

Episode One Hundred Twenty-Seven - Letter to Pythocles 02 - The Formation of "Worlds"

Post by "Cassius" of June 15, 2022 at 1:55 PM

Welcome to Episode One Hundred Twenty Seven of Lucretius Today.

This is a podcast dedicated to the poet Lucretius, who wrote "On The Nature of Things," the only complete presentation of Epicurean philosophy left to us from the ancient world.

I am your host Cassius, and together with our panelists from the EpicureanFriends.com forum, we'll walk you through the ancient Epicurean texts, and we'll discuss how Epicurean philosophy can apply to you today. We encourage you to study Epicurus for yourself, and we suggest the best place to start is the book "Epicurus and His Philosophy" by Canadian professor Norman DeWitt.

If you find the Epicurean worldview attractive, we invite you to join us in the study of Epicurus at EpicureanFriends.com, where you will find a discussion thread for each of our podcast episodes and many other topics.

Today we continue [Epicurus' Letter to Pythocles](#), with a look at the formation of "worlds." Joshua is away today, so let's now join Don reading today's text:

BAILEY

A world is a circumscribed portion of sky, containing heavenly bodies and an earth and all the heavenly phenomena, whose dissolution will cause all within it to fall into confusion: it is a piece cut off from the infinite and ends in a boundary either rare or dense, either revolving or stationary: its outline may be spherical or three-cornered, or any kind of shape. For all such conditions are possible, seeing that no phenomenon is evidence against this in our world, in which it is not possible to perceive an ending.

[89] And that such worlds are infinite in number we can be sure, and also that such a world may come into being both inside another world and in an interworld, by which we mean a space between worlds; it will be in a place with much void, and not in a large empty space quite void, as some say: this occurs when seeds of the right kind have rushed in from a single world or interworld, or from several: little by little they make junctions and articulations, and cause changes of position to another place, as it may happen, and produce irrigations of the appropriate matter until the period of completion and stability, which lasts as long as the underlying foundations are capable of receiving additions.

[90] For it is not merely necessary for a gathering of atoms to take place, nor indeed for a whirl and nothing more to be set in motion, as is supposed, by necessity, in an empty space in which it is possible for a world to come into being, nor can the world go on increasing until it collides with another world, as one of the so-called physical philosophers says. For this is a contradiction of phenomena.

Sun and moon and the other stars were not created by themselves and subsequently taken in by the world, but were fashioned in it from the first and gradually grew in size by the aggregations and whirlings of bodies of minute parts, either windy or fiery or both, for this is what our sensation suggests.

HICKS

A world is a circumscribed portion of the universe, which contains stars and earth and all other visible things, cut off from the infinite, and terminating [and terminating in a boundary which may be either thick or thin, a boundary whose dissolution will bring about the wreck of all within it] in an exterior which may either revolve or be at rest, and be round or triangular or of any other shape whatever. All these alternatives are possible: they are contradicted by none of the facts in this world, in which an extremity can nowhere be discerned.

[89] That there is an infinite number of such worlds can be perceived, and that such a world may arise in a world or in one of the intermundia (by which term we mean the spaces between worlds) in a tolerably empty space and not, as some maintain, in a vast space perfectly clear and void. It arises when certain suitable seeds rush in from a single world or intermundium, or from several, and undergo gradual additions or articulations or changes of place, it may be, and waterings from appropriate sources, until they are matured and firmly settled in so far as the foundations laid can receive them. For it is not enough that there should be an aggregation or a vortex in the empty space in which a world may arise, as the necessitarians hold, and may grow until it collide with another, as one of the so-called physicists says. For this is in conflict with facts.

"The sun and moon and the stars generally were not of independent origin and later absorbed within our world, [such parts of it at least as serve at all for its defence]; but they at once began to take form and grow [and so too did earth and sea] by the accretions and whirling motions of certain substances of finest texture, of the nature either of wind or fire, or of both; for thus sense itself suggests.

Post by "Cassius" of June 24, 2022 at 1:56 PM

Editing has been slow but is finally coming along and this one should be out soon.

In the meantime, I noticed an interesting exchange on Martin's wall about "entropy" and how issues revolving around the eventual destruction of our world (but not of the universe as a whole!) can be a little depressing to think about.

<https://www.epicureanfriends.com/wcf/index.php?user/173-martin/#wall/comment398/response169>

I think Martin did a good job with the point, and I mark it here in this thread because we talk about that issue to some degree in this podcast episode too.

I don't think I was able to cite it specifically in the podcast, but there are a couple of references in DeWitt that I think are well-reasoned and applicable:

Quote

Out of this teaching arises a perplexing question. Was Epicurus, in making of Nature a judge, and incidentally a teacher, involuntarily ascribing to her a certain purposiveness and by so doing admitting himself as a believer in teleology? On the face of it this would be going contrary to his fundamental teachings. In his cosmos a single primary cause was recognized, the downward motion of the atoms. In the overall picture it was true that the good prevailed over the bad, but this was a deduction from the infinity of the universe and the infinity of time; in the individual worlds the forces of destruction eventually prevailed over the forces of creation but never in the universe at large. This ascendancy of the good over the bad, however, does not signify purposiveness or some far-off divine event toward which the whole creation moves. For such teleology there was no room in the cosmos of Epicurus.

