

# Stoic Objections to Epicurean Doctrine on Infinity of The Universe

Post by “Cassius” of August 31, 2020 at 10:39 AM

In contrast to the issues about infinity of the universe based on modern physics, the original issues involved in infinity theory involved important logical and ethical issues. This thread is not to address the physics arguments, but to address the arguments of the Stoics and others who thought that the Epicurean argument on infinity of the universe was insufficient. I don't have time to go through this right now but the attached article came across my email, and I see it is written by someone whose thesis is that the Stoic argument was superior. Over time I'd like to develop in this thread some discussion on potential responses to these Stoic-based arguments.

## Chapter 3 The End of Epicurean Infinity: Critical Reflections on the Epicurean Infinite Universe

Frederik A. Bakker

**Abstract** In contrast to other ancient philosophers, Epicurus and his followers famously maintained the infinity of matter, and consequently of worlds. This was inferred from the infinity of space, because they believed that a limited amount of matter would inevitably be scattered through infinite space, and hence be unable to meet and form stable compounds. By contrast, the Stoics claimed that there was only a finite amount of matter in infinite space, which stayed together because of a general centripetal tendency. The Roman Epicurean poet [Lucan](#) tried to defend the Epicurean conception of infinity against this Stoic alternative view, but not very successfully. One might suspect, therefore, that the Epicureans' adherence to the infinity of matter was not so much dictated by physical arguments as it was motivated by other, mostly theological and ethical, concerns. More specifically, the infinity of atoms and worlds was used as a premise in several arguments against divine intervention in the universe. The infinity of worlds was claimed to rule out divine intervention directly, while the infinity of atoms lent plausibility to the chance formation of worlds. Moreover, the infinity of atoms and worlds was used to ensure the truth of multiple explanations, which was posited by Epicurus as the only way to ward off divine intervention in the realm of celestial phenomena. However, it will be argued that in all of these arguments the infinity of matter is either unnecessary or insufficient for reaching the desired conclusion.

---

Post by “Don” of August 31, 2020 at 11:04 AM

For those interested, [here's the author's webpage at Radboud University](#). Looks like his PhD thesis was on Epicurean cosmology.

---

Post by “Cassius” of August 31, 2020 at 11:44 AM

Yes he's using a Stoic argument here:

Lucretius does not identify the proponents of this theory, and over the years various candidates have been proposed. The common, and in my opinion the most plausible, view is that Lucretius was thinking of the Stoics.<sup>20</sup> Although several ancient philosophers and schools of philosophy endorsed some kind of centripetal gravity, only the Stoics deployed this theory in order to safeguard the integrity of a single and finite cosmos in infinite space, and only they extended this centripetal tendency to all bodies, heavy and light alike. Other proposed candidates, like Aristotle or the early Platonists, simply rejected extra-cosmic space, and therefore did not have to account for the coherence of the cosmos as such, or to counterbalance the centrifugal tendency of air and fire with a centripetal one.<sup>21</sup> However, although Lucretius probably had the Stoics in mind, this does not necessarily mean that he understood

48

F. A. Bakker

or represented their theory correctly in every respect. The clearest ancient testimony as to the Stoic theory in question is preserved by Stobaeus:

In the case of all things in the cosmos that have a *hexis* of their own the parts tend towards the centre of the whole thing. Similarly in the case of the cosmos itself; and it is in virtue of this fact that it is rightly said that all parts of the cosmos have a tendency to move towards the centre of the cosmos, most of all the things possessing weight. The same thing is responsible both for the immobility of the cosmos in the infinite void and for the earth's immobility in the cosmos, as it is situated around the centre of it [viz. of the cosmos] in a state of equal balance. Still it is not unrestrictedly so that body has weight, but air and fire are weightless. However, also these elements tend towards the centre of the whole globe of the cosmos, although they find their relative position in the direction of the periphery of the cosmos. For by their own nature they are upward moving because they don't have any share in weight.<sup>22</sup>

According to the Stoics, just as individual things within the cosmos are held together by a cohesive force or *hexis*, so the cosmos as a whole has a *hexis*, which causes all its parts to converge on its centre. This tendency is felt most strongly by the heaviest parts, which take up a more central position, but less by the weightless bodies, which therefore move towards, and settle at, the periphery.

