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

Post by “Cassius” of August 15, 2020 at 5:39 AM

This thread is for discussion of the FAQ here: https://www.epicureanfriends.com/wcf/index.php?faq/#entry-34

Stated another way, in an actual question, "What is the Epicurean physics view of energy? Instead of "matter and void", shouldn't it be "mass-energy and void"? How strongly do we hold to the idea that atoms are indestructible and immutable? What would Epicurus think if he knew about matter-antimatter annihilation?" [Edit: The following thread includes a dialog on the question as quoted here; the poster of that question asked that it be noted that he asked it that way, not in the more sweeping form of the title of the FAQ and this thread.]

This is frequently asked and we ought to discuss at length so here is a first reply, although I am sure others such as Martin can do much better.

But first, in my experience the general way this question is often asked comes down to something like this: "Don't we now know about subatomic particles and other phenomena smaller than atoms, and since Epicurus said atoms were indivisible then Epicurus was wrong, his philosophy fails, he can't be trusted, so shouldn't we just muse about how interesting it is to consider pleasure the goal of life, and how cute he was to talk about pleasure as "absence of pain?" Shouldn't we just discuss Epicurus for an hour while we have a beer and eat some exotic food and after that go back to studying Plato and the Stoics?"

And the general answer to that question is "No."

That's because the Epicurean view of nature was built on an approach to knowledge that is first and foremost geared toward adapting to and incorporating all observations that can reliably judged to be correct. The philosopher known for the viewpoint that "all sensations are true" (in the sense of honestly reported) is never going to ignore new observations in physics which are repeatedly and reliably observed. Read Lucretius and you will see the most detailed presentation of Epicurean physics left to us, and you will see that the physics is built on a step by step series of observations that remain persuasive today. No doubt some will want to argue about this, but the general starting points that (1) nothing ever truly comes from nothing, and (2) nothing ever truly goes to nothing remain persuasive today. Even more certainly, neither of those phenomena are ever observed to occur at the whim or will of any supernatural god. All of the rest of Epicurean physics are derivative conclusions intended to produce a working model of how this fundamental observation is most likely to be "explainable" given the knowledge that

we have. And one part of Epicurus' working model was that at some point in nature we arrive at an irreducible limit where things can no longer be divided further, and that this are of limit is where nature gets its stability and reliability and continuity that we see around us every day, which exists by nature and not because a supernatural god is watching it and willing it into existence.

It is therefore fundamental to observe that if new instrumentation gives us the ability to prove to our satisfaction the existence of "mass-energy" or anything else then that would be incorporated into the overall consistent world-view.

One also has to consider that the use of words varies between languages and over the centuries. When Epicurus was referring to "atoms" the Greek translates most generally into "things that are indivisible. What we refer to today as atoms made up of subatomic particles would easily be incorporated into Epicurean physics by observing that what Epicurus was really saying was that at SOME point you come to a level where existence is indivisible.

Various philosophers of Epicurus day and before had asserted that matter was theoretically infinitely divisible, and they carried those observations to ridiculous conclusions such as that movement is impossible. Epicurean physics is largely devoted to philosophical approach that prioritizes observation and practical experience over abstract theory, meaning for just one example that when we observe that motion is going on everywhere around us, we do not accept speculative abstractions which assert that motion does not exist. The entire issue of supernatural gods and supernatural realms is essentially on this same level - it is the assertion of the existence of profoundly important things that (if true) would lead to an entirely different set of ethics and moral values than is otherwise the case.

You could apply the same analysis to "mass-energy" or "matter-antimatter" or astrophysics or any other science. Epicurus was committed to living in the real world that we experience as human beings, and if a speculative theory led in his own time to a conclusion that contradicts human experience, as we experience it through our human faculties, then such theories are slated for rejection. That doesn't mean that we are ever wedded to the details of any one theory of physics, and in fact sometimes we have to "wait" in choosing between theories that seem consistent with the facts but for which we don't have enough facts to be sure which is correct.

This attitude showed Epicurus' commitment to using a reasonable approach to what we can be confident of and what we cannot, because Epicurus knew that if we don't consciously separate the things about which we are confident from those that we aren't then there is no essential difference between us and a fanatical religionist, because we would be accepting things on "Faith" rather than on rigorous commitment to following the evidence.

That's a start at the general answer but there's a lot more to say.

Post by “A_Gardner” of August 15, 2020 at 8:54 AM

I do have some thoughts on this Cassius , but before sharing, are we discussing modern science in general (including psychology) or is the focus on modern physics and what we currently understand (as it seems to be in your initial post)?

I ask because I believe that Epicurean teachings on physics are more reconcilable and face less challenges with the former, rather than the latter.

Post by “Cassius” of August 15, 2020 at 9:27 AM

A. Gardner I think in this thread it would be best to stick to physics, as we have a lot of people who are highly interested specifically in physics - as you will see from what is about to follow. Feel free to start a separate thread on psychology if you like!

Post by “Cassius” of August 15, 2020 at 9:27 AM

Here's the person who wrote the initial question, responding to my first answer (above)

Alan writing here:

Thanks for this treatment Cassius. I agree that it is useful for others to give the general context in which questions like these are asked. However, for me, I would say that I understand the Canon, have read Lucretius, and understand the nuance of the Epicurean conception of atoms. I also understand how he defends free-will against hard determinism by postulating the swerve, though I disagree. So to be clear and frank, the position which you stated is, although it may be a common one, is not mine and puts words in my mouth which I did not say. My position is that even if the conclusions of Epicurean physics are incorrect by modern standards, that in no way harms or reduces the impact of the ethics or epistemology (depending on how you interpret the latter). A modern Epicurean can still defend the metaphysical positions of naturalism/materialism and free-will even without the results of Epicurean physics, as those metaphysical positions can just as easily be arrived from the modern scientific view of physics.

