb that he could place his stride across the deep sea and with his hands turn the whole sky around him.

Lucretius lumps the ‘streams of plenty’ meme together with two others as examples of the sort of ludicrous ideas that one tends to find in mythological accounts of prehistory. He exaggerates for effect³⁹ but the reference to gold highlights his target source—Hesiod’s account of the five races—and by linking Hesiod’s story of the gradual decline of humanity from the divinely blessed Golden Race to the degenerate modern Iron Race with the even more ludicrous *adunata* of mythology—Atlas and other giants, and a classic topos of blessed landscapes, the gold or jewel-bearing trees—he debunks the entire rival primitivist tradition of prehistory. So when we come across these memes again we are more likely to smile knowingly than to be infected by a nostalgic yearning for a return to a purer, simple and nobler age. However he does not leave it at that, and indeed there are streams of plenty in his prehistory, *DRN* 5.945-52:

at sedare sitim fluvii fontesque vocabant,
 ut nunc montibus e magnis decursus aquai
 claricitat late sitentia saecla ferarum.
 denique nota vagis silvestria templa tenebant
 nympharum, quibus e scibant umori’ fluenta
 lubrica proluvie larga lavere umida saxa,

³⁹ Cf. Gale 1994 (n.1) 163-4. I have been unable to find any rivers of real gold amongst the *adunata* of the Golden Age landscape. But Ctesias does have a spring of liquid gold in his description of the wonders of the Orient (Ctesias *Indica* in Photius *cod.* 7245b). Similarly the gem-bearing trees seem to be paralleled most closely in Greek literature by either Pindar’s flowers of gold in the Islands of the Blessed (*Olymp.* 2.72) or the golden apples of the Hesperides, cf. 5.32 *aureaque ... fulgentia mala*. Lucian (*Vera Historia* 2.17-18) has trees of glass that bear self-filling wine glasses in his Island of the Blessed. However, in Indian Vedic myths of the Tretā age, we do find trees bearing jewels and also fine cloths (cf. *Vāyu Purāna* 8.74). Vergil remythologises the rivers of gold in *Georgics* 2.165-6.

umida saxa, super viridi stillantia musco,
et partim plano scatere atque erumpere campo.

But to quench their thirst the rivers and springs called them, just as now the waters rushing down from the high mountains call afar loud and clear the thirsting races of wild animals. And then they stayed in the woodland temples of the nymphs known to them from their wanderings, from where they knew gliding waters flowed and washed the wet rocks with a great gush, washed the wet rocks dripping above with green moss, and in some cases burst out and gushed onto the level plain.

When we read these lines we know exactly where we are; we are in that blessed numinous pastoral landscape that exists in indeterminate time and space and shares so many features with other blessed landscapes such as that of the Golden Age and that of the Isles of the Blessed: Arcadia.⁴⁰ The language and imagery then is that of the rival primitivist tradition, and indeed this has led some scholars to see Lucretius positively praising this stage of humanity as a sort of Golden Age, and even attributing a rudimentary religion of nature to the first humans.⁴¹ However we shall shortly see the early humans fighting over carrion, being eaten alive by wild beasts, resorting to rape or prostitution to satisfy their lusts, hiding in caves when lashed by storms, and dying in agony from hideous sores and starvation. All this takes place in Arcadia. It might be thought that all Lucretius really needs to do to get across his rational message of the gradual acquisition of culture without divine aid is to say ‘the first humans drank water from streams: they had no need of rivers of wine or honey’. But because the idea of rivers of plenty in prehistory is such a powerful meme, it is not enough to simply debunk it, and again because it is so powerful it is available for use as an excellent carrier for his rational progressivist argument. Lucretius has identified one of the key memes of the primitivist tradition and instead of killing it dead has introduced it into his rational prehistory as a Trojan-horse virus: it looks and tastes like the Golden Age and Arcadia, but is used to argue something quite different. We may imagine even the most romantic Golden Age / rural idyll dreamer, such as Horace’s moneylender Alfius in *Epode* two, lapping up this poetry.⁴² Alfius would not wish to know that the life of the countryman is tough and miserable: that he is frequently faced by crop-failure and starvation and crippled by arthritis. Similarly he would not wish to see the life of the first age of humanity as nasty, brutish, and short. He would rather read Hesiod or Aratus, or in philosophy perhaps Posidonius or Dicaearchus.⁴³ But by recontextualizing this meme with a slight twist, a subtly

⁴⁰ Gale, 1994 (n.1) 170 compares Theocritus 1.1-8, 5.33, 7.136f, Vergil *Eclogues* 1.51f, and 7.45. For Lucretius and pastoral poetry generally see A. L. Giesecke, *Atoms, Ataraxy, and Allusion: Cross-generic Imitation of the De rerum natura in Early Augustan Poetry*, *Spudasmata* Bd. 76 (Hildesheim 2000) 31-58, D. J. Gillis, ‘Pastoral poetry in Lucretius’ *Latomus* 26 (1967) 339-62.

⁴¹ Cf. F. Giancotti, *Religio, Natura, Voluptas. Studi su Lucrezio* (Bologna 1989) 176-7, L. Perelli, ‘La Storia dell’Umanità nel 5 libro di Lucrezio’ *Atti della Accademia delle Scienze di Torino* 101 (1967) 160-1.

⁴² *Epode* 2.23-25: *libet iacere modo sub antiqua ilice / modo in tenaci gramine / labuntur altis ripis aquae.*

⁴³ Aratus *Phaenomena* 96-136, Posidonius fr. 284 E-K (in Seneca *Epistle* 90), Dicaearchus fr. 49 Wehrli (in Porphyry *De abstinentia* 4.1.2).

different string of literary DNA—water instead of wine—the argument passes through the meme filters of such Golden Age dreamers.

There are many other examples of this technique in the prehistory. I shall look at just one more; another of the classic memes of prehistory. If we were to ask today what people ate in prehistory before the invention of agriculture, the unreflective answer might very well be ‘roots and berries’.⁴⁴ If we were to ask the same question of an ancient Greek or Roman the answer would almost inevitably be ‘acorns’. I have collected the following references to acorn-eating in prehistory and among ‘primitive’ peoples etc. Again, I expect there are many more:⁴⁵

Hesiod *Op.* 233, Herodotus 1.66.2, Hellenicus fr. 96, Theophrastus *On Piety* fr. 2.25ff, Dicaearchus fr. 49 Wehrli, Galen *De Alim. Fac.* 2.38.4, Diod. Sic. 19.19.3, Cicero *Orat.* 31, Varro *RR* 2.1.3, Vergil *G.* 1.8, and 1.147-49, Horace *Sat.* 1.3.100, Tibullus *Elegies* 2.1.37ff and 2.3.68ff, Diosc. 1.175, Propertius 3.13.25ff, Ovid *Met.* 1.104-6, and 14.216, *Am.* 3.10.9, *Ars Am.* 2.622 and *Fast.* 1.671ff, 4.395ff, 4.509ff, Pliny *NH* 7.56, 16.1, and 16.6, Plutarch *Mor.* 993E ff and *Cor.* 3.3-4, Juvenal *Sat.* 6.1ff and 13.57, Lucian *Amat.* 33f, Pausanias *Descr. Graec.* 8.1.4-6 and 8.5.1, Apuleius *Met.* 11.2, Macrobius *Somn. Scip.* 2.10.6, Maximus Tyrius *Or.* 21.5c, Apollonius Rhodius 4.264ff, Aelian *Var. Hist.* 3.39, Prudentius *Contra Symm.* 2.284, Claudian *Rapt. Pros.* 3.18ff, Boethius *Phil. Cons.* 2.5, Arnobius *Nat.* 2.66, Calpurnius *Ecl.* 4.24, Just. 2.6.5, Cervantes *Don Quixote* 1.11, Rousseau 2nd *Discourse* pt.1, Locke 2nd *Treatise on Government.* ch. 5, Shelley, M. W. *Frankenstein* ch. 17.