But primarily the reference I want to point out is the following extended quote, which is wrapped up in isonomia and the Epicurean theory of divinity. All of this has to be taken with the understanding that it is DeWitt's reconstruction of the doctrines of Epicurus from the remaining evidence, and we can differ on the details of the reconstruction. But it seems to me that this material is well-founded because there is a lot of textual evidence from Cicero and others in support of it, and very little if any that would be to the contrary. So at least for me I think this line of reasoning makes sense, perhaps not so strongly in the part that talks about the gods and numbering them, but definitely in the fundamental point that the universe as a whole is never destroyed (and therefore in a sense "prevails over the forces of destruction") which is the important point for addressing the "attitude" we should take about birth and death. In the end the birth and death of "worlds" is not a lot different from birth and death of animals, individuals, nations, continents, etc. But while individuals and planets come and go, the "universe as a

<https://www.epicureanfriends.com/thread/2561-episode-one-hundred-twenty-seven-letter-to-pythocles-02-the-formation-of-worlds/>

whole" continues forever (in the Epicurean worldview).

Quote

It was from this principle that Epicurus deduced his chief theoretical confirmation of belief in the existence of gods. It was from this that he arrived at knowledge of their number and by secondary deduction at knowledge of their abode. He so interpreted the significance of infinity as to extend it from matter and space to the sphere of values, that is, to perfection and imperfection. In brief, if the universe were thought to be imperfect throughout its infinite extent, it could no longer be called infinite. This necessity of thought impelled him to promulgate a subsidiary principle, which he called *isonomia,* a sort of cosmic justice, according to which the imperfection in particular parts of the universe is offset by the perfection of the whole. Cicero rendered it *aequabilis tributio,* "equitable apportionment." 70 The mistake of rendering it as "equilibrium" must be avoided.

The term *isonomia* itself, which may be anglicized as isonomy, deserves a note. That it is lacking in extant Epicurean texts, all of them elementary, and is transmitted only by Cicero is evidence of its belonging to higher doctrine and advanced studies. Epicurus switched its meaning slightly, as he did that of the word *prolepsis.* To the Greeks it signified equality of all before the law, a boast of Athenians in particular. It was a mate to *eunomia,* government by law, as opposed to barbaric despotism, a boast of Greeks in general. That Epicurus thought to make capital of this happy connotation may be considered certain. He was vindicating for Nature a sort of justice, the bad being overbalanced by the good. It is also possible that he was remotely influenced by the teachings of Zoroaster, well known in his day through the conquests of Alexander, according to whom good and evil, as represented by Ormazd and Ahriman, battled for the upper hand in mundane affairs.

Whatever may be the facts concerning this influence, Epicurus discovered a reasonable way of allowing for the triumph of good in the universe, which seemed impossible under atomic materialism. Thus in his system of thought isonomy plays a part comparable to that of teleology with Plato and Aristotle. Teleology was inferred from the evidences of design, and design presumes agencies of benevolence, whether natural or divine. Epicurus was bound to reject design because the world seemed filled with imperfections, which he listed, but by extending the doctrine of infinity to apply to values he was able, however curiously, to discover room for perfection along with imperfection.

That he employed isonomy as theoretical proof of the existence of gods is well documented. For example, Lactantius, who may have been an Epicurean before his conversion to Christianity, quotes Epicurus as arguing "that the divine exists because

there is bound to be something surpassing, superlative and blessed."⁷¹ The necessity here appealed to is a necessity of thought, which becomes a necessity of existence. The existence of the imperfect in an infinite universe demands belief in the existence of the perfect. Cicero employs very similar language: "It is his doctrine that there are gods, because there is bound to be some surpassing being than which nothing is better." ⁷² Like the statement of Lactantius, this recognizes a necessity of existence arising from a necessity of thought; the order of Nature cannot be imperfect throughout its whole extent; it is bound to culminate in something superior, that is, in gods.

It is possible to attain more precision in the exposition. Cicero, though brutally brief, exhibits some precision of statement. The infinity of the universe, as usual, serves as a major premise. This being assumed, Cicero declares: "The nature of the universe must be such that all similars correspond to all similars." ⁷³ One class of similars is obviously taken to be human beings, all belonging to the same grade of existence in the order of Nature. As Philodemus expresses it in a book about logic, entitled *On Evidences,* "It is impossible to think of Epicurus as man and Metrodorus as non-man." ⁷⁴ Another class of similars is the gods. This being understood, the truth of Cicero's next statement follows logically: "If it be granted that the number of mortals is such and such, the number of immortals is not less." ⁷⁵ This reasoning calls for no exegesis, but two points are worthy of mention: first, Cicero is not precise in calling the gods immortals; according to strict doctrine they are not deathless, only incorruptible of body; the second point is that Epicurus is more polytheistic in belief than his own countrymen.