That being said, when I said 'atoms' in my original question, I was specifically referring to the Epicurean conception of them. Therefore, when I ask if it is critical to hold to the idea that the

atoms are indestructible (or perhaps the better way is to say eternal) and immutable, I am asking that in the context of whatever we now understand to be the smallest particle of matter (quarks and leptons). From quantum chromodynamics, we know that these particles do frequently change properties, such as 'flavor', or are converted spontaneously into other particles, so it would be wrong to say that they are eternal and unchanging (unless you want to suggest that there is something even smaller than these?). Additionally, when a quark or lepton meets an anti-quark or an anti-lepton, they are spontaneously annihilated to produce photons of equivalent energy (photons have no mass, they are non-matter particles, so categorically, Epicurean physics should have an issue here). Additionally, in the modern understanding of physics, the electron is a point particular with infinitesimal physical extent, occupying an infinitely small point in space (the electron radius is a classical physics approximation that is useful pedagogically in certain contexts). This seems to go against the view of Epicurus that the atom would be finite in physical extent. However to go to an even deeper level, in quantum field theory the particles are actually treated more as aberrations or excitations of an underlying field. So it is likely that fields are more fundamental than particles.

Also, I noticed in your response that you did not seriously engage with the problem of the absence of the concept of energy in Epicurean physics, an arguably even more fundamental property of nature than matter. The Stoics had a notion of it, unfortunately however, (in my view) Stoic ethics is inhuman. Going back to the Epicureans, I think the easiest hypothesis is that they just didn't know about it, and that's OK, as it doesn't change the results of the ethics.

As a slight tangent, but which also might be relevant to this conversation, allow me to say that what I understand from Philodemus' inferential epistemology is that Epicureans can hold as equally true all satisfactory hypotheses that don't conflict with our observations of nature, until one or another of them do conflict with nature, at which point they can be discarded. (This approach is like an anti-Occam's razor, which says that among competing hypotheses, just take the one that makes the fewest assumptions). Rigorously employing this simultaneity of sound hypotheses would allow a modern Epicurean to both accept that the universe is finite and infinite, as both paradigms can be consistent with our scientific observations, and top cosmologists and theoretical physicists still have not concluded the issue.

Let me conclude by saying that from the position of modern empirical science, the reality of nature is under no obligation to comply with unsound deduction (as DeWitt would say Epicurus employed). Insisting on adhering to unsoundly deduced conclusions in Epicurean physics (e.g. swerve, infinity of universe, etc.) about reality (even if checked by our imperfect sensations) is deviating into the realm of the Platonic idealisms which you so vehemently detest.

Post by “Cassius” of August 15, 2020 at 9:28 AM

And my response to Alan:

Let me first respond to a couple of comments:

"*My position is that even if the conclusions of Epicurean physics are incorrect by modern standards, that in no way harms or reduces the impact of the ethics or epistemology (depending on how you interpret the latter).*" I disagree with this statement because it is overly broad, and ambiguous, unless you clarify WHICH conclusions of Epicurean physics we are discussing. The ultimate conclusion of Epicurean physics, as I think I stated, is that there is no supernatural control over the operation of nature. If in fact "modern standards" were to produce satisfactory proof that one or more supernatural gods had created the universe and were superintending it now, then **of course** the conclusions of Epicurean physics and the rest of the philosophy would be totally overturned.

"*From quantum chromodynamics, we know that these particles do frequently change properties, such as 'flavor', or are converted spontaneously into other particles, so it would be wrong to say that they are eternal and unchanging (unless you want to suggest that there is something even smaller than these?).*" That is EXACTLY what I think Epicurus would suggest, because he did not believe then, nor do I believe he would admit now, that "things that exist" (whatever you want to call them) are "infinitely" divisible. His logical position was that at some level there is a final substance that gives the universe continuity and regularity, and that final substance is not changeable at its own discretion, as that would imply something supernatural. Human experience to this point shows that we do not have the ability to keep drilling deeper, and based on that experience it is not ridiculous to say that we will *ever* be able to extend our reach to such a point. Given that circumstance we today certainly, and probably the rest of humanity as long as it exists, will always have unanswered questions about these things, so the issue comes down to how we live our lives given the existence of these unanswered questions. Carrying the discussion one level deeper, step by step as you are doing into ever-more-"cutting edge" words, cannot be expected to lead to an "ultimate" conclusion next year, next century, or ever. The analogy here would be that Epicurus would assert, I think, that just as astrophysicists are not going to find "out there in the stars" a realm of ideal forms, as Plato suggested, exploration at a microscopic level is not going to find a pseudo-mystical "essence" in a material thing as Aristotle suggested. Epicurus' scientific conclusion was that such things do not exist.

"*Let me conclude by saying that from the position of modern empirical science, the reality of nature is under no obligation to comply with unsound deduction (as DeWitt would say Epicurus employed). Insisting on adhering to unsoundly deduced conclusions in Epicurean physics (e.g. swerve, infinity of universe, etc.) about reality (even if checked by our imperfect sensations) is deviating into the realm of the Platonic idealisms which you so vehemently detest.*" My issue with this conclusion is the same as throughout the discussion so far - you are not specifying what conclusions you are referring to. No one here is suggesting that science stands still and that we aren't going to incorporate new knowledge as our information improves. That was the

entire point of my post. The issue we seem not to be joined on is the issue of what Epicurean philosophy is really all about. It is not at root a long list of specific scientific propositions that must always stand unaltered. It is rather a much higher-level outline of an approach to how to answer questions that appear to us to be unanswerable. It constitutes a framework for living as human beings to the best of our ability to understand our place in the universe and how that relates to the most important issues facing us, such as:

1 Is there a supernatural god?

2 Is there are realm of ideal forms / virtue to which we must conform?

3 Is there a "fate" which completely predetermines the course of our lives?

4 Is there a life after death in which we are punished or rewarded for our conduct?

- Given the answer to these questions being "no," then what in fact should we consider to be the guide of life? (feeling/pleasure-pain).

If a discovery in "science" were to invalidate one of the first four conclusions, which are ultimately based on Epicurean physics, then the entire philosophy would need to be discarded.