If accounting for the quenching of the early humans’ thirst is straightforward; accounting for their sustenance is somewhat more problematic. The Golden Age tradition of course can answer the question of what the first humans ate, born into the world without technologies of any kind, by appealing to the beneficence of the gods: the first people were more pious than we are today and the gods responded to their piety by supplying all their sustenance spontaneously from the earth. It is because we are a degraded and impious race that we have to struggle to eke a living from soil by farming.⁴⁶ In the Golden Age no farming was necessary. The rationalist tradition, deprived of the *deus ex machina* explanation, can only appeal to naturally occurring wild foods as the diet of the first people. It needs to be something very plentiful. It might be grasses, as in Diodorus 1.7.1, but overwhelmingly this first food is acorns. So although it is more difficult to feed his first humans than it is to water them, a good deal of work has already been

⁴⁴ Try this at home! An Internet search for the phrase ‘roots and berries’ yielded 2,290 results, many of which were concerned with prehistory, hunter-gatherers, survival etc. Cf. C.S. Lewis, *Prince Caspian* (Harmondsworth 1951) 17: “Hermits and knights-errant and people like that always manage to live somehow if they’re in a forest. They find roots and berries and things.” “What sort of roots?” asked Susan. “I always thought it meant roots of trees,” said Lucy.’

⁴⁵ Many of these are from D. B. Levine, ‘Acorns and primitive life in Greek and Latin literature’ *Classical and Modern Literature* 9.2 (1989) 87-95. See also S. Mason, ‘Acornutopia? Determining the role of acorns in past human subsistence’ in J. Wilkins (ed.), *Food in Antiquity* (Exeter 1995) 12-24. Sir James Frazer on Ovid *Fasti* 1.676 suggests the frequency of references to acorns reflects a folk memory of a western Eurasian pre-agrarian diet.

⁴⁶ The argument of Aratus *Phaenomena* 96-136. Rebutted by Lucretius at 2.1164-74.

done for Lucretius since the acorn-eating meme has already come into being as a rationalization of the ‘divine spontaneous growth of crops’ meme. Dicearchus (fr. 49 Wehrli) provides his first race of humanity with acorns in an explicit rationalization of the Golden Age myth.⁴⁷ Lucretius is more subtle, 5.933-44:

nec robustus erat curvi moderator aratri
 quisquam, nec scibat ferro molirier arva
 nec nova defodere in terram vigulta neque altis
 arboribus veteres decidere falcibu’ ramos.
 quod sol atque imbres dederant, quod terra creatat
 sponte sua, satis id placabat pectora donum.
 glandiferas inter curabant corpora quercus
 plerumque; et quae nunc hiberno tempore cernis
 arbuta puniceo fieri matura colore,
 plurima tum tellus etiam maiora ferebat.
 multaque praeterea novitas tum florida mundi
 pabula dura tulit, miseris mortalibus ampla.

Nor was anyone a tough guider of the curved plough, nor did anyone know how to work the fields with iron, nor to plant new shoots in the ground, nor to prune old branches from high trees with sickles. What the sun and showers had given, what the earth had created of her own accord, this was a pleasing enough gift for their hearts. Among the acorn-bearing oaks they cared for their bodies for the most part; and the arbute berries you now see ripening in winter time with crimson Punic colour, at that time the earth bore most abundantly and larger than now. And the flowery newness of the world then bore much tough fodder besides, ample for poor mortals.

Again we are in the pastoral landscape of Arcadia: the oak, the most ancient of trees, the symbol of Arcadia, and the acorn the classic food of the hard-primitive tough Arcadians, the earliest of all peoples, born before the moon.⁴⁸ Oaks and acorns then are enough in themselves to evoke Arcadia, but Lucretius goes beyond this and adds other attractive Arcadian images: the ripeness of the crimson arbute berries⁴⁹ among the flowery meadows of the new world. In baldly rational terms, his first humans must scratch a living browsing on raw, bitter acorns and

⁴⁷ ‘In his [Dicearchus’] account of the primeval life of Greece, he says of the men of the earliest age, who were akin to the gods and were by nature the best men and lived the best life, so that they are regarded as Golden Race in comparison with the men of the present time, made of a base and inferior matter—of these primeval men he says that they took the life of no animal. To this, he remarks, the poet bears witness [quotes *Works and Days* 117-9] ... if it [the Golden race] is to be taken as having really existed and not as an idle tale, when the mythical parts of the story are eliminated it may by the use of reason be reduced to a natural sense ... how simple and ready to hand the food of primeval men was is shown by the later proverb, *Enough of the oak-tree!* (ἄλις δρυός) which was probably uttered by the man who first departed from this way of living.’ (Trans. Lovejoy and Boas).

⁴⁸ Cf. Herodotus 1.66, Pausanias 8.1.4-6, 8.42.6, Apollonius Rhodius 4.264, Statius *Thebaid* 4.275-84. For the proselenic status of the Arcadians see P. Schrijvers, *Lucrece et Les Sciences de la Vie, Mnemosyne Suppl.* 186 (Leiden 1999) 95-6.

⁴⁹ The Arbutus is a traditional tree of the pastoral landscape, cf. Theocritus 5.129, and 9.11, Longus 2.16, Vergil *Eclogues* 3.82, and 7.46, *Georgics* 3.300, Horace *Carm.* 1.17.5, and 1.1.21. Varro’s paraphrase of Dicearchus’ prehistory (*RR* 2.1.3) also mentions arbute berries along with acorns, but he may well be conflating Lucretius and Dicearchus.

other tough animal fodder in the woods: they are after all for Lucretius just another species of animal, not clearly distinguished from wild beasts at this point in prehistory, and at 970 he will compare them to bristly boars, an animal which enjoys eating acorns. Their food is tough—Lucretius has already had to make them tougher and more resistant to strange foods and disease than we are in order for them to survive in their harsh world without technology⁵⁰—and as we will see later on in his account their lives are very harsh and dangerous. Yet they live in Arcadia. Lucretius knows the connection between acorns and Arcadia and softens the picture of beast-like browsing with pastoral imagery to make it more palatable. We read of the unpleasant harsh and bitter diet through an Arcadian filter as it were, and the scene slips past our guard by its charm carrying the virus of progressivism. He also knows that the source of the ‘acorn-eating’ meme lies in a rationalization of the ‘divine spontaneous crops meme’, and he takes that meme and alters one part of it in order to slip it past our meme filters. The first people responded to this wonderful gift of spontaneous food with happy hearts just as Hesiod’s Golden Race do, but the gift is not a merry feast nor is it granted by the gods. It is a feast of animal fodder granted spontaneously by earth, sun and rain: a ‘gift’ granted impersonally by the elements.