The next item, however, calls for close scrutiny. Just as human beings constitute one set of similars and the gods another, so the forces that preserve constitute one set and the forces that destroy constitute another.

At this point a sign of warning is to be raised. There is also another pair of forces that are opposed to each other, those that create and those that destroy.⁷⁶ The difference is that the latter operate in each of the innumerable worlds, while the former hold sway in the universe at large. For example, in a world such as our own, which is one of many, the forces of creation have the upper hand during its youthful vigor. At long last, however, the forces of destruction gradually gain the superiority and eventually the world is dissolved into its elements.⁷⁷

In the universe at large, on the contrary, the situation is different and the forces opposed to each other are not those that destroy and those that create but those that destroy and those that preserve. Moreover, a new aspect of infinity is invoked, the infinity of time. The universe is eternal and unchanging. Matter can neither be created nor destroyed. The sum of things is always the same, as Lucretius says. This truth is contained in the first two of the Twelve Elementary Principles. In combination they are made to read: "The universe has always been the same as it now is and always will be

the same." 78 This can be true only on the principle that the forces that preserve are at all times superior to the forces that destroy.

It follows that Cicero was writing strictly by the book when he made his spokesman draw the following conclusion from the doctrine of isonomy: "And if the forces that destroy are innumerable, the forces that preserve must by the same token be infinite."79 This doctrine, it is essential to repeat, holds only for the universe at large. It is not applicable to the individual world and it does not mean that the prevalence of elephants in India is balanced by the prevalence of wolves in Russia. Isonomy does not mean "equal distribution" but "equitable apportionment." It does not denote balance or equilibrium. No two sets of similar forces are in balance; in the individual world the forces of destruction always prevail at last, and in the universe at large the forces of preservation prevail at all times.

By this time three aspects of the principles of isonomy have been brought forward: first, that in an infinite universe perfection is bound to exist as well as imperfection; that is, "that there must be some surpassing being, than which nothing is better"; second, that the number of these beings, the gods, cannot be less than the number of mortals; and third, that in the universe at large the forces of preservation always prevail over the forces of destruction.

All three of these are direct inferences from the infinity and eternity of the universe. There remains to be drawn an indirect inference of primary importance. Since in the individual worlds the forces of destruction always prevail in the end, it follows that the incorruptible gods can have their dwelling place only outside of the individual worlds, that is, in the free spaces between the worlds, the so-called *intermundia,* where the forces of preservation are always superior. There is more to be said on this topic in the section that follows.

Display More

So thanks to Marco and Martin for having the discussion that prompted me to find this.

Post by "Godfrey" of June 24, 2022 at 2:45 PM

Quote from DeWitt via Cassius

By this time three aspects of the principles of isonomy have been brought forward: first, that in an infinite universe perfection is bound to exist as well as imperfection;

that is, "that there must be some surpassing being, than which nothing is better"; second, that the number of these beings, the gods, cannot be less than the number of mortals; and third, that in the universe at large the forces of preservation always prevail over the forces of destruction.

I've had problems wrapping my head around isonomia from the first time I read DeWitt. Using this quote as a summary helps to analyze my concerns with the idea.

First aspect: at first it makes sense that in an infinite universe there would be perfection as well as imperfection. But on further thought, how is perfection defined? Isn't this a mental concept rather than something inherent in a material universe? If anything, I would consider the universe itself as perfect rather than some aspect of it. This leads me to a definition of perfection as a self-contained, self-perpetuating system, a definition which then leads back to the original question of the destruction of the world. And maybe this leads to the imperturbability of the [Epicurean gods](#) as well. But the key point in my mind is that perfection is a value judgment, and therefore has no place in describing a material universe.

The second aspect, that the number of gods must equal the number of mortals, makes absolutely no sense to me. Can someone explain this?

The third aspect seems to make sense to me, but I should read the conversation between [Martin](#) and [Marco](#) before I make up my mind.

Anybody have other thoughts or explanations about isonomia? I'm rather befuddled.

Post by "Cassius" of June 24, 2022 at 3:09 PM

[Quote from Godfrey](#)

First aspect: at first it makes sense that in an infinite universe there would be perfection as well as imperfection. But on further thought, how is perfection defined?

Exactly my view too. DeWitt is being too loose in using the word "perfection" without defining it. I do think he makes clear that the gods are not eternal, just "deathless," and that's a good hint that the [Epicurean gods](#) are not everything that we today would invest in the term "perfect" (such as omnipotent or omniscient). The word perfect in this context has to be contextual and limited, like "the perfect basketball player." DeWitt drops the ball here by not making that more clear. (But on the other hand, how many writers have you seen carry the ball nearly this far?)