Unless you are reading the scientific literature differently than I am, there is no sound evidence whatsoever that any of the basic conclusions of Epicurean physics are incorrect. Surely it's great to use new words and new discoveries to explain how we reach the conclusions, but for probably 99% of humanity the issues of life come down to those conclusions, and what they and we need to always keep in mind is the big picture, without being worried that every improvement in microscopic technology is likely to cause any of these to need to be re-examined.

So ultimately I do not think we disagree, but I do think there are significant issues of presentation that are going to be very important for how these issues are discussed in audiences which are not tuned in to a highly technical conversation. There's certainly a place for those discussions, but context is always going to drive what is appropriate.

Post by “Cassius” of August 15, 2020 at 10:58 AM

A.Gardner I just saw the reason for your question - I will change the title of the thread to "Physics" rather than "Science"

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.

Post by "Cassius" of August 15, 2020 at 11:01 AM

To Alan:

You and I are certainly moving closer on some things but perhaps apart on others. First a couple of comments:

"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." <<< Well you're sure listing some big ones but at least we are being clear. 

"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." <<<< I think you are correct in large part as to Dewitt, but I think even DeWitt factored in he deduction based on what we observe about free will. I think you will be interested in an article some of us recently discussed by David Sedley (I will get the title and paste here) where Sedley contends that Epicurus came to the conclusion about the swerve from another direction primarily, rather than physics. Regardless of which approach is correct, it appears the swerve was a deduction and was apparently not considered to be a topic of prime importance by Epicurus.

"Lastly regarding the eternality and immutability of atoms, I am not sure if he deduced these or if he held those to be axiomatic." << I would project that this too was based on deductive logic, as DeWitt contends. Of course in the Epicurean scheme, deductive logic is tied as tightly as possible to observations, so they go hand in hand.

"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." <<< I think in response

to this Epicurus would say in part something like, "Ok Mr, Reyes, if you don't like mine, what is YOUR explanation for these physical phenomena?" And if you are able to give a coherent one which is understandable to ordinary people, without leaving them dazed in conclusion, then possibly you would be right when you say that 'we haven't lost any of the important Epicurean conclusions.' Otherwise you are making assertions on which there is no good reason to have confidence than if you asserted the opposite about your positions."

Because I think that Epicurus would also say, further, that in the absence of a coherent and understandable explanation of the universe which allows us to have confidence in our conclusions, then theories which end up saying simply "we don't know" about the important questions about our / humanity's place in the universe end up as a practical matter undermining our ability to live happily. There are a number of statements to that effect in Epicurus, one of which is in the letter to Menoeceus that it would be better to believe in a false religion than to believe that we where the slaves of hard determinism and thus had no power whatsoever to effect our future happiness.

As for me personally, I enjoy reading scientific material, and I welcome every bit of new evidence I can find. But I also conclude more strongly as I get older that it is rare for "science" to come at us totally without an "agenda" of the carrier, and in many if not most cases, there is an "agenda" behind what is presented so as to emphasize uncertainty and doubt while replacing it with attitudes of radical skepticism and other damaging viewpoints. There are exceptions to this, and I understand from my limited reading that Victor Stenger is one.

I should also say that I am cautious not to attempt to go toe to toe on the details of the latest research, but I do harbor the strong suspicion that the attitude of many theorists is flawed because they do not understand, or they reject, the ultimate philosophic approach that we are discussing. How many times do we see people talk about an "expanding universe" without making very clear that we are talking about "the universe we have observed so far?" When someone fails to acknowledge that limitation in their position I almost automatically disqualify their sweeping conclusions. Same with Lawrence Krauss and his "A Universe from Nothing" book titles which gloss over that his definition of "nothing" is not consistent with the literal philosophic definition of the word.

So in conclusion at this point I can fully agree with you that some particular scientific positions certainly need to be revised, but I also think Epicurus would say that tearing down our confidence in a natural understanding of our place in the universe, without replacing it with something more firm based on better science, is extremely dangerous, And the worst possible variation of that would be to contend that we should "have faith in science" which is really another bottom line of what I detect in the position of some advocates. There is ultimately no such thing as "science" - the valid part comes down to real people talking about their observations from experience. In the practical experience of most (if not all) humans, productive discussion of science requires a framework of thought that makes sense and is consistent with the information available to us through our senses.

If you rip away the framework that gives us confidence in our conclusions, you end up as doing nothing more than making assertions without any grounds for confidence in them, thereby undermining our confidence in living our own lives. In the words of book four of Lucretius, "And though reason is not able to assign a cause why an object that is really four-square when near, should appear round when seen at a distance; yet, if we cannot explain this difficulty, it is better to give any solution, even a false one, than to deliver up all Certainty out of our power, to break in upon our first principle of belief, and tear up all foundations upon which our life and security depend. For not only all reason must be overthrown, but life itself must be immediately extinguished, unless you give credit to your senses. These direct you to fly from a precipice and other evils of this sort which are to be avoided, and to pursue what tends to your security. All therefore is nothing more than an empty parade of words that can be offered against the certainty of sense." (Daniel Brown version)

Post by “Cassius” of August 15, 2020 at 11:56 AM

From Alan:

Cassius Okay, yes, we are getting closer to a mutual understanding. I understand the utility of retaining some position rather than nothing when it comes to dealing with the largest questions and not giving in to Pyrrhonism or ultimate skepticism. For this we can rigorously employ polyvalent logic/the simultaneity of sound hypotheses principle, and have a variety of explanations that are consistent with empirical experience (e.g., the universe is literally both infinite and finite, until one or the other is contradicted by the evidence, much like a quantum state can be a superposition of many until observed and the wave function is collapsed).

If Epicurus would ask me how would I defend our conclusions from a modern perspective, I would say the following:

Conclusion 1) There are no supernatural gods which intervene because if they exist it would fly in the face of everything we understand from modern physics about nature. If there are gods, they could be biologically immortal or even post-biological and so advanced and concerned with themselves to the point that they need not bother with us. They could even be aware of us but not interested in us, like an advanced Kardashev civilization in a Matrioshka brain.