Lucretius’ first stage of prehistory is no sort of a Golden Age, but it is constructed from many of the memes of the Golden Age. Our meme filters are bypassed because it sounds, looks and tastes like the Golden Age. The Golden Age is indeed the honey Lucretius uses to sweeten the bitter message that we are alone in this world without divine aid. There can be no return to a former blessed state of infantile dependence on the beneficent bounty of the gods. The first humans lived a life of violence, danger and pain, and we have only gradually escaped from this state by the constant application of human ingenuity in inventing technologies.⁵¹ It is on the one hand an empowering message, but on the other may be frightening and make the world a colder-seeming place. Yes, our futures are in our hands and we can shape our own destinies, but we can expect no

⁵⁰ 5.925-30. The Hippocratic *On Ancient Medicine* 3.26 gives a tough anti-primitivist version of this raw wild diet and describes it as causing illness and even death among the first people.

⁵¹ For the sake of clarity and brevity, I here gloss over an important aspect of Lucretius’ approach to prehistory: Epicurean cultural primitivism. In fact the Epicureans seem deeply ambivalent about the value of civilization, and a major focus of the ethics is a return to some sort of utopian lifestyle as illustrated by Diogenes of Oinoanda fr. 56 Smith in which he prophesies a future Epicurean Golden Age of a sort when none of the contrivances of civilization—laws, fortifications and so on—will be necessary, and only farming activities will interrupt the constant study of philosophy (!). Unlike Posidonius however, who saw the first people as ideal philosophers (fr. 284 Edelstein-Kidd = Seneca *Epistle* 90), the Epicureans could not see the world pre-Epicurus as a really ideal age, but there are aspects of the lifestyle of earlier peoples that they would see as simpler and purer and thus worthy of emulation and praise. This would be true particularly of the stage we see at 5.1011-27 when the first societies were formed, and when the Epicurean conception of justice arose naturally. The teachings of Epicurus are more necessary perhaps now in a civilized age with all its concomitant anxieties than they were before the beginnings of religious error, but early people could still not have been entirely free from anxiety without Epicurus, and as we see in Lucretius 5.1160-93, without the fortification of Epicureanism they were liable to make fundamental errors when they first attempted to interpret the world around them. This has inevitable consequences for our reading of Lucretius’ prehistory. For Stoic approaches to prehistory see G. Boys-Stones, *Post-Hellenistic Philosophy* (Oxford 2001) esp. 18-27 and 45-9.

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help from above. When we read Hesiod and Aratus now after reading Lucretius we may find we have to read them differently. The memes of the Golden Age have entered our minds but now carrying a vaccinating virus. The virus 'culture by divine providence' is hollowed out and refilled with 'cultural gradualism': 'cultural gradualism' now takes on the appearance and attractiveness of 'culture by divine providence' and vaccinates the reader's mind against the latter.

APPENDIX

Table of The Memes of Prehistory (including Isles of the Blessed, Ideal States, Noble Savages etc.)

This table is intended to represent an outline of the memes of prehistory. I have not restricted it to descriptions of the past alone, and I include blessed lands, both past, present and future, since there is often no clear conceptual boundary between them. The table may serve as a guide to the vast mass of literature on the subject, and, I hope, serve to illustrate the universality of certain of L.'s themes, and how they often appear in widely differing contexts. Please note that the table is by no means exhaustive, even for ancient Greek and Roman sources. Medieval and later entries are merely representative. The omission of any reference should not be taken to signify anything other than my own ignorance.

— indicates the theme does not appear in *DRN* or the other extant Epicurean sources.

Entries preceded by ? indicate that the theme is not definitely present, or that the writer gives the theme in an ambiguous way.

Compiled from B. Gatz, *Weltalter, goldene Zeit und sinnverwandte Vorstellungen* (Hildesheim 1967), A. Lovejoy and G. Boas, *Primitivism and Related Ideas in Antiquity* (Baltimore 1935), G. Boas, *Primitivism and Related Ideas in the Middle Ages* (Baltimore 1948) and T. Cole, *Democritus and the Sources of Greek Anthropology* (Atlanta 1990), with many omissions and additions.

Linked Memes

Meme	<i>DRN</i> / Epicurean sources	Others
Invention of Property, Metals, Agriculture, and Seafaring linked (in various combinations) with Warfare, Injustice, and Moral Decline	5.1110-16, 1241-9, ?1266-8, 1289-96, ?1350-60.	Hesiod <i>Op.</i> 156ff, Empedocles DK31 B128, Plato <i>Tim.</i> 24 and <i>Critias</i> 120Eff, Dicearchus fr. 49 Wehrli, Aratus <i>Phaen.</i> 109ff, Agatharchides <i>De Mar. Eryth.</i> 49, Vergil <i>E.</i> 4.31ff, <i>G.</i> 1.254ff and 2.490ff, and <i>A.</i> 8.314ff, Tibullus <i>Eleg.</i> 1.3. 49ff and 2.3.35ff, Horace <i>Epode</i> 16.40ff, Ovid <i>Met.</i> 1.128ff and 15.96ff, and <i>Am.</i> 3.8.25ff, Manilius <i>Astron.</i> 1.75ff, Seneca <i>Ep.</i> 90 (Posidonius fr. 284 E-K), Ps. Seneca <i>Octavia</i> 388ff, Hyginus <i>Poet. Astron.</i> 2.25, Maximus Tyrius <i>Diss.</i> 36, Rousseau <i>2nd Discourse</i> pt.2.

Early / ‘Primitive’ Humans, ‘Noble Savages’ etc.