[Quote from Godfrey](#)

Isn't this a mental concept rather than something inherent in a material universe?

It may indeed be a mental concept, but that, in itself, is not a total disqualifier from consideration as part of an evidentiary chain, because we do regularly refer to and use mental concepts if we can reasonably extrapolate from sensory evidence to back them up. We predict atoms exist due to mental concepts *which we derive from what we think is good physical evidence*. The speculations we're talking about now are not arbitrary and groundless, but based on observations here on earth, one example of which is the "nature never creates only a single thing of a kind (which is in Lucretius too).

[Quote from Godfrey](#)

But the key point in my mind is that perfection is a value judgment, and therefore has no place in describing a material universe.

Yes that's the definitional issue. "Perfect" is far too broad and loose a term. One way to get into this deeper would be to check the Latin word that was used. I wouldn't be surprised if its more related to "blessed" than what we are thinking today (omnipotent; omniscient) due to the corruption brought about by Abrahamic religion.

[Quote from Godfrey](#)

The second aspect, that the number of gods must equal the number of mortals, makes absolutely no sense to me. Can someone explain this?

Do I not recall that DeWitt says that strict numerical equivalence is not the point, but rather "equitable distribution," which is in itself a loose term?

The way I have always thought of all this that makes sense to me is:

- 1 - We look around us here on earth and we see "life" in many forms.
- 2 - We see that Nature never makes only one single thing of a kind.

3 - Some of those life forms are "primitive" single cell organisms, and some of those life forms are extremely complex and powerful and intelligent (let's say Epicurus, or Don, for example 😊)

4 - As I see it we have a mental tendency to organize in our minds a spectrum of these life forms from "lowest" to "highest" in terms of abilities. I personally think that that "tendency" would involve the faculty of anticipations in some way. The anticipation would not be the "concept of low to high life forms" but some very basic organizational drive to link things together that appear to be related . It would be important to note that just like seeing and hearing, that tendency does not had us completed concepts in an infallible way. The tendency would just exist report to us a phenomena, just like sight does, and we'd have to regularly and repeatedly test it to verify any conclusions that we decide to draw from those observations.

5 - We extrapolate that in an infinite and eternal universe there are, and already have been, and infinite number of worlds like ours with intelligent beings.

6 - We can reasonably extrapolate that there is no reason that "Epicurus" or "Don" is the most intelligent and physically powerful life form that can possibly exist, and therefore we extrapolate that "higher" (more intelligent and more powerful life forms) have, do, and will continue to exist.

As for their number, I agree that saying that the same number of mortals and gods exist is pretty "out there." However, over an infinite universe with infinite number of living beings in it, maybe it does make sense to say that the numbers of both are the same, because they are both "infinite."

All this is aggressive speculation but as per the Velleius material and other material DeWitt cites, it does seem well founded in the texts. And that doesn't even include the reference in Lucretius that seems to contemplate a Nietzsche-style "eternal recurrence" when he asks whether it would make a difference to us if our atoms would at any time in the future rearrange themselves in the same way they are now.

I don't think any of this is necessary to believe as core Epicurean philosophy. Some people, following the Frances Wright model, just aren't interested in this kind of big-picture speculation, and if someone is that way and not troubled by these issues, then there is no reason for them to be concerned about them.

But it seems to be natural for a large number of people to want to have *some* kind of reasonable perspective on the "big picture," and this direction does, it seems to me, provide a reasonable framework for those people to have a position on "the big picture" that stops them from being in fear that the lack of ANY explanation exposes them to the oppression of the priests.

Post by “Godfrey” of June 25, 2022 at 12:33 AM

Thanks [Cassius](#) that's helpful. But of course I have more questions 😊

DeWitt mentions Zoroaster as an influence for thinking in terms of good and evil, and good and evil would fit with the analogy of the legal system. But they don't seem to fit with Epicurus' description of justice. I'm curious if love and strife are more direct influences, being pre-Socratic influences on and precursors to the development of atomism. (Was it Parmenides theory? I tend to get the Pre-Socratics mixed up.) This would be what is being described in the underlined portion of the quotation in post #2.

It also seems curious that the term isonomia doesn't exist in extant Epicurean texts but is only found in Cicero, per DeWitt. Curious in that Cicero, the crafty lawyer, would express it in legal terms. And that such terms imply good and evil....

"The existence of the imperfect in an infinite universe demands belief in the existence of the perfect. Cicero employs very similar language: "It is his doctrine that there are gods, because there is bound to be some surpassing being than which nothing is better."

I also don't see the truth in this statement. To me, in an infinite universe there is an infinite progression of "better". I'm fully on board with the idea of an hierarchy, but in keeping with the mind-bogglingness of infinity, I can't conceive of a limit such as "best". I suppose there could be something that is "biggest", but, again, does infinity contain such a limit?

BTW [Cassius](#) in what section of DeWitt is the quote in post #2 located? At some point it might be helpful to track down his footnotes. And do you know offhand where it is that Lucretius discusses this?