Conclusion 2) There are no ideal forms because abstractions are not the things in themselves. Nowhere in nature will you find something supernatural. Just because we imagine it does not mean it is real.

Conclusion 3) There are no compulsory virtues. We evolved Darwinistically as social and communal beings, and it was conducive to our survival fitness to contribute to the group and be

altruistic. However, there is no mandate to be altruistic/virtuous, it is just a useful tool/accessory that helped us to survive (e.g. in Pleistocene Africa and during the Ice age, etc.)

Conclusion 4) There is no fatalism because we do have (at the very least the appearance of) agency. Even in a mostly causally deterministic universe, we have these minds that are simultaneously reductionist (traceable to electroneurochemical brain firings) and emergent (coming about as more than the sum than its parts), and it is also very clear to us that we have the appearance of free-will. An evolutionary argument could also be made that agency is necessary to facilitate interactions within the group (what Epicurus would call natural justice), because otherwise we could not give accountability or praise for actions. We do not need the swerve to defend free will.

Conclusion 5) There is no afterlife. We have to take this one on faith because if we are being truly honest, we don't know for sure whether there is one or not. The best we can say is that there has never been compelling evidence to believe that an afterlife exists, and it is not useful for this life to place our hopes in an afterlife (and by doing so may lead to many real repercussions in this life). To say that our consciousness goes on in any meaningful way in this naturalistic universe violates entropy and thermodynamics and cannot be. The only way for there to be an afterlife would be for it to be necessarily supernatural, in which case we would be wrong.

Post by "Cassius" of August 15, 2020 at 11:56 AM

Cassius Reply Back to Alan:

Other than Conclusion 5 we are very definitely closing the gap, and I bet we can close it on 5 too. I think Epicurus would say that there is never any logical reason to accept a contention without any evidence at all, and that there is absolutely no evidence of life after death, and much evidence to indicate that life is like everything else, and that all that comes together eventually dissolves back into the elements from which it came (plus many other arguments).

The issue here is that I think Epicurus was ultimately a philosopher and he was in fact fully engaging the other philosophers on their own territory -- logic -- as well as physics. I think he would say that the "true" rules of reason are such that accepting something as possible without any reliable evidence whatsoever would undermine the rules of reasoning which are necessary to live happily. (You would be right to think that I believe this applies to the physics arguments as well.)

Someone reading into this argument further would want to research Philodemus' "On Methods of Inference" and the commentary in the DeLacy translation of what remains of that work.

So maybe someone would want to argue that there IS some kind of evidence of life after death, and if so we could debate that. But in the end I think the direction Epicurus was going is that in order to live happily you have to adopt rules of what you are even going to consider as evidence, and at least for me I see your conclusion 5 too as one of those things which has to simply be ruled out of court for consideration based on the evidence we already have.

Post by “Cassius” of August 15, 2020 at 2:19 PM

Alan wrote:

Cassius Okay, very good. Let's hone in on Conclusion 5 then. Christopher Hitchens (who one self-described as an Epicurean) is known for having invented his own philosophical razor, which states that "any claim put forward without evidence can be dismissed without evidence." I think therefore (but not solely on those grounds but for many reasons) that the notion of the afterlife can be dismissed. Therefore, we ought to live our lives as if the afterlife does not exist, to try to make the most pleasant experience as possible for ourselves on Earth in our short time, and to follow Epicurus in the paraphrase: when we are gone, we are not here, and so death is nothing for us. To be clear, that is not to say that we are 100% confident that there is no afterlife.

Such a declaration could only be based on sound deduction, which I do no know that we have. What we can rely on is very strong induction, since no one has ever observed continuity of consciousness past the life-death boundary, etc. So effectively, I am satisfactorily confident (say 99.9+% if you want to be statistical) that an afterlife does not exist, but I retain a very small likelihood that, given extremely compelling evidence, I could be wrong.

Post by “Cassius” of August 15, 2020 at 2:20 PM

Cassius responded:

Alan I don't have too much trouble with that analysis, but I can imagine a strong possibility that Epicurus would go further than that. When you say " To be clear, that is not to say that we are 100% confident that there is no afterlife. Such a declaration could only be based on sound deduction, which I do no know that we have..." I think there are a couple of issues there. First is the issue of being "100% confident." What does that even mean (I ask rhetorically)? I think Epicurus might say that being "100% confident" might be a false standard, if what is implied here is some kind of god-link omniscient certainty which we would previously rule out as an

impossibility in an atomistic universe.

Also, I am not sure that Epicurus would admit that the no-afterlife conclusion could not be based on sound deduction. Is "being there" or "observing it with our own eyes" absolutely required for a deduction to be considered sound? Again I think the answer is "no," with the deduction being based on the conclusions that only the ultimate particles are eternal, and all else is subject to dissolution, which would again be a combination and interplay of observations about the scene and deductions about the unseen.

We are probably skirting the issue of "dogmatism" here and what Epicurus meant when he apparently wrote about how knowledge of certain things is possible, while also maintaining a practical view that some things of tremendous importance to us (life after death, perhaps life on other worlds) will never be open to our direct observation. Are we forever foreclosed from being confident about things that we cannot see? I think Epicurus would say that at least in some situations (life after death; existence of supernatural gods) we can in fact be confident. Now we individually may have a sliding scale of our own confidence in many of the other conclusions, but i personally have no problem accepting with confidence his arguments that there is essentially no "limit" to the size of the universe, and I am also confident that given an advanced enough spaceship to make the travel time manageable, we will to a certainty find life on other words. And following further what they apparently described as isonomia, that nature never makes only a single thing of a kind, and that there is a sort of distribution of things in the universe, I personally am also quite confident that we will find that there are living beings which are technologically further advanced than we are, and that it is also very likely that some of them have essentially perfected a means of sustaining themselves from death for a duration that may not have a future limit.