Larger / Tougher / Hairier / Beast-like	5.925-30, 966, 970.	<i>Iliad</i> 1.260ff, 5.303 and 12.381-3, Hesiod <i>Op.</i> 143ff, Herodotus 1.68, Vergil <i>G.</i> 1.63 and <i>A.</i> 12.899-900, Ovid <i>Met.</i> 1.414-5 and <i>Ars Am.</i> 2.473ff, Pliny <i>NH</i> 6.30 and 7.15, <i>1 Corinthians</i> 15:47-9, Aulus Gellius <i>NA</i> 3.10, St. Augustine <i>Civ. Dei</i> 15.9, Ps. Clementina <i>Homilia</i> 8.10-17, Rousseau <i>2nd Discourse</i> pt.1.
Taller / More Beautiful / Physically Superior	—	<i>Iliad</i> 1.260ff, Herodotus 3.20, Scylax <i>Periplus</i> 112, Philo <i>De Op. Mund.</i> 47-9, Pliny <i>NH</i> 6.30, Columbus <i>Ep. ad Luis de S. Angel</i> (Jane 1.6), De Léry <i>Histoire</i> Ch. 8.
Longer Lived	?5.931-2.	<i>Genesis</i> 5:3ff, Hesiod <i>Op.</i> 109ff, Pindar <i>Pyth.</i> 10.29ff, Ctesias <i>Indica</i> 23, Callimachus <i>Hymn to Delos</i> 282, P. Mela <i>Chor.</i> 3.36-7, Pliny <i>NH</i> 4.89, St. Augustine <i>De Civ. Dei</i> 15.9, Junior Philos. <i>Tot. Orb. Descr.</i> 4-7, Geoffrey of Monmouth <i>Vit. Merl.</i> 908-15, Vespucci <i>Mundus Novus</i> , Montaigne <i>Cannibals</i> 1.31, De Léry <i>Histoire</i> Ch. 8.
Healthier	5.930.	Hesiod <i>Op.</i> 90ff, Pindar fr. 143 Snell and <i>Pyth.</i> 10.29ff, Telekleides fr.1 Edmonds, <i>Vayu Purana</i> 8.47ff, Dicearchus fr. 49 Wehrli, <i>Orac. Sib.</i> 1.283ff, Pliny <i>NH</i> 4.89, Theopomp. FGH 115 fr. 75 CJ, Solinus <i>Collect.</i> 26, Lactantius <i>De Ave Phoen.</i> 1-28, St. Augustine <i>Civ. Dei</i> 14.26, Junior Philos. <i>Tot. Orb. Descr.</i> 4-7, Hildegard of Bingen <i>Caus. et Cur.</i> 2, Montaigne <i>Cannibals</i> 1.31, De Léry <i>Histoire</i> Ch. 8.
Morally Superior	5.1009-10.	<i>Genesis</i> 1-2, <i>Iliad</i> 1.23-4 and 13.1-6, Hesiod <i>Op.</i> 109ff, Plato <i>Laws</i> 3.676ff, Dicearchus fr. 49 Wehrli, Aratus <i>Phaen.</i> 96ff, Tibullus <i>Eleg.</i> 1.3.35ff, Ovid <i>Met.</i> 1.89ff and 15.96ff, P. Trogus (Justinus <i>Epit.</i> 43.1.3-4), Ps. Seneca <i>Oct.</i> 388ff, Hyginus <i>Poet. Astron.</i> 2.25, Ps. Callisthenes <i>Gesta Alex.</i> 3.9-14, Junior Philos. <i>Tot. Orb. Descr.</i> 4-7, Montaigne <i>Cannibals</i> 1.31, Pope <i>Essay on Man</i> 3.161ff.

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Morally Inferior	5.958-61, 2.1157-9.	<i>Iliad</i> 9.106ff, Eurip. <i>Suppl.</i> 210ff, Critias <i>Sisyphus TrGF</i> 1.43 fr. 19, Plato <i>Prot.</i> 320Cff, Moschion <i>TrGF</i> 1.97 fr. 6, Athenio <i>PCG</i> fr. 1, Horace <i>Sat.</i> 1.3.99ff, Gratius Faliscus <i>Cyn.</i> 2ff.
Θηριώδης βίος / <i>Vita more ferarum</i>	5.931-2, Philodem. <i>De Piet.</i> 1215 Obbink.	Eurip. <i>Supp.</i> 195ff and <i>Orest.</i> 1646, Critias <i>Sisyphus TrGF</i> 1.43 fr. 19, Hipp. <i>De Vet. Med.</i> 3.26, Isocrates <i>Or.</i> 3.6, 4.28 and 4.39, Dicearchus fr. 49 Wehrli, Moschion <i>TrGF</i> 1.97 fr. 6, Polyb. 6.5.4ff, Diod. Sic. 1.8.1 and 1.90.1, Cicero <i>De Inv.</i> 1.2, <i>Rep.</i> 1.25.40, Vitruvius <i>De Arch.</i> 2.1.1ff, Vergil <i>A.</i> 8.314ff, Horace <i>Ars</i> 391ff and <i>Sat.</i> 1.3.99ff, Tibull. 2.1.37ff, Ovid <i>Am.</i> 3.10.7ff, <i>Ars. Am.</i> 2.621ff, and 3.113ff, and 2.289ff, Manilius <i>Astron.</i> 1.66ff, Pliny <i>NH</i> 16.1, Plutarch <i>Adv. Colotem</i> 30 and <i>De Is. et Os.</i> 13, Tacitus <i>Ann.</i> 3.26, Apuleius <i>Apol.</i> 23, Minucius Felix <i>Oct.</i> 21.4ff, Lactantius <i>Inst. Epit.</i> 17, Prudentius <i>Contra Symm.</i> 2.277ff, Macrobius <i>Somn. Scip.</i> 2.10.6 and <i>Saturn.</i> 1.7, Claudian <i>Rapt. Pros.</i> 3.18ff, Columbus <i>Ep. ad Doña Juana</i> (Jane 2.66), Rousseau <i>2nd Discourse</i> pt.1.
Naked	5.971.	<i>Genesis</i> 2:25, Diod. Sic. 1.8.5, Columbus <i>Ep. ad Luis de S. Angel</i> (Jane 1.6), Vespucci <i>Mundus Novus</i> , Montaigne <i>Cannibals</i> 1.31, De Léry <i>Histoire</i> Ch. 8, Rousseau <i>2nd Discourse</i> pt.1.
Living in Fields/ Mountains/ Forests/ Caves	5.939, 946, 948, 955-7, 962, ?972, 992, ?1243 –5, ?1284, 1386, 1411, D. of O. fr. 12 Smith.	Homeric <i>Hymn to Hephaestus</i> 1ff, Aesch. <i>Prom.</i> 447ff, Isocrates <i>Or.</i> 4.39f, Plato <i>Laws</i> 3.676ff, <i>Prot.</i> 320Dff, and <i>Tim.</i> 22Cff, Moschion <i>TrGF</i> 1.97 fr. 6, Diod. Sic. 1.8.7 and 3.56.3ff, Cicero <i>De Orat.</i> 1.36, <i>Pro Sest.</i> 91, <i>Tusc.</i> 1.62, and 5.5, <i>Rep.</i> 1.25.40, Vitruvius <i>De Arch.</i> 2.1.1ff, Horace <i>Ars</i> 391ff, Ovid <i>Met.</i> 1.121-2, <i>Ars Am.</i> 2.467ff and 2.621ff, <i>Fast.</i> 2.289ff, Seneca <i>Ep.</i> 90 (Posidonius fr. 284 E-K) and <i>Phaedr.</i> 525ff, Juvenal <i>Sat.</i> 6.1ff, Lucian <i>Amat.</i> 33f, Claudian <i>Rapt. Pros.</i> 3.18ff, Columbus <i>Ep. ad Doña Juana</i> (Jane 2.66), Rousseau <i>2nd Discourse</i> pt.1.
In Harmony with wild animals	—	Empedocles DK31 B130, Ovid <i>Met.</i> 15.96ff, Vergil <i>E.</i> 4.21ff, Lactantius <i>Div. Inst.</i> 7.24.