Post by “Cassius” of June 25, 2022 at 5:27 AM

[Quote from Godfrey](#)

I'm fully on board with the idea of an hierarchy, but in keeping with the mind-bogglingness of infinity, I can't conceive of a limit such as "best". I suppose there could be something that is "biggest", but, again, does infinity contain such a limit?

I agree with you that there would be no theoretical limit to "best" other than the practical limits analogous to "biggest.". He may have thought that there must be a limit to "biggest" because otherwise that very big thing would already, in an infinite time past, already have grown to consume the entire universe in size.

Let me look for the other references....

The "perplexing question" part is on page 221 under New Hedonism.

The "another pair of forces opposed to each other" is on page 273 under "New Piety"

The section in Lucretius that discusses "no single thing of a kind" is right at the end of book two:

[1048] First of all, we find that in every direction everywhere, and on either side, above and below, through all the universe, there is no limit, as I have shown, and indeed the truth cries out for itself and the nature of the deep shines clear. Now in no way must we think it likely, since towards every side is infinite empty space, and seeds in unnumbered numbers in the deep universe fly about in many ways driven on in everlasting motion, that this one world and sky was brought to birth, but that beyond it all those bodies of matter do naught; above all, since this world was so made by nature, as the seeds of things themselves of their own accord, jostling from time to time, were driven together in many ways, rashly, idly, and in vain, and at last those united, which, suddenly cast together, might become ever and anon the beginnings of great things, of earth and sea and sky, and the race of living things. Wherefore, again and again, you must needs confess that there are here and there other gatherings of matter, such as is this, which the ether holds in its greedy grip.

[1067] Moreover, when there is much matter ready to hand, when space is there, and no thing, no cause delays, things must, we may be sure, be carried on and completed. As it is, if there is so great a store of seeds as the whole life of living things could not number, and if the same force and nature abides which could throw together the seeds of things, each into their place in like manner as they are thrown together here, it must needs be that you confess that there are other worlds in other regions, and diverse races of men and tribes of wild beasts.

[1077] This there is too that in the universe there is nothing single, nothing born unique and growing unique and alone, but it is always of some tribe, and there are many things in the same race. First of all turn your mind to living creatures; you will find that in this wise is begotten the race of wild beasts that haunts the mountains, in this wise the stock of men, in this wise again the dumb herds of scaly fishes, and all the bodies of flying fowls. Wherefore you must confess in the same way that sky and earth and sun, moon, sea, and all else that exists, are not unique, but rather of number numberless; inasmuch as the deep-fixed boundary-stone of life awaits these as surely, and they are just as much of a body that has birth, as every race

which is here on earth, abounding in things after its kind.

[1090] And if you learn this surely, and cling to it, nature is seen, free at once, and quit of her proud rulers, doing all things of her own accord alone, without control of gods. For by the holy hearts of the gods, which in their tranquil peace pass placid years, and a life of calm, who can avail to rule the whole sum of the boundless, who to hold in his guiding hand the mighty reins of the deep, who to turn round all firmaments at once, and warm all fruitful lands with heavenly fires, or to be at all times present in all places, so as to make darkness with clouds, and shake the calm tracts of heaven with thunder, and then shoot thunderbolts, and often make havoc of his own temples, or moving away into deserts rage furiously there, plying the bolt, which often passes by the guilty and does to death the innocent and undeserving?

[1105] And since the time of the world's birth, and the first birthday of sea and earth, and the rising of the sun, many bodies have been added from without, and seeds added all around, which the great universe in its tossing has brought together; that from them sea and lands might be able to increase, and from them too the mansion of the sky might gain new room and lift its high vault far away from the lands, and the air might rise up. For from all places all bodies are separated by blows each to its own kind, and they pass on to their own tribes; moisture goes to moisture, with earthy substance earth grows, fires forge fires, and sky sky, until nature, parent of all, with perfecting hand has brought all things on to the last end of growing; as it comes to pass, when there is now no whit more which is sent within the veins of life, than what flows out and passes away. Here the growth of all things must stop,

Post by “Don” of June 25, 2022 at 6:33 AM

[Quote from Cassius](#)

1077] This there is too that in the universe there is nothing single, nothing born unique and growing unique and alone, but it is always of some tribe, and there are many things in the same race. First of all turn your mind to living creatures; you will find that in this wise is begotten the race of wild beasts that haunts the mountains, in this wise the stock of men, in this wise again the dumb herds of scaly fishes, and all the bodies of flying fowls. Wherefore you must confess in the same way that sky and earth and sun, moon, sea, and all else that exists, are not unique, but rather of number numberless; inasmuch as the deep-fixed boundary-stone of life awaits these as surely, and they are just as much of a body that has birth, as every race which is here on earth, abounding in things after its kind.

This only means that there is never just one elephant, one human, one kosmos created in the universe. There is always a herd of elephants, a tribe of humans, an infinity of kosmoi. There is never a single solitary thing by itself. Things or beings are always part of a larger group. You don't have unique one of a kind things popping into existence.