So those are examples where I personally find Epicurean philosophy compelling on many additional details. I don't have any intention of running a cult so I have no right or intention of stating where the line is between who is an Epicurean and who is not, but I do think the things we are discussing, and where we are already in large agreement, are near the core of what it ought to mean to consider oneself to be an Epicurean. And for me, these things go far beyond the more practical homespun advice on things like "natural and necessary" which are very useful, but not core philosophical ideas. (Of course that's another separate topic too, but the key point would be that in an atomistic universe no universal standard is possible and choices must be evaluated contextually, while the observation that "natural and necessary" is a helpful guideline is a secondary idea in that it is just a specific application of the key point to a particular context.)

Post by “Cassius” of August 15, 2020 at 9:28 PM

Alan wrote:

Cassius, We are mostly in agreement, though I am not sure if the Epicureans did explicitly formulate a deduction regarding the afterlife. If you can cite one or plausibly render such a syllogism, I would be willing to examine it.

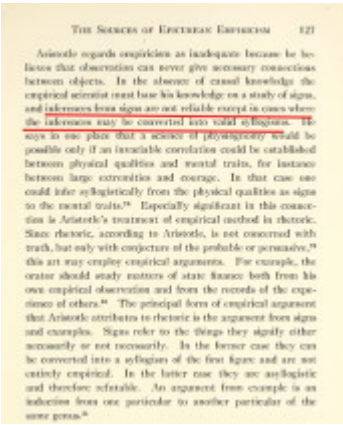
The only criteria for soundness in syllogistic logic is for the premises to be self-consistent and necessarily resulting in the conclusions (i.e., validity) and also being each individually attested to in truth, which grants soundness to the validity. My argument against the afterlife is admittedly inductive.

Post by “Cassius” of August 15, 2020 at 9:53 PM

Cassius:

Well first of all and most importantly, in asking for a syllogism and suggesting that only through syllogism is truth obtained, you are directly contravening a core Epicurean position in which Epicurus fought against Plato and Aristotle. This is explained at length in the Delacy commentary to Philodemus on methods of inference. I will come back here and add a page reference in just a moment. I am attaching a clip of a core part of the discussion where DeLacy is explaining aristotle's view - unfortunately it will be necessay to read this in some detail to see his explanation of how Epicurus rejected this. This can be found at the following link:

https://archive.org/stream/philode...ge/126/mode/2up



THE SOURCES OF EPICUREAN EMPIRICISM 121

Aristotle regards empiricism as inadequate because he believes that observation can never give necessary connections between objects. In the absence of causal knowledge the empirical scientist must base his knowledge on a study of signs, and inferences from signs are not reliable except in cases where the inferences may be converted into valid syllogisms. He says in one place that a science of physiognomy would be possible only if an invariable correlation could be established between physical qualities and mental traits, for instance between large extremities and courage. In that case one could infer syllogistically from the physical qualities as signs to the mental traits.[9] Especially significant in this connection is Aristotle's treatment of empirical method in rhetoric. Since rhetoric, according to Aristotle, is not concerned with truth, but only with conjecture of the probable or persuasive,[9] this art may employ empirical arguments. For example, the orator should study matters of state finance both from his own empirical observation and from the records of the experience of others.[9] The principal form of empirical argument that Aristotle attributes to rhetoric is the argument from signs and examples. Signs refer to the things they signify either necessarily or not necessarily. In the former case they can be converted into a syllogism of the first figure and are not entirely empirical. In the latter case they are asyllogistic and therefore refutable. An argument from example is an induction from one particular to another particular of the same genus.[9]

Post by “Cassius” of August 15, 2020 at 9:54 PM

Alan:

Cassius, Okay, I've done the reading. I think that Aristotle is wrong here. Empirical experience is a candidate for truth, which is attested in the sensations of the Canon. Not sure how the rest of what follows is relevant to our discussion.

Again we are not using the same terms for the same things. What I mean by a syllogism is the standard definition, here from Oxford as "an instance of a form of reasoning in which a conclusion is drawn (whether validly or not) from two given or assumed propositions (premises), each of which shares a term with the conclusion, and shares a common or middle term not present in the conclusion (e.g., all dogs are animals; all animals have four legs; therefore all dogs have four legs)."

If you say that Epicurus did not use a syllogism to prove the swerve than you are not accepting the standard definition of a syllogism. I explicitly laid out the premises and the conclusion in an earlier comment.

There is no truth content in the syllogism itself. The syllogism is just a relational structure. The deduction that arises from the syllogism only bears truth if and only if its premises are valid and also true, as attested to by other criteria, such as empirical experience.

Post by “Cassius” of August 15, 2020 at 9:54 PM

Cassius:

Alan as I interpret what DeLacy is conveying, you are correct when you say "If you say that Epicurus did not use a syllogism to prove the swerve than you are not accepting the standard definition of a syllogism." I interpret DeLacy to be saying that ultimately Plato and Aristotle were both rationalists who contended that truth comes essentially ONLY through reason, and that conclusions based fundamentally in sensory data can never be true unless they can be converted into syllogisms. This is a huge issue separate and apart from where we started today on physics, so we need to keep that in mind.

- Edit yes absolutely, the two pages at the link are near the beginning of the point, but this appendix article in full is an excellent summary of the epistemological revolution Epicurus was engaged in. I have not found a better summary of these issues than this article. It is unfortunately not something that is easily distilled into a couple of sentences.

Post by “Cassius” of August 15, 2020 at 9:55 PM

Cassius:

As Ilkka said upstream, the physics is based in large part on epistemology, and Epicurus' epistemology is a rejection of Platonic and Aristotelian rationalism, so we are now in a discussion of even greater significance than the astrophysics we were discussing earlier.

Post by “Cassius” of August 15, 2020 at 9:55 PM

Alan:

Cassius Hm, okay I agree with that. Epicurus absolutely did, at least according to DeWitt, use the structure of a syllogistic argument to prove the swerve.

As you say, what we are delving into now is a separate issue, but also important. I disagree with the rationalists and would affirm that certain truths can be ascertained from direct sensation, for example: I am now sitting in my chair at my desk and I feel the chair under me, therefore the chair exists. This is not a syllogism because there is only one premise.