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In Conflict with wild animals	5.982-7.	Plato <i>Prot.</i> 320Cff, Dicearchus fr. 49 Wehrli, Hermarchus fr. 34 L-A, Cic. <i>Rep.</i> 1.25.40, Diod.Sic. 1.8.2, Seneca <i>Ep.</i> 90 (Posidonius fr. 284 E-K), Prudentius <i>Contra Symm.</i> 2.277ff, Rousseau <i>2nd Discourse</i> pt.1.
Vegetarian / Wild / Raw Diet	5.939-41, 965, 1416.	<i>Genesis</i> 1:29, Empedocles DK31 B128, Hellanicus fr. 96, Hipp. <i>De Vet. Med</i> 3.26, Dicearchus fr. 49 Wehrli, Diod. Sic. 1.8.1, 1.8.6, Ovid <i>Met.</i> 1.104ff, and 15.96ff, Tertullian <i>De Jej.</i> 4, Ps. Callisthenes <i>Gesta Alex.</i> 3.9-14, Novatian <i>De Cib. Jud.</i> 2, St. Basil <i>De Struct. Hom.</i> 2.3.4, Alex. Neckham <i>De Nat. Rer.</i> 2.156, Rousseau <i>2nd Discourse</i> pt.1.
Food Spontaneously Produced / Abundant	2.1157-9, 3.18-24, 5.811-15, 937-8, 942-4.	<i>Genesis</i> 1:29-30, <i>Odyssey</i> 9.106ff, Hesiod <i>Op.</i> 109ff, <i>Vayu Purana</i> 8.47ff, Empedocles DK31 B77-78, Aesch. fr. 196 Nauck, Herodotus 4.95, Plato <i>Polit.</i> 271ff and <i>Critias</i> 114Dff, Aristotle <i>Protrept.</i> fr. 58 Rose, Dicearchus fr. 49 Wehrli, Moschion <i>TrGF</i> 1.97. fr. 6, Arat. <i>Phaen.</i> 96ff, Diod. Sic. 1.8.1-2, 2.47.1, 2.55-60, 5.19 and 5. 41-6, Varro <i>LL</i> 5.108, and <i>RR</i> 2.1.3, Vergil <i>E.</i> 4., <i>G.</i> 1.121ff and 2.458ff, Strabo 15.1.34, Horace <i>Epode</i> 16 and <i>Carm.</i> 3.24.9ff, Tibullus <i>Eleg.</i> 1.3.35ff, Ovid <i>Met.</i> 1.111-12 and 15.96ff, <i>Am.</i> 3.8.35, <i>Fast.</i> 4.395ff, and <i>Trist.</i> 3.12.1ff, Dionysios of Hal. 1.36, <i>Aetna</i> 9-16, Germanicus <i>Arat.</i> 103ff, Ps. Seneca <i>Octav.</i> 385ff, Seneca <i>Ep.</i> 90 (Posidonius fr. 284 E-K) and <i>Phaedr.</i> 525ff, Plutarch <i>Sertorius</i> 8, Lucian <i>Saturn.</i> 5-9 and 20, and <i>V. Hist.</i> 1.28, Fronto <i>Laud. Negl.</i> p. 204 Hout, Maximus Tyrius <i>Or.</i> 21.5C, <i>Orac. Sib.</i> 1.283ff and 3.741ff, Ps. Callisthenes <i>Gesta Alex.</i> 3.9-14, Lactantius <i>Div. Inst.</i> 7.24.7ff, Claudian <i>Rapt. Pros.</i> 3.18ff, 23.5B and 36.1f, Philostrat. <i>Imag.</i> 2.18.1, Symmachus <i>Or.</i> 3.9, Avitus <i>De Mund. Init.</i> 193ff, St. Ambrose <i>Hexaemeron</i> 3.10, Prudentius <i>Contra Symm.</i> 2.277ff, Benedeit <i>Navigio Sanct. Brend.</i> , Anon. <i>Letter of Prester John</i> 21, Geoffrey of Monmouth <i>Vit. Merl.</i> 908-15, Montaigne <i>Cannibals</i> 1.31, Rousseau <i>2nd Discourse</i> pt.1.
Grasses / Roots	?5.944.	Hipp. <i>De Vet. Med.</i> 3.26, Diod. Sic. 1.8.1 and 1.43, Cic. <i>De Inv.</i> 1.2, Vitruvius <i>De Arch.</i> 2.1.1ff, Vergil <i>A.</i> 8.314ff, Ovid <i>Met.</i> 15.96ff, <i>Am.</i> 3.10.7ff, <i>Ars Am.</i> 2.467ff, <i>Fast.</i> 2.289ff and 4. 395ff, Pausanias <i>Descr. Graec.</i> 8.1.4-6, Lucian <i>Amat.</i> 23ff, Iustinus <i>Epit. P. Trog.</i> 44.4.

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Acorns	5.939, 965, 1416.	Hesiod <i>Op.</i> 233, Herodotus 1.66.2, Hellanicus fr. 96, Theophrast. <i>On Piety</i> fr. 2.25ff, Dicearchus fr. 49 Wehrli, Galen <i>De Alim. Fac.</i> 2.38.4, Diod. Sic. 19.19.3, Cicero <i>Orat.</i> 31, Varro <i>RR</i> 2.1.3, Vergil <i>G.</i> 1.8, and 1.147-49, Horace <i>Sat.</i> 1.3.100, Tibullus <i>Elegies</i> 2.1.37ff and 2.3.68ff, Diosc. 1.175, Propertius 3.13.25ff, Ovid <i>Met.</i> 1.104-6, and 14.216, <i>Am.</i> 3.10.9, <i>Ars Am.</i> 2.622 and <i>Fast.</i> 1.671ff, 4.395ff, 4.509ff, Pliny <i>NH</i> 7.56, 16.1, and 16.6, Plutarch <i>Mor.</i> 993Eff and <i>Cor.</i> 3.3-4, Juvenal <i>Sat.</i> 6.1ff and 13.57, Lucian <i>Amat.</i> 33f, Pausanias <i>Descr. Graec.</i> 8.1.4-6 and 8.5.1, Apuleius <i>Met.</i> 11.2, Macrobius <i>Somn. Scip.</i> 2.10.6, Maximus Tyrius <i>Or.</i> 21.5c, Apollonius Rhodius 4.264ff, Aelian <i>Var. Hist.</i> 3.39, Prudentius <i>Contra Symm.</i> 2.284, Claudian <i>Rapt. Pros.</i> 3.18ff, Boethius <i>Phil. Cons.</i> 2.5, Arnob. <i>Nat.</i> 2.66, Calpurnius <i>Ecl.</i> 4.24, Just. 2.6.5, Cervantes <i>D.Q.</i> 1.11, Rousseau 2nd Discourse pt.1, Locke 2nd <i>Tr. Govt.</i> ch. 5, Shelley, M.W. <i>Frankenstein</i> ch. 17.
Arbute Berries	5.941, 965.	Varro <i>RR</i> 2.1.4 (Dicearchus?), Vergil <i>G.</i> 1.148, Ovid <i>Met.</i> 1.104.
Carnivorous / Hunting	5.966-9, 1249, Diog. of O. fr. 12 Smith, Hermarc. fr. 34 L-A.	<i>Genesis</i> 9:3-4, Plato <i>Laws</i> 3.676ff, Dicearchus fr. 49 Wehrli, Tertullian <i>De Jej.</i> 4, Novatian <i>De Cib. Jud.</i> 2, Montaigne <i>Cannibals</i> 1.31, Rousseau 2nd Discourse pt.1, De Léry <i>Histoire</i> ch. 10.
Cannibalism	—	<i>Odyssey</i> 9.106ff, Orphica fr. 292 Kern, Plato <i>Laws</i> 3.782C1ff and <i>Polit.</i> 271ff, Athenio <i>PCG</i> fr. 1, Moschion <i>TrGF</i> 1.97 fr. 6, Diod. Sic. 1.13, Strabo 7.3.9, Montaigne <i>Cannibals</i> , De Léry <i>Histoire</i> Ch. 15.

