# To What Extent, If Any, Does Modern Physics Invalidate Epicurean Philosophy?

## Post by “Cassius” of August 15, 2020 at 11:00 AM

Alan Reyes wrote:

Thanks for your reply Cassius. Let me narrow in on the first comment. The particular conclusions of Epicurean physics that I disagree with are 1) swerve, 2) infinity of the universe, and 3) eternality and immutability of atoms. I also am concerned with the lack of mention of energy (and less so, time).

This is how I understand how (through DeWitt) Epicurus derives the above. Regarding the swerve:

Premise 1) The atoms move in straight lines with constant speed.

Premise 2) If the atoms never contact one another, there could be no macroscopic objects.

Premise 3) We observe that there are macroscopic objects.

Conclusion ) Therefore, the atoms must swerve.

The conclusions of deduction can only be sound if all of the premises are true and consistent with reality. If you agree with this formulation of Epicurus’ argument (and that he is a deductionist and not an empiricist) then I invite you to defend those premises. The first premise is not obviously true and would need justification. The second premise fails to recognize the forces of attraction that we now understand in modern (post-Newtonian) physics.

Now on to the infinity of the universe:

Premise 1) A finite universe could not contain an infinite amount of matter.

Premise 2) An infinite universe with a finite amount of matter would result in the spreading out of matter, which goes against our observations of macroscopic objects.

Conclusion) The universe is both infinite in space and matter.

The first premise is fine with me, but the second premise again fails to account for gravity and the other forces of attraction and isn’t obvious at all. I would dare to say it is even just plain wrong, which would of course invalidate the conclusion.

Lastly regarding the eternality and immutability of atoms, I am not sure if he deduced these or if he held those to be axiomatic. Regardless, if the atoms are indeed the subatomic particles that we now understand, then the position is wrong. If particles are fundamentally energetic

excitations of fields and don’t have a real spatial interpretation, then they were never solid bodies to begin with.

Now, moving on from this, I would say that it isn’t important for a modern Epicurean to have to accept all of these conclusions. We can still employ the Canon and the Ethics in our lives because at the root of both is an appeal to the metaphysical position of naturalism/materialism and empiricism, and a hard rejection of supernaturalist explanations of things. There are still no supernatural gods, no ideal forms (in reality, but perhaps in our imagination), no compulsory virtues, no fatalism (we do not need the swerve to defend free-will), and no afterlife. We haven’t lost any of the important Epicurean conclusions by dismissing the results from the old physics.