So to expand my question from earlier, how would Epicurus have proved the nonexistence of the afterlife either by way of direct empirical experience or by using a syllogistic argument form as he did with the swerve and the infinity of the universe?

Post by “Cassius” of August 15, 2020 at 9:56 PM

Cassius:

Ok this tangent and your example of your feeling the chair means we are over a pretty big hump I think 

Now as to the existence of an afterlife, there are also going to be numerous places we have to check, and I am going to have to start by just listing a couple first. I think you are asking for more detail that just the statement that death is nothing to us because it means absence of

sensation, you are probably looking for the extended discussion of how spirit and atoms cannot form an eternal bond that continues after death disperses the atoms of the body.

I am tempted to suggest that we start a different thread since this is such an important and deep topic as well. Let's do that, and that will help us call in others for assistance and extend us over into tomorrow.

What Arguments Did Epicurus Use To Prove the Non-Existence of Life After Death?

Post by “Cassius” of August 15, 2020 at 9:56 PM

Ilkka:

I've never had any trouble integrating modern particle physics and Epicurean philosophy... But I'm not a physicist.

It's only an accident of history that we use "atom" in a different way than Epicurus did. It would have saved us a lot of confusion if we didn't. Modern meaning and the ancient one are two different things.

In the context of Epicurean philosophy we can say atom and be understood to mean "the smallest possible particle". In the context of modern physics that statement is false, because we know that there are smaller particles than those that physicists call atoms.

I think that we as modern Epicureans should -- in the interest of clarity -- use modern terms.

It seems to me that there is no difference in saying "atoms and void" or "mass-energy and space-time". These statements are synonymous.

We should also remember that while Epicurean ethics rest on the study of nature, both rest on epistemology. The physical theories must change with new knowledge, and so must the ethical theories.

But what has actually changed in practical, human terms?

If the elementary particles are quanta, for example, would pleasure cease being the foundation of human morality? I think not.

Similarly the fact that the universe is billions of years old is in practice an eternity. The numbers remain so staggeringly large as to be unfathomable. When we assign 14.3 as the age of the universe we're creating a mirage that we think we understand: we know that a mirage is a reflection... but what we see is an image hovering in the air.

If quantum theory is true, the particles are still moving randomly. Still swerving. As far as I the layman can make out...

As a final note I'd like to ask a question: What do you think Epicurus would do if he was presented with the evidence we have available to us?

I think he would rejoice... and update his physics.

Post by “Cassius” of August 15, 2020 at 9:57 PM

alan:

Ilkka - I agree with everything you said except for the "still swerving" statement, as specifically applied proactively in the context of modern physics. What you are suggesting is a basic redefinition of what we mean by the swerve, and I would also be for that. The swerve as first formulated by Epicurus (that is, the reason for why there are macroscopic objects and why we have free-will in an otherwise deterministic universe) is not attested to by modern physics. What you are now suggesting we understand the swerve to be is perhaps quantum indeterminacy, or perhaps Brownian motion, or perhaps Heisenberg uncertainty. This is all well and good, but it is not what Epicurus originally had in mind.

Post by “Cassius” of August 15, 2020 at 9:57 PM

Cassius: (to Alan)

"This is all well and good, but it is not what Epicurus originally had in mind." <<< Well, it's probable also that Epicurus had more than one thing in mind when he suggested the theory of the swerve. In apparently making no effort to explain the "mechanism" of the swerve, he was simply stating the effect rather than speculating as to a cause or even really a manner of operation. I am all for further exploration and discussion of possible mechanisms, as I am sure that Epicurus would be -- the point I keep emphasizing is that in engaging in speculation we should never lose site of the big philosophical picture, nor should we open the door in our own minds, or specially in the minds of those who are not trained in the speculative sciences, that we are suggesting that Jehovah or Allah are possible explanations.

I know that you personally are committed to not doing that, but there are many scientists (apparently) who are all too willing to make those connections, and we need to be careful in

consideration of our own peace of mind, plus (or more) that of others who are neither equipped nor disposed to deal with these issues. Standing in the theatre and yelling "the atoms are divisible and they are on fire and may explode at any second" would be improper from many perspectives. Of course YOU Alan are not doing that in any way shape or form, but the world got to the mess it is in today in large part because there are so many people who ARE willing to do that, and no debate ever takes place in a totally contextless vacuum.

Post by “Cassius” of August 15, 2020 at 9:58 PM

Ilkka to Alan:

Alan, the swerve is "random movement by a particle". Whatever consequences it has further down the line, it also has a physical definition. I'm sure that Epicurus didn't have any of those things you listed in mind when he formulated the swerve, but that doesn't change the fact that there is random movement. Several different kinds in fact, if I've understood it correctly.

Swerve was an attempt to ground the self evident facts, of compound objects and choice making, in the physical structure of the world. It was the best that could have been done at the time, and something we're still trying to figure out. Maybe we should cut the ancients some slack in matters not settled yet.

Post by “Cassius” of August 15, 2020 at 9:58 PM

Up the line in this thread I promised a cite to a David Sedley article with an interesting description of how Sedley thinks Epicurus came up with the swerve, more from a "Determinism" standpoint rather than simply due to physics theory. Your mileage may vary, but in my experience Sedley is one of the most perceptive commentators on Epicurus alive today. The article is "Epicurus' Refutation of Determinism" and can be found here:

File

Sedley: "Epicurus' Refutation of Determinism"

1983 Paper which is the one of the best treatments of Epicurus' view of the Free Will / Agency / Determinism issue available.

Cassius
June 3, 2020 at 8:40 AM

Post by “Cassius” of August 15, 2020 at 9:58 PM

Alan to Ilkka:

Ilkka I agree with all of that. I only disagree with those who vehemently say that we need the swerve to have agency or even that the swerve of Epicurean atoms really truly exists in the very precise context that Epicurus stipulated them to serve in. You're not saying that, so we don't have a disagreement. The swerve of Epicurean atoms is a very different thing than the random motion of particles in a gas or fluid or the superposition of quantum states or the fundamental inability to register both a particles position and momentum to arbitrary accuracy (all those things that I suggested above that could be considered a 'modern swerve').