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Rivers of Plenty	— (cf. 5.911ff).	<i>Exodus</i> 3.8 and 13.5, Eurip. <i>Bacch.</i> 704ff and <i>Hipp.</i> 741ff, Pherecrates <i>PCG</i> fr. 113, Plato <i>Ion</i> 534A and <i>Rep.</i> 363A 6ff, Theocr. 5.124ff, Vergil <i>G.</i> 1.132 and 2.136-8, <i>E.</i> 4, 15.1.64, Tibullus 1.3.35ff, <i>Aetna</i> 9ff, Horace <i>Carm.</i> 1.33.7f, 2.19.9ff and <i>Ep.</i> 16, Ovid <i>Met.</i> 1.111-12 and <i>Am.</i> 3.8.35ff, Statius <i>Silv.</i> 1.6.39ff, Lucian <i>V. Hist.</i> 1.7, 2.6, and 2.11-14, <i>Orac. Sib.</i> 3.741ff, Philostrat. <i>Imag.</i> 1.14.3 and 1.18.1, Lactantius <i>Div. Inst.</i> 7.24, Claudian <i>Rapt. Pros.</i> 3.18ff, Junior Phil. <i>Tot. Orb. Descr.</i> 4-7, Benedeit <i>Navigio Sanct. Brend.</i> , Anon. <i>Letter of Prester John</i> 21, Columbus <i>Ep. ad Luis de S. Angel</i> (Jane 1.6).
Magical Fountains / Springs etc.	— (cf. 5.911ff).	Ctesias <i>Ind.</i> (Photius <i>Cod.</i> 7245b), Lucian <i>V. Hist.</i> 1.7, 2.6 and 2.11-14, Ps. Lactantius <i>De Ave Phoen.</i> 1-28, Anon. <i>Letter of Prester John</i> 21, Pater Marcus <i>Visio Tnudgali</i> , Roger de Wendover <i>De Parad.</i>
Scarcity of Food / Starvation	5.1107.	Plato <i>Rep.</i> 369C, Aristophanes <i>Plut.</i> 468ff, 510ff, and 532ff, Eratosthenes <i>Merc.</i> fr. 10.11 Hiller, Dicearchus fr. 49 Wehrli, Vergil <i>G.</i> 1.121ff, Diod. Sic. 1.8.6-7, Origen <i>Contra Cels.</i> 4.76, Polybius 6.5.4ff, (Theocritus) <i>Piscat.</i> 1ff, Nemesius of Emesa <i>De Nat. Hom.</i> 18ff, Apuleius <i>Apol.</i> 18, Claudian <i>Rapt. Pros.</i> 3.18ff.

Arts and Technologies

No Seafaring	5.1000-6.	<i>Odyssey</i> 9.106ff, Hesiod <i>Op.</i> 109ff, Plato <i>Laws</i> 3.678C, Aratus <i>Phaen.</i> 96ff, Agatharchides <i>De Mar. Eryth.</i> 49, Posidonius fr. 284 E-K (Seneca <i>Ep.</i> 90), Vergil <i>E.</i> 4.31ff, and <i>G.</i> 1.121ff, Horace <i>Epode</i> 2.1ff and 16, Ovid <i>Met.</i> 1.94-6, <i>Fast.</i> 1.35ff, and <i>Am.</i> 3.8.35, Propertius 3.7.31ff, Tibullus <i>Eleg.</i> 1.3.35ff, and 2.3.33ff, Manilius <i>Astron.</i> 1.66ff, Germanicus <i>Arat.</i> 103ff, <i>Phaedr.</i> 525ff, and <i>Medea</i> 301ff, Hyginus <i>Poet. Astron.</i> 25, Boethius <i>Phil. Cons.</i> 2.5.
No Warfare / Conflict	5.999-1000.	Hesiod <i>Op.</i> 109ff, Pindar <i>Pyth.</i> 10.29ff, Empedocles DK31 B128 and B130, Plato <i>Polit.</i> 271ff, and <i>Laws</i> 3.679Aff, Agatharchides <i>De Mar. Eryth.</i> 49, Dicearchus fr. 49 Wehrli, Aratus <i>Phaen.</i> 96ff, Vergil <i>G.</i> 1.121ff and 2.536ff, <i>E.</i> 4.17, and 4.33, Horace <i>Epode</i> 2.1ff, Tibullus <i>Eleg.</i> 1.3.35ff, Ovid <i>Met.</i> 1.97-100, <i>Met.</i> 15.96ff, and <i>Fast.</i> 1.247, Posidonius fr. 284 E-K (Seneca <i>Ep.</i> 90), and <i>Phaedr.</i> 525ff, Germanicus <i>Arat.</i> 103ff, Ps. Callisthenes <i>Gesta Alex.</i> 3.9-14, Diogenes of Oinoanda fr. 56 Smith, Hyginus <i>Astron.</i> 25, P. Mela <i>Chor.</i> 3.36ff, <i>Orac. Sib.</i> 3.741ff, Ps. Seneca <i>Oct.</i> 385ff, Strabo 7.3.9, Boethius <i>Phil. Cons.</i> 2.5, Rousseau <i>2nd Discourse</i> pt.1, Sir R. Blackmore <i>Creation</i> 3.17.
Warfare / Conflict	?5.1245-6, ?1283-5.	Critias <i>Sisyphus TrGF</i> 1.43 fr. 19, Aristotle <i>Politics</i> 1.1256B 23-6, Moschion <i>TrGF</i> 1.97. fr. 6, Horace <i>Carm.</i> 1.3.99ff, Gratius Faliscus <i>Cyn.</i> 2ff, De Léry <i>Histoire</i> Ch. 14.
No Agriculture	5.933-6.	? <i>Genesis</i> 2:5, <i>Odyssey</i> 9.106ff, Hesiod <i>Op.</i> 109ff, Dicearchus fr. 49 Wehrli, Moschion <i>TrGF</i> 1.97. fr. 6, Caesar <i>B. G.</i> 6.22, Diod. Sic. 1.8.4, Varro <i>RR</i> 1.2.16 and 2.1.3ff, Vergil <i>E.</i> 4.40ff, <i>G.</i> 1.125ff and <i>A.</i> 8.314ff, Tibullus <i>Eleg.</i> 1.3.35ff, Ovid <i>Met.</i> 1.101-2 and 15.96ff, <i>Am.</i> 3.8.35ff, and 3.10.1ff, Seneca <i>Phaed.</i> 535ff, Statius <i>Theb.</i> 4.275ff, Ps. Seneca <i>Oct.</i> 418ff, Lucian <i>Sat.</i> 1.20.402ff, Philo <i>De Op. Mund.</i> 26, Prudentius <i>Contra Symm.</i> 2.277ff, Peter Abelard <i>Expos. In Hexaemeron</i> (on <i>Genesis</i> 2:5), Rousseau <i>2nd Discourse</i> pt.1.