---

## Post by “Don” of August 31, 2020 at 11:00 PM

I had not heard the argument the author puts forward that Epicurus needed all possible explanations of phenomena to be true throughout the infinite cosmos. The reason for multiple explanations in other threads on this forum seemed to assume that we reserve multiple explanations until we have more sensory input to make a judgement of one over the others. What the author is saying is that the Epicureans demanded dogmatically that all explanations were, in fact, true: if not here in this cosmos, then in one of the other infinite number of cosmoi. That's both an intriguing and somewhat unsettling proposition. It does actually echo the multiple universe theory, but I'm not convinced that's what's going on. So, we're to accept that snow can be caused:

### Quote

"Snow may be formed when a fine rain issues from the clouds because the pores are symmetrical and because of the continuous and violent pressure of the winds upon clouds which are suitable ; and then this rain has been frozen on its way because of some violent change to coldness in the regions below the clouds. Or again, by congelation in clouds which have uniform density a fall of snow might occur through the clouds which contain moisture being densely packed in close proximity to each other ; and these clouds produce a sort of compression and cause hail, and this happens mostly in spring. [108] And when frozen clouds rub against each other, this

accumulation of snow might be thrown off. And there are other ways in which snow might be formed. (Letter to Pythokles)

... By any and all of these causes throughout the infinite cosmos? That doesn't make sense to me. Later in the Pythokles, Epicurus writes:

Quote

All this, Pythocles, you should keep in mind ; for then you will escape a long way from myth, and **you will be able to view in their connexion the instances which are similar to these**. But above all give yourself up to the study of first principles and of infinity and of kindred subjects, and further of the standards and of the feelings and of the end for which we choose between them. For **to study these subjects together will easily enable you to understand the causes of the particular phenomena**. And those who have not fully accepted this, in proportion as they have not done so, will be ill acquainted with these very subjects, nor have they secured the end for which they ought to be studied." (My emphasis added)

My interpretation here is that Epicurus is saying that the study of his philosophy will equip you to "understand the causes of the particular phenomena" and "see connections which are similar" and to reason from analogy with what your senses and the Canon provide you with. I will need to investigate the articles authors citations, so I don't want to dismiss his assertion out of hand on this topic.

I also need to investigate the Stoic refutation the author says is going on. I didn't see much about the Stoics' Logos. Is that what is causing their "centripetal" hexis? I'm intrigued by the paper, but I don't - at first reading - find his arguments compelling.

---

## Post by “Cassius” of September 1, 2020 at 5:46 AM

i haven't had time to read the paper yet and probably won't in the near future, so with that caveat I have two preliminary comments:

I suspect you are correct Don and he is distorting the doctrine. Sounds like an extreme variation the "[all sensations are true](#)" argument which Dewitt deals with, applied to attack the idea that we should not eliminate possibilities until there is evidence on which to do so.

Also, I think this article and the background probably helps show how the infinite universe argument was not so much a "knowledge for the sake of knowledge" debate as it was an

example of logical fencing, originating with the Platonists et al, who were using their logic to persuade others toward a theocentric universe model. Given that playing field the Epicurean position was probably always intended more as an antidote to theism than anything else.

I think we are seeing a thread here that the real crux of many matters is this "methods of inference" question, turning on the question of what is the proper perspective to take when the evidence of our senses seems to us to be insufficient to establish the level of certainty we would prefer.

In such cases do we allow ourselves to follow "logic contrary to some evidence and to the experience here we can refer to by analogy" or do we "wait" and in the meantime accept that multiple possibilities may be true.

If in fact the Epicureans said "are true" rather than "may be true" (and I question that) then this must have been another example of a nonstandard definition of the word "true" just like they used "god" in a way that to us seems nonstandard.

We should not judge the Epicureans according to our own technology or according to our own definitions.

---

## Post by “Don” of September 1, 2020 at 6:55 AM

It "feels" important to me that the word *μύθος* *mythos* "myth" just means a "[tale, story, narrative](#)." Myth implies to us specifically stories about the gods, but I don't think that's what Epicurus intends in his "then you will escape a long way from myth." To paraphrase, you will be far from talking fiction if you follow the Canon etc.

But, here are two of the relevant sections of the Letter to Pythokles:

### Quote

[87] "For in the study of nature we must not conform to empty assumptions and arbitrary laws, but **follow the promptings of the facts ; for our life has no need now of unreason and false opinion ; our one need is untroubled existence.** All things go on uninterruptedly, if all be explained by the method of plurality of causes in conformity with the facts, so soon as we duly understand what may be plausibly alleged respecting them. But when we pick and choose among them, rejecting one equally consistent with the phenomena, we clearly fall away from the study of nature altogether and tumble into myth. Some phenomena within our experience afford evidence by which we may interpret what goes on in the heavens. We see how the

former really take place, but not how the celestial phenomena take place, for their occurrence may possibly be due to a variety of causes. [88] However, we must observe each fact as presented, and further separate from it all the facts presented along with it, the occurrence of which from various causes is not contradicted by facts within our experience.