Post by “Cassius” of August 15, 2020 at 9:59 PM

Cassius:

"If the elementary particles are quanta, for example, would pleasure cease being the foundation of human morality? I think not." That is a great example of an update in physics that does not change the conclusions an iota. On the other hand, if the elementary particles are found to be inscribed "**Best wishes**, Jehova" then that would be a scientific discovery that WOULD change the conclusions rather dramatically. As humans we will never see these elementary particles ourselves, so we need a framework for having confidence in our conclusions in the absence of seeing them with our own naked eyes. Are we to say to ourselves, "Yes it's POSSIBLE that they are so inscribed, because I haven't seen them"? I feel confident that even given our advances to date, Epicurus would still say "no." One might want to qualify that with "reasonably possible" or other hedge words, but at some point you're simply playing a word game rather than dealing in useful concepts, because once you truly believe that "anything is possible" then you're a long way toward totally losing touch with human reality.

Post by “Philos Armonikos” of August 16, 2020 at 3:41 AM

The title of this forum is so misleading and against the ethos of why I posed the questions in the first place. A more appropriate title would be "Is Epicurean Physics in Need of Revision?" or "Does Epicurean Philosophy Need the Old Physics?".

Post by “Cassius” of August 16, 2020 at 6:12 AM

Philos the reason for my turning this thread into a FAQ is that it is indeed frequently asked in varying forms and will best be found in the future by a title which describes the topic. Were the issue here solely your personal question it would not rise to the level of general interest, and were the issue personal to you and not in need of a FAQ I would not have been able to devote so much extended effort to discussing it with you as I have done. Thanks for posting your comment as that can serve as your caveat that the way the question is phrased was not your intent. That's why I explained in the opening post the nature of the topic I intended to address, on a broader level. I will add to the opening post a note with a link to your comment and I think I can modify it to help with your concern.

Post by “Philos Armonikos” of August 16, 2020 at 10:03 AM

Okay, I am satisfied with that. Thanks for appreciating my concern. I look at the effects of actions as well the intent of actions, and while your intent more or less seems honest to me, by using the original title you may have unknowingly had the effect of casting my responses in a bad light, at least from the perspective of new readers who were not familiar with my intended goals for this discussion.

Post by “Don” of August 16, 2020 at 10:19 AM

I have found this thread fascinating and greatly appreciate those who have participated. It has been enlightening and intellectually stimulating.

But...

1) Epicurus and the ancient Epicureans cannot be held to a modern standard of scientific accuracy and detail. They had no instruments, no experimentation (other than the most rudimentary processes). They didn't have the benefit of centuries of hypotheses and theories. They had no Newton, Einstein, Hawking, et al. Those scientists stood on the shoulders of the giants before them. The ancient philosophers were basically building the scaffold for the later giants to stand on, then the scaffold got wrecked by Christians and barbarians and had to be repaired before science could even become a thing.

2) The fact that Epicurus and his predecessors used the word ἄτομος atomos "un-cuttable" is, in some ways, unfortunate. The fact that the ancient term was repurposed by John Dalton in 1805 entices us to place all our modern interpretations and discoveries backwards onto the ancient Greeks. "We use the same word, we must mean the same thing." While there are similarities between the modern "atom" and the ancient ἄτομος, they are not the same and we cannot impose a modern interpretation on the ancient term.

The same can be said about φύσις *physis* and Physics, the modern sense being applied in 1715. Again, the similarities are there but only in the basic outlines. The ancients were attempting to explain "natural things." Modern physics has narrowed its focus and has had access to increasingly more sophisticated processes and equipment.

3) If we want to call ourselves Epicureans, we can't lose the vision of the forest for the trees. My perspective is that we have to focus on Epicurus's intent: The Universe is material. There are no supernatural causes. This, in turn, means there is no existence after death. I fully realize that's overly simplified, but I think we hold Epicurus to an unrealistic standard if we insist on fitting an Epicurean φύσις peg into a quantum physics hole. We can muse over the similarities and be impressed with what Epicurus had glimpses of from his observations and reasonings. But I think we have to, as Illka mentioned above, cut the ancients some slack.

Post by “Philos Armonikos” of August 16, 2020 at 10:46 AM

Hi Don. Thanks for your reply. You are undeniably correct in your appraisal. I agree completely that we must cut the ancients some slack and realize when we have transcended beyond the domain of knowledge which they would have had access to (i.e. modern quantum physics, etc.)

The only point that I feel the need to emphasize is that there are indeed some people who even now insist on clinging to the results of the ancient atomist hypothesis (infinite universe, the swerve, immutability and indestructibility of atoms, etc.) on faulty deductive grounds (in like manner to Plato's idealisms which are not in contact with reality), which I have been arguing all along that we need to re-evaluate. The Epicurean physics needs to have a modern adjustment, while at the same time not losing any of the most important consequences for the ethics.

Post by “Don” of August 16, 2020 at 11:20 AM

Thanks and agreed.

Just as we shouldn't hold Epicurus to our modern understanding, we shouldn't hold ourselves to maintaining ancient ideas that have been better explained by modern science. If we don't, we fall into the trap of textual fundamentalism and requiring *belief* in things like the idea that the universe is 6,000 years old like some *other* fundamentalists believe. Again, forest not trees.

From my perspective, those three that you mention (infinite universe, the swerve, immutability and indestructibility of atoms, etc.) should not be impediments to acceptance of Epicurean philosophy. We had a thread elsewhere on the forum on infinite vs innumerable. Ultimately, it doesn't matter to me whether the universe is infinite *in fact*. From my puny human perspective, it is, for all intents and purposes, infinite. On the swerve, there is minimal surviving textual evidence or information on this topic from Epicurus and the early Epicureans. Personally, I don't think we should get hung up on it. On the "immutability and indestructibility of atoms", whether we *interpret* this to mean the fields of quantum physics or something else, this points to Epicurus's concept that things just don't change willy-nilly. There is *something* "natural" that holds up or undergirds our - and the universe's - physical existence. It does a gross disservice to Epicurus to say, "He said atoms are indestructible. What a dummy! We are so much smarter than him!" We need to ask what was he getting at with *his* interpretation of existence. Why was that *idea* important to him?