Post by “Cassius” of June 25, 2022 at 7:02 AM

Episode 127 of the Lucretius Today Podcast is now available. In this episode, Joshua is away, and Don helps us out on the issue of "Formation of Worlds."

<https://www.spreaker.com/episode/50331614>

Post by “Don” of June 25, 2022 at 7:24 AM

Is the only extant use of isonomia from Epicurus The mention in Cicero:

Quote

Moreover there is the supremely potent principle of infinity, which claims the closest and most careful study; we must understand that it has the following property, that in the sum of things everything has its exact match and counterpart. This property is termed by Epicurus isonomia, or the principle of uniform distribution. From this principle it follows that if the whole number of mortals be so many, there must exist no less a number of immortals, and if the causes of destruction are beyond count, the causes of conservation also are bound to be infinite.

That's it? And isonomia is defined as, by Cicero, "in the sum of things everything has its exact match and counterpart." According to the LSJ Greek dictionary, isonomia is cited as occurring in Epicurus Usener Fragment 352, which is Cicero's reference. And is it really Epicurus or is it just Cicero that goes off on "it follows that .." Is isonomia just Epicurus saying "no one thing of its kind"? I could see "its exact match and counterpart" as referring to something like that idea. I'll definitely want to dive into Academia.edu or JSTOR for some papers.

[Henry George Liddell, Robert Scott, A Greek-English Lexicon, ἰσονομία](#)

Post by “Cassius” of June 25, 2022 at 9:05 AM

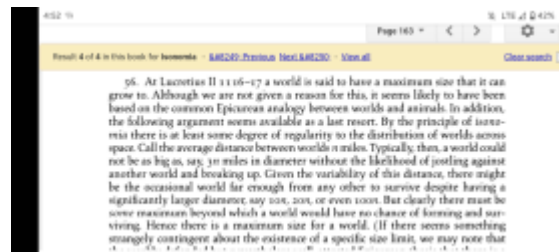
It is my understanding that that Velleius material is indeed the only source for much of what is said there. Which doesn't mean it isn't accurate, given the way Cicero was using other material to prepare his philosophy works, but does mean we don't have much else to go by unless we can find it in Lucretius.

Post by “Godfrey” of June 25, 2022 at 2:56 PM

A Google search for "isonomia David Sedley" revealed the book Creationism and Its Critics in Antiquity by David Sedley. It has what appears to be a pertinent chapter titled "Epicurean Infinity". <https://books.google.com/books?id=SgRuj...epage&q&f=false>

It's always worth asking David Sedley 😊

Post by “Don” of June 25, 2022 at 4:53 PM



Isonomia reference...

Post by “Godfrey” of June 25, 2022 at 5:56 PM

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infinity." What is that? As reported by Cicero (*ND* I 50,⁴² 109⁴³), Epicurus associated the power of infinity with what he called *isonomia*, "distributive equality." Although, regrettably, the actual term *isonomia* occurs only in one uniquely problematic theological context, where the Epicureans quoted as invoking it appear to be doing so ineptly,⁴⁴ the same principle is clearly put to work, and more illuminatingly, elsewhere in our Epicurean sources. According to Cicero's report of this principle of *isonomia*, the power of infinity is such "that all like things match all like things." That is, in an infinite universe, if two types of thing have coordinate status, they exist in equal quantities. As the name *isonomia*, "distributive equality," implies, this is not a question of the mere fact that the sum totals of the two items will be equal. For since the Epicurean universe is infinite, even when it comes to comparing atoms themselves with the worlds that they combine in vast numbers to constitute, their sum totals will be identical, in the sense that both atoms and worlds will alike have infinitely many exemplars. Consider an arithmetical analogy: in the series of natural numbers, there is an infinity not only of those numbers themselves, but also of cubic numbers, despite the fact that these latter constitute only a minute proportion of the total. *Isonomia* is to be found, not in the compared items' sum totals, but in their distribution. In the arithmetical case, *isonomia* is satisfied by the equal distribution of odd and even numbers. In Epicurean cosmology, *isonomia* is satisfied at the phenomenal level by the equal distribution of opposite pairs of qualities such as hot and cold, and of coordinate species, for example of elephants and horses; and at the atomic level, by the equal distribution of atoms of different types.

42. The Epicurean Velleius: "summa vero vis infinitatis et magna ac diligenti contemplatione dignissima est. in qua intellegi necesse est eam esse naturam, ut omnia omnibus paribus paria respondeant; hanc isonomian appellat Epicurus, id est aequabilem tributionem . . ." "Moreover, the supreme power of infinity fully deserves long and careful reflection. You must understand that in it there lies a nature such that all like things match all like things. Epicurus calls this *isonomia*, that is, 'distribution in equal proportions' . . ."

43. The Academic Cotta: "confugis ad aequilibratam (sic enim isonomian, si

There's also this tidbit....