The word used in 87 translated as "facts" is φαίνω and means "that which appears to the senses." The assumptions and laws are arrived at by reason and are man-made. Epicurus is saying we need to not be lured in by fancy arguments or stories or what we think are worthy but by what we perceive by our senses. And then...

#### Quote

"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 ... 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.

So, with that last part, I can't rule out the articles authors thesis. Epicurus does say all the alternatives are possible or permissible or allowed. But I want to delve into that a little deeper in context and the original.

---

### Post by "Cassius" of September 1, 2020 at 7:11 AM

So when you say you can't rule out his thesis, what do you see his thesis being?

Because yes this seems valid to be a valid approach to me: "Epicurus does say all the alternatives are possible or permissible or allowed" ... when you qualify that these possibilities have some evidence to support them, even evidence by analogy, and you qualify that the particular alternative does not have evidence against it to disqualify it.

---

### Post by "Don" of September 1, 2020 at 7:18 AM

Oh but I think he's saying that not only are all possible options possible, they actually exist in all possible infinite cosmos. So every explanation actually exists out in the infinite cosmos and that's why Epicurus needed infinite worlds for this to be true.

I'm not saying I agree but that's the author's thesis.

---

### **Post by "Cassius" of September 1, 2020 at 7:32 AM**

OK yes something like that is what I too gather the thesis to be, but I definitely reject that as what Epicurus was saying, and I really don't think its even close as a reasonable construction.

I think it is clear that Epicurus is telling us how to approach issues where evidence is lacking (hold reasonable possibilities as "possible" rather than picking among them when there is insufficient evidence to do so). He is certainly not saying that all things are possible as that is specifically ruled out by the limitations in the way that atoms can combine, and this is stated in several ways in Lucretius and I think other places as well.

---

### **Post by "Cassius" of September 1, 2020 at 7:34 AM**

so it was that the lively force of his mind won its way, and he passed on far beyond the fiery walls of the world, and in mind and spirit traversed the boundless whole; whence in victory he brings us tidings what can come to be and what cannot, yea and in what way each thing has its power limited, and its deepset boundary-stone. And so religion in revenge is cast beneath men's feet and trampled, and victory raises us to heaven.

---

### **Post by "Cassius" of September 1, 2020 at 8:02 AM**

This is the kind of exploration of this argument that I think is most useful. I agree with you Don that from my quick reading he seems to be alleging that Epicurus held that "all possible options possible, they actually exist in all possible infinite cosmos." This may be the first time we have discussed this here on this forum, but I think I have seen this before and in fact I think it is

probably the argument that we'll run into frequently as soon as we seek out and discuss more often the general approach. So I think it will be very good for us to pick this apart and line up the responses, including not just that quote but a series of others that are even more specific that all things cannot combine in all "possible" ways. If I recall correctly too there is a "conceivability" aspect to this as well.

But at any rate, we have to very carefully articulate these issues about how to treat "possibilities." Otherwise this will always be a hurdle that will be thrown in front of us, and I think the best (or at least one of first) responses is simply to hunt out and marshal the sources which say that this is not so.

---

### **Post by “Cassius” of September 1, 2020 at 8:06 AM**

Another reference, this one from Lucretius Book 2 (Bailey). This is one of the most specific that I remember:

And yet we must not think that all particles can be linked together in all ways, for you would see monsters created everywhere, forms coming to being half man, half beast, and sometimes tall branches growing out from a living body, and many limbs of land-beasts linked with beasts of the sea, and nature too throughout the lands, that are the parents of all things, feeding Chimaeras breathing flame from their noisome mouths. But it is clear to see that none of these things comes to be, since we see that all things are born of fixed seeds and a fixed parent, and can, as they grow, preserve their kind. You may be sure that that must needs come to pass by a fixed law. For its own proper particles separate from every kind of food and pass within into the limbs of everything, and are there linked on and bring about the suitable movements. But, on the other hand, we see nature cast out alien matter on to the ground, and many things with bodies unseen flee from the body, driven by blows, which could not be linked to any part nor within feel the lively motions in harmony with the body and imitate them. But lest by chance you should think that living things alone are bound by these laws, the same condition sets a limit to all things. For even as all things begotten are in their whole nature unlike one to the other, so it must needs be that each is made of first-beginnings of a different shape; not that but a few are endowed with a like form, but that they are not all alike the same one with another. Moreover, since the seeds are different, there must needs be a difference in their spaces, passages, fastenings, weights, blows, meetings, movements, which not only sunder living things, but part earth and the whole sea, and hold all the sky away from the earth.