If we take that tack, I think we can have an interesting conversation on the similarities between Ancient "Physics" (quotes used deliberately) and modern Physics; but we should neither denigrate the ancients for their understanding nor require ourselves to maintain outdated scientific ideas.

Post by “Cassius” of August 16, 2020 at 11:23 AM

We will address some of these issues in the podcast that was recorded today in a way that most should find satisfactory.

To the extent that "some" in Philos' comment refers to **me**, the point I am making is that physics does not exist alone in its own world. Epicurus confronted in his day, and we confront today, arguments that are based on "words" - "logic" - and that those arguments are of concern to many people. We are always going to be faced with questions that are essentially "You don't know because you haven't personally been there / done that / seen that / etc." It is important to understand how we respond to those questions, what is involved in "waiting," what kind of standards of "certainty" we should expect to hold ourselves to, and what is an appropriate level of skepticism to hold toward various things.

Those who are primarily immersed in scientific pursuits are not generally going to be as concerned with those contentions as those who are not. However in Epicurus' day it was considered a serious philosophic argument to contend that it was impossible to walk across a room, and even today there are all sorts of logical and ontological arguments for the existence of god and similar questions waiting to trap the unwary.

Not everyone needs help in those areas, but there are a lot of people who get concerned with arguments like those who need help in responding. For them, no amount of "physics" is going to be enough.

So when Philos says:

> Quote
>
> The Epicurean physics needs to have a modern adjustment, while at the same time not losing any of the most important consequences for the ethics.

I would say that Epicurean philosophy is ultimately not about any particular and precise physics position (and in that I think we are agreed). The issue is more that Epicurean physics were derived using a particular approach to knowledge (the canonical faculties vs "rationalism") and if we don't learn the details of that method then we'll never understand the appropriate consequences for the ethics.

It is very important to observe the resistance that Epicurus displayed toward accepting contentions based on mathematics, geometry, or other aspects of logical modeling. Such conclusions can actually or apparently contradict what we observe through the senses, and that is why we are talking about these issues and need to continue to do so.

Studying the reasoning behind "the swerve," for example, will always be more useful for understanding Epicurus' thought process than it will ever be for explaining the movement of

atoms.

The same goes for the infinite universe, life on other words, immutability, indivisibility, and the rest. That is why these issues cannot be dropped as if they were unimportant to talk about.

I'll close this comment by observing that in my ten years of internet involvement in Epicurus, I do see this as a recurring issue. People who approach Epicurus purely from the scientific perspective don't tend to appreciate the "logical" issues. People who approach Epicurus from a "history of philosophy" perspective or an "ethics" perspective don't tend to appreciate the physics of Epicurus and Lucretius, and they hardly spend any time at all on the letters to Herodotus or Pythocles, or on Lucretius' poem.

Both perspectives are important to understanding Epicurus, and we should not let the varying perspectives become at war with one another.

Post by “Cassius” of August 16, 2020 at 11:38 AM

Here is one example that I see of the kind of attitude that is appropriate for an Epicurean to take even when we don't have the amount of evidence we would like to have, as illustrated by what Lucian thought was the proper Epicurean attitude toward a religious imposter, from "Aristotle the Oracle Monger"

And at this point, my dear Celsus, we may, if we will be candid, make some allowance for these Paphlagonians and Pontics; the poor uneducated ‘fat-heads’ might well be taken in when they handled the serpent—a privilege conceded to all who choose—and saw in that dim light its head with the mouth that opened and shut. **It was an occasion for a Democritus, nay, for an Epicurus or a Metrodorus, perhaps, a man whose intelligence was steeled against such assaults by skepticism and insight, one who, if he could not detect the precise imposture, would at any rate have been perfectly certain that, though this escaped him, the whole thing was a lie and an impossibility.**

Post by “Don” of August 16, 2020 at 1:05 PM

> Quote from Cassius

> I would say that Epicurean philosophy is ultimately not about any particular and precise physics position (and in that I think we are agreed). The issue is more that Epicurean physics were derived using a particular approach to knowledge (the canonical faculties vs "rationalism") and if we don't learn the details of that method then we'll never understand the appropriate consequences for the ethics.

Agreed. I think this reinforces what I was saying: forest not trees. It's more important to understand *how* and *why* Epicurus arrived at his conclusions than the "scientific" proposals themselves that can be refuted by modern science... with the understanding that modern science hasn't answered all the outstanding questions.

> Quote from Cassius
>
> It is very important to observe the resistance that Epicurus displayed toward accepting contentions based on mathematics, geometry, or other aspects of logical modeling. Such conclusions can actually or apparently contradict what we observe through the senses, and that is why we are talking about these issues and need to continue to do so.

That being said, our understanding of mathematics has progressed well beyond what was available to the Ancient Greeks. I'm not sure if the Greeks even accepted the idea of zero (and I'm not trying to be hyperbolic here).

> Quote from Cassius
>
> **Studying the reasoning behind "the swerve,"** for example, will always be more useful for understanding Epicurus' thought process than it will ever be for explaining the movement of atoms.

Yes, agreed, and ultimately more satisfying. This process is less shoe-horning Epicurus's ideas into an anachronistic, modern context (and vice versa) and more understanding Epicurus's thought process so we can apply *that* to our modern lives.

Post by “Cassius” of August 16, 2020 at 5:06 PM

At this point we are branching off in this discussion to a different aspect of this topic: How Supporters of Epicurean Philosophy Should Approach The Effect of Modern Scientific Discoveries

That thread is going to be primarily devoted to "organizational" aspects of how Epicureans should relate to each other and/or incorporate new scientific discoveries in their organized activities.

This thread should continue on the original topic, primarily addressed to individuals in their own studies and thoughts:

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