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No Land Boundaries	5.1110.	Vergil <i>G.</i> 1.125ff, Tibullus <i>Eleg.</i> 1.3.35ff, Ovid <i>Met.</i> 1.135, <i>Am.</i> 3.8.35, Seneca <i>Phaed.</i> 528ff, St. Ambrose <i>Expos. In Psalm.</i> 118, 22, De Léry <i>Histoire</i> Ch. 18, Rousseau <i>2nd Discourse</i> pt.2.
No Property / Communism	5.1113.	Aristophanes <i>Eccl.</i> 590ff, Plato <i>Laws</i> 3.676ff, 4.739C and, Dicearchus fr. 49 Wehrli, Ps. Scymnus <i>Orb. Descr.</i> 850ff, Caesar <i>B. G.</i> 6.22, Cicero <i>De Offic.</i> 1.67.21, Diod. Sic. 5.41-6, Vergil <i>G.</i> 1.121ff, Tibullus <i>Eleg.</i> 1.3.35ff, Strabo 7.3.9, Ovid <i>Met.</i> 1.135 and <i>Am.</i> 3.8.35ff, Germanicus <i>Arat.</i> 103ff, Juvenal <i>Sat.</i> 6.1ff, Macrobius <i>Saturn.</i> 1.8, Maximus Tyrius <i>Or.</i> 36.1ff, Seneca <i>Phaed.</i> 525ff and <i>Ep.</i> 90 (Posidonius fr. 284 E-K), Ps. Seneca <i>Octav.</i> 385ff, Philo <i>Quod Omnis Probus</i> 12, Ps. Callisthenes <i>Gesta Alex.</i> 3.9-14, Solinus <i>Collect. App.</i> 22.12-15, St. Ambrose <i>Expos. In Psalm.</i> 118, 22, Rousseau <i>2nd Discourse</i> pt.1.
No Marriage / Promiscuity, Community of Wives	5.962-5 (cf. 1011-13).	Plato <i>Polit.</i> 273Dff, Diogenes Cyn. <i>Rep.</i> (Diog. Laert. 6.72), Zeno <i>Rep.</i> (Diog. Laert. 7.33-4), Chrysippus (Sext. Emp. <i>Hyp.</i> 3.205), Strabo 7.303, Tibullus <i>Eleg.</i> 2.3.35ff, Statius <i>Theb.</i> 4.279, Rousseau <i>2nd Discourse</i> pt.1.
No Laws	5.958-9.	<i>Odyssey</i> 9.106ff, Critias <i>Sisyphus TrGF</i> 1.43 fr. 19, Plato <i>Polit.</i> 273Dff, <i>Laws</i> 3.679Bff, and <i>Prot.</i> 320Cff, Agatharchides <i>De Mar. Eryth.</i> 49, Diod. Sic. 1.8.1, Vergil <i>A.</i> 8.314ff, Ovid <i>Met.</i> 1.90-3, P. Trogus (in Justin <i>Hist. Phil. Epit.</i> 1.1.1-3 and 2.2), Tacitus <i>Ann.</i> 3.26, St. Ambrose <i>Epist. Class.</i> 2.73.2-3, Junior Philos. <i>Tot. Orb. Descr.</i> 4-7, De Léry <i>Histoire</i> Ch. 8.

Discoveries and Inventions

Granted divinely / with divine aid / by *Nomothetes* / etc.

Arts and Technologies Generally	—	Homeric <i>Hymn to Hephaestus</i> 1ff, Hesiod <i>Op.</i> 42ff, Aesch. <i>Prom.</i> 447ff, Eurip. <i>Suppl.</i> 195ff, Plato <i>Prot.</i> 320Dff, <i>Polit.</i> 274C-D, <i>Laws</i> 4.713C-714A, and <i>Menex.</i> 237Eeff, Moschion <i>TrFG</i> 1.97 fr. 6, Diod. Sic. 1.15.9ff, 3.56.3f, Vergil <i>G.</i> 1.121ff and <i>A.</i> 8.314ff, Pliny <i>NH</i> 7.57, Seneca <i>Medea</i> 301ff, Minucius Felix <i>Oct.</i> 21.4ff, Claudian <i>Rapt. Pros.</i> 3.18ff.
Agriculture / Grain	—	<i>Genesis</i> 2:15 and 3.17ff, Hesiod <i>Op.</i> 42ff, Eurip. <i>Suppl.</i> 205, Isocrates <i>Or.</i> 4.28, Moschion <i>TrGF</i> 1.97 fr. 6, Aratus <i>Phaen.</i> 96ff, Callimachus <i>Hymn In Cer.</i> 19ff, Diod. Sic. 1.13, 1.29.3, 5.2.4, Vergil <i>G.</i> 1.129ff and <i>A.</i> 8.314ff, Ovid <i>Am.</i> 3.10.12ff, <i>Fast.</i> 1.671ff, 4.395ff, <i>Met.</i> 5.341ff, Philo <i>De Op. Mund.</i> 26, Pliny <i>NH</i> 7.57 and 7.191, Pausanias <i>Descr. Graec.</i> 8.4.1, Hyginus <i>Astron.</i> 2.14, Origen <i>Contr. Cels.</i> 4.76, Novatian <i>De Cib. Jud.</i> 2, St. Augustine <i>De Gen. Ad Lit.</i> 8.8.9, Peter Abelard <i>Expos. In Hexaemeron.</i>
Fire	—	Homeric <i>Hymn to Hermes</i> 3, Hesiod <i>Op.</i> 50ff and <i>Theog.</i> 535ff, Plato <i>Prot.</i> 320Cff, <i>Polit.</i> 274C-D.
Language	—	? <i>Genesis</i> 1, Euripides <i>Suppl.</i> 201ff, Diod. Sic. 1.15.9ff, Macrobius <i>Saturn.</i> 1.7.
Justice and Law	—	Theognis <i>Eleg. A.</i> 1135ff, <i>Critias</i> 120Eeff, Plato <i>Prot.</i> 320Cff, <i>Laws</i> 4.713C-714A, and <i>Polit.</i> 273C-D, Aratus <i>Phaen.</i> 96ff, Cicero <i>In Verr.</i> 2.5.187, Diod. Sic. 1.14.3, and 2.38.2ff, Vergil <i>A.</i> 8.314ff, Pliny <i>NH</i> 7.191, Plutarch <i>De Is. et Os.</i> 13, Servius in <i>V. A.</i> 8.322.