Post by “Cassius” of June 25, 2022 at 8:29 PM

I don't know about anyone else but I don't pretend to have any confidence in any particular reconstruction we've seen so far. Why should the number of horses or elephants be related to each other?

Now for things which are in some sense natural opposites, like "hot" and "cold" - I can more readily see that.

But I think we ought to be able to do a better job of reconstructing Epicurus' thought than what I have seen so far.

The principle of "Nature never makes a single thing of a kind" seems to me to be pretty firmly graspable and a firm starting point for expecting there to be an infinite number of worlds (or for the sake of our discussion, and infinite number of planets like Earth).

And I can see there being some kind of observable "progression" in those things that Nature has created. Nature has created pleasure as a reality (a very deep question there) but regardless of anything else we know that living things have the feeling of pleasure and pain and it's a small leap to conclude that this faculty of feeling allows living things to "progress" over time to get stronger and more self-fulfilling.

But as for there being an "equal number" of beings through some kind of principle of opposition or linkage, I think we would need to be able to articulate something better than "Velleius says so." "Maybe" the equality issue arises from the infinite number series observation that is cited above, but if Epicurus' point was there there is an infinite number of everything and therefore there's the same number of everything -- that does not seem to me like the kind of point Epicurus would have made -- it sounds too purely abstractly mathematical to me.

So therefore I suspect something more than has been articulated so far, and I don't think it's fair to jump to the conclusion that this was an interpolation of later Epicureans.

I guess my focus would be on a more likely translation of "all like things match all like things."

Post by “beasain” of July 2, 2022 at 8:53 AM

[Quote from Cassius](#)

In the meantime, I noticed an interesting exchange on Martin's wall about "entropy" and how issues revolving around the eventual destruction of our world (but not of the universe as a whole!) can be a little depressing to think about.

Martin on his wall limited this issue to the future of our solar system. In my opinion the concept of entropy is really a most depressing one, and I think that Epicurism is for me an excellent antidote to live with it.

Entropy is a measure of disorder, and especially the so-called second law of thermodynamics rules the universe in an unpleasant way:

"the entropy of the universe increases in the course of any spontaneous change."

The key word here is universe: it means, as always in thermodynamics, the system together with its surroundings. There is no prohibition of the system or the surroundings individually undergoing a decrease in entropy provided that there is a compensating change elsewhere.

Atkins, Peter. The Laws of Thermodynamics: A Very Short Introduction (Very Short Introductions) (p. 49). Oxford University Press. Edición de Kindle.

"The second law is of central importance in the whole of science, and hence in our rational understanding of the universe, because it provides a foundation for understanding why any change occurs. Thus, not only is it a basis for understanding why engines run and chemical reactions occur, but it is also a foundation for understanding those most exquisite consequences of chemical reactions, the acts of literary, artistic, and musical creativity that enhance our culture."

Atkins, Peter. The Laws of Thermodynamics: A Very Short Introduction (Very Short Introductions) (pp. 37-38). Oxford University Press. Edición de Kindle.

The consequence of this law is that there is in general a change that takes place in the direction of more disorder (destruction). My library spontaneously evolves in a chaotic staple of books (and it costs energy to order them). The good thing is that you like in my library locally can reduce the disorder by augmenting the disorder of the universe. An example is an airco installation in the city. You can reduce the inside temperature in your house (lower temperature is lower entropy) by 'pumping' entropy to the rest of the city.



In other words, to maintain entropy/disorder low you need to have a continuous flow of energy. An example is our body. While we are able to pump oxygen and sugar around our organs everything maintains its ordered state, and the repair mechanisms maintain entropy low. Once the flow of energy stops, self-organisation begins to disintegrate, and in keeping with the Second Law of thermodynamics our orderly system becomes undone, dissolves... The cells start leaking, autolysis, and the body starts to disintegrate.

I think that the Second law of thermodynamics has enormous philosophical implications, and I have the feeling that it is in some way in Epicurus with his no nonsense stand against metaphysics. "You can philosophize all that you want but nobody escapes of a tremendous increase of entropy sooner or later". The latter are of course my words...

What do you think? [Martin](#)?

PS. The book of Peter Atkins I have cited from is a very good introduction to the concept, and in my opinion also to philosophical implications. Peter Atkins wrote various very good textbooks on chemistry etc.

Post by "Cassius" of July 2, 2022 at 3:20 PM

Here's an explicit reference in Lucretius Book 2 as to the essentially positive view that the forces of destruction do not forever prevail:

[541] But still, let me grant this too, let there be, if you will, some one thing unique, alone in the body of its birth, to which there is not a fellow in the whole wide world; yet unless there is an unlimited stock of matter, from which it might be conceived and brought to birth, it will not be able to be created, nor, after that, to grow on and be nourished.