Discoveries and Inventions

Discovered gradually / by chance and necessity / by human ingenuity / with ‘Nature’, ‘Time’, ‘Necessity’ or ‘Experience’ as teacher etc.

Arts and Technologies Generally	5.1440ff, Epicurus <i>Ep. Hdt.</i> 75-6, Diog. of O. fr. 12 Smith.	Xenophanes DK21 B18 (cf. B14, and B15), Anaxagoras DK59 A66, B21 and B4 (cf. A102), Archelaus DK60 A4 (cf. A1 and A2), Democritus DK68 B154 (cf. B144, A151, and A138), Hipp. <i>De Vet Med.</i> 3.26, Plato <i>Laws</i> 3.678A, Philemon (Stobaeus <i>Ecl.</i> 1.8.34), Posidonius fr. 284 E-K (Seneca <i>Ep.</i> 90), Moschion <i>TrGF</i> 1.97 fr. 6, Cicero <i>Rep.</i> 1.8.26 and <i>Pro Sest.</i> 91-2, Vitruvius <i>De Arch.</i> 2.1, Varro <i>RR</i> 2.1.3ff, Diod. Sic. 1.8, Vergil <i>G.</i> 1.145-6, Horace <i>Sat.</i> 1.3.99ff, Manilius <i>Astron.</i> 1.66ff, Pliny <i>NH</i> 7.57, Prudentius <i>Contr. Symm.</i> 2.277ff.
Agriculture	5.1361ff, 1448, 6.1ff.	Anaxagoras DK59 B21 and B4, Sophocles <i>Antig.</i> 332ff, Hipp. <i>De Vet. Med.</i> 3.26, Plato <i>Laws</i> 3.676ff, Moschion <i>TrGF</i> 1.97 fr. 6, Cicero <i>Pro Flacc.</i> 62 and <i>Tusc.</i> 1.62, Diod. Sic. 1.8, Manilius <i>Astron.</i> 1.66ff, Posidonius fr. 284 E-K (Seneca <i>Ep.</i> 90).
Fire	5.1011, 1091-1101.	Democritus (Diogenes Laertius 9.47), Diod Sic 1.8, Vitruvius <i>De Arch.</i> 2.1, Vergil <i>G.</i> 1.135, Rousseau <i>2nd Discourse</i> pt.2.
Language	5.1028ff Epicurus <i>Ep. Hdt.</i> 75-6, <i>On Nature</i> 12, and 28, D. of O. fr. 12 Smith, Philodemus <i>De Piet.</i> (225-31, 510-60, Obbink), Demetrius Lacon col. 67.4-5 (Puglia), Origen <i>Contr. Cels.</i> 1.24 (fr. 334 Us.).	Democritus DK68 B26, Plato <i>Prot.</i> 320Cff and <i>Crat.</i> 388E-390E, Diod. Sic. 1.8, Vitruvius <i>De Arch.</i> 2.1, Cicero <i>Rep.</i> 3.2.3, Horace <i>Sat.</i> 1.3.99ff, Manilius <i>Astron.</i> 1.85, Proclus <i>In Plat. Crat.</i> 16, p. 7, Lactantius <i>Div. Inst.</i> 6.10.13-15.

GORDON CAMPBELL, LUCRETIUS AND THE MEMES OF PREHISTORY

<p>Justice and Law</p>	<p>5.1011-27, 1141-50, 6.1ff, Epicurus <i>On Nature</i> 12 (Philodemus <i>De Piet.</i> 225-31 Obbink), ΚΔ 32, 33, 39, 40, Hermarchus fr. 34 L-A, Philodemus <i>De Piet.</i> 1176-1217, 2145-74 Obbink, Plutarch <i>Adv. Colotem</i> 1124D, D. of O. fr. 56 Smith.</p>	<p>Archelaus DK60 A1, A2, and A4, Democritus DK B259 (cf. B256, B257, B258, B261), Critias <i>Sisyphus TrGF</i> 1.43 fr. 19, Plato <i>Laws</i> 3.676ff, Moschion <i>TrGF</i> 1.97 fr. 6, Polybius <i>Hist.</i> 6.4-6, Posidonius fr. 284 E-K (Seneca <i>Ep.</i> 90), Cicero <i>Pro Sest.</i> 91-2.</p>
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Climate

<p>Eternal Spring / mild</p>	<p>3.18-24, 5.800, ?802, 806, 816, 818-20, 943-4, ?1395-6.</p>	<p><i>Odyssey</i> 4.561ff and 6.42-6, Pindar <i>Ol.</i> 2.62ff, <i>Vayu Purana</i> 8.47ff, Ps. Plato <i>Axioch.</i> 371, Diod. Sic. 2.47.1ff, 2.55-60 and 5.19, Strabo 1.1.4, Vergil <i>G.</i> 2.335ff, Horace <i>Epode</i> 16, Propertius 4.7.59ff, Ovid <i>Met.</i> 1.107, P. Mela <i>Chor.</i> 2.100, Pliny <i>NH</i> 4.58, Plutarch <i>De Fac. in Orb. Lun.</i> 26, <i>De Ser. Num. Vind.</i> 25 and <i>Sert.</i> 8, 4.89 and 6.55, Lucian <i>V. Hist.</i> 2.3-6, Maximus Tyrius <i>Or.</i> 36.1ff, Commodian <i>Instr.</i> 2.3.3ff, Servius on <i>V. A.</i> 5.735, Augustine <i>De Civ. Dei</i> 14.26, Claudian <i>Rapt. Pros.</i> 2.277ff and <i>Epithal. De Nupt. Hon. Aug.</i> 49ff, Ps. Lactantius <i>De Ave Phoen.</i> 1-28, Avitus <i>De Mund. Init.</i> 193ff, Benedeit <i>Navigio Sanct. Brend.</i>, Henry of Saltrey <i>De Purgat. Sanct. Patric.</i> 56, Martianus Capella <i>Philol.</i> 6.693, De Léry <i>Histoire</i> Ch. 8.</p>
<p>Storms and cold</p>	<p>?5.929, ?940, 957, 1002-3, 1015-16, 1426-7, D. of O. fr. 12 Smith.</p>	<p>Posidonius fr. 284 E-K (Seneca <i>Ep.</i> 90), Diod. Sic. 1.8.6-7, <i>Rousseau 2nd Discourse</i> pt.1.</p>