Nay, in very truth, if I were to suppose this too, that the bodies creative of one single thing were limited as they tossed about the universe, whence, where, by what force, in what manner will they meet and come together in that vast ocean, that alien turmoil of matter? They have not, I trow, a plan for union, but as, when many a great shipwreck has come to pass, the great sea is wont to cast hither and thither benches, ribs, yards, prow, masts and swimming oars, so that along all the coasts of the lands floating stern-pieces are seen, giving warning to mortals, to resolve to shun the snares of the sea and its might and guile, nor trust it at any time, when the

wiles of the windless waves smile treacherous; even so, if you once suppose that the first-beginnings of a certain kind are limited, then scattered through all time they must needs be tossed hither and thither by the tides of matter, setting towards every side, so that never can they be driven together and come together in union, nor stay fixed in union, nor take increase and grow; yet that each of these things openly comes to pass, fact proves for all to see, that things can be brought to birth and being born can grow. It is manifest then that there are, in any kind of things you will, infinite first-beginnings, by which all things are supplied.

[569] And so, neither can the motions of destruction prevail for ever, and bury life in an eternal tomb, nor yet can the motions of creation and increase for ever bring things to birth and preserve them. So war waged from time everlasting is carried on by the balanced strife of the first-beginnings. Now here, now there, the vital forces of things conquer and are conquered alike. With the funeral mingles the wailing which babies raise as they come to look upon the coasts of light; nor has night ever followed on day, or dawn on night, but that it has heard mingled with the baby's sickly wailings, the lament that escorts death and the black funeral.

.....

[991] And so, we are all sprung from heavenly seed; there is the one father of us all, from whom when live-giving earth, the mother, has taken within her the watery drops of moisture, teeming she brings forth the goodly crops and the glad trees and the race of men; she brings forth too all the tribes of the wild beasts, when she furnishes the food, on which all feed their bodies and pass a pleasant life and propagate their offspring; wherefore rightly has she won the name of mother. Even so, what once sprung from earth, sinks back into the earth, and what was sent down from the coasts of the sky, returns again, and the regions of heaven receive it.

Nor does death so destroy things as to put an end to the bodies of matter, but only scatters their union. Then she joins anew one with others, and brings it to pass that all things thus alter their forms, and change their colours, and receive sensations, and in an instant of time yield them up again, so that you may know that it matters with what others the first-beginnings of things are bound up and in what position and what motions they mutually give and receive, and may not think that what we see floating on the surface of things or at times coming to birth, and on a sudden passing away, can abide in the possession of eternal first-bodies. Nay, indeed, even in my verses it is of moment with what others and in what order each letter is placed. For the same letters signify sky, sea, earth, rivers, sun, the same too crops, trees, living creatures; if not all, yet by far the greater part, are alike, but it is by position that things sound different. So in things themselves likewise when meetings, motions, order, position, shapes are changed, things too are bound to be changed.

Post by “Martin” of July 2, 2022 at 3:37 PM

Hi [beasain](#),

I think that you have already a good understanding of entropy except for some details affected by the inaccurate and misleading analogy between entropy and disorder. When I was an undergraduate student, that analogy considerably delayed my understanding of entropy. When ignoring that analogy and sticking to the definition of entropy as a measure of the probability of a thermodynamic state, I finally got a working understanding.

If you apply the analogy between entropy and disorder without consideration for the actual definition of entropy, you may easily get false conclusions such as "lower temperature is lower entropy". A counterexample for that false conclusion is the adiabatic process, in which the temperature changes but the entropy does not change. Another counterexample is that in the distant past, the universe had a higher average temperature and a lower entropy than today.

The interpretation of increase in entropy as destruction or an increase in disorder is subjective and not always obvious. Instead of thinking that the universe goes into disorder and destruction, we should more accurately think that it transitions from a less probable state to a state with higher probability, and that formulation should not trigger any depressive thoughts or cynicism, independent of what school of philosophy we prefer.

Whereas easy to understand analogies are a useful tool for the popularization of science, we need to be aware that the incurred simplification may mislead us when we draw our own conclusions.

What I wrote about entropy on my wall was not limited to our solar system but referred to the universe as a whole. The development of the universe and the expected future development appear to be contrary to Epicurus' concept that the universe has always been the same and will remain the same.

In its early stages, the universe has been very different from now. Many billion years into the future, it will be very different from now. In between, there are many billion years in which it is about the same, in particular as it appears to us on Earth. Therefore, from a practical perspective for us humans now, Epicurus' concept of a constant universe is reasonably correct unless we are professional astrophysicists.

On this limited time interval (of nevertheless billions of years), the increase in entropy is good to know to understand nature and to develop technology and is no reason to feel depressed.

Epicurus' philosophy helps us to focus on the generations currently alive and the next few generations. It makes sense to put reasonable effort in mitigation of climate change, preservation of biodiversity, sustainable agriculture and industry, avoidance of depletion of limited resources and whatever else helps to make survival not too unpleasant for the next generations. Beyond that reasonable effort, it is up to the future generations to deal with the

problems they will face.