What Would Epicurus Think of the Big Bang?

Post by “Cyrano” of January 13, 2024 at 6:19 PM

Only in the title of this thread is Epicurus mentioned, not at all in my article. I wrote this article many years ago, long before I met you great Epicureans. But I think you will nevertheless **feel** his presence sufficiently that this article will be welcomed.

Post by “Cassius” of January 13, 2024 at 7:41 PM

I suspect that some will have hesitation, but before anyone else responds I want to be on the record.....

I one hundred percent agree with your reasoning, and all the Lawrence Krauss's in the world and his cohorts will never convince me otherwise!

This is not a matter of philosophy vs science, it's a matter of philosophy informing a debate in which scientists of good faith are on both sides of the argument, and the resolution of such issues being ultimately a matter of philosophy.

I doubt there would ever come a time when I would consider the position you take in this article to be a "requirement" here at the forum, but as someone recently said in another context about the issue of Epicurean theology, it's a shame that this position doesn't always get the respect it deserves within Epicurean circles! It is certainly the position that Epicurus himself took.

Thank you for posting this. It would be relatively easy for me or one of us to take he PDF and reduce it to plain text, but I would appreciate it if you would post it into a post rather than just the PDF. I would like to take this and add it into our "articles" section as a featured article. No doubt over time there will be good-faith dissenters, but I think this is the position that Epicurus would take even today, and this needs to be on any site devoted to Epicurean philosophy.

Post by “Cyrano” of January 13, 2024 at 9:59 PM

Wow, Cassius, what a beautiful response to my article!

Regarding Lawrence Krauss: while many speak of him as the second coming of Charles Darwin (Richard Dawkins) - and many others laud him to high heaven - I take particular note of the David Albert review in the ***New York Times*** and many other good critiques as well.

I have my article only in PDF. I do not know how (and do not have the program) to convert PDF to plain text. If you wish to do so, please do.

But though feel inadequate in that, I am left glowing in your closing remark: "I think this is the position that Epicurus would take even today, and this needs to be on any site devoted to Epicurean philosophy."

Thank you very much.

Post by “Bryan” of January 13, 2024 at 11:04 PM

Thank you, Cyrano. I truly think this is a work of brilliance and courage. I fully agree with you. Bravo!

We must reject the absurdities of matter coming in and out of existence, an origin of the universe, or any influence on empty space.

Post by “Cyrano” of January 13, 2024 at 11:33 PM

Thanks a million, Bryan! I've been a member here for only eleven days, but man do I feel I joined the right group.

Post by “Novem” of January 14, 2024 at 4:15 AM

What a coincidence, I was also lately wondering about the Big Bang Theory and Epicurean cosmology, which puts forth a steady-state universe.

I did find this article, which covers Epicurean atomism and the Big Bang ("CAN ATOMS MAKE YOU HAPPY?"**)**: https://classicsvic.files.wordpress.com/2014/01/penwillvol22.pdf

Reading about other steady-state models online, and quasi-steady-state models, had matter being created and destroyed, which makes sense for QSS models because they incorporate "mini-bangs" within the greater universe. And then we have eternal closed universes. I'm not a physicist so I am not able to comment, but I can say that theoretical physics is very hard to understand, and very theoretical indeed.

Post by “Cassius” of January 14, 2024 at 6:21 AM

> Quote from Novem
>
> I'm not a physicist so I am not able to comment, but I can say that theoretical physics is very hard to understand, and very theoretical indeed.

Yes, very true, and we need people who really want to dig into these issues to help discuss them intelligently and persuasively.

But in the meantime, I am not going to let the Lawrence Krausses of the world bother me by injecting doubt as to the existence of a possible supernatural factor into my day to day life.

Am I supposed to believe that just maybe some miracle happened with no explanation at all, and that I need to rely on some quantum physicist about whom I know nothing personally and whose good faith and integrity I have no way to judge (and considerable reason to doubt) to tell me how to think about the ultimate issues of nature? I think not.

Post by “Cassius” of January 14, 2024 at 6:23 AM

Here is an imperfect transcription of the article by Cyrano. If possible, Cyrano, can you give us more about the background of when you wrote this, etc?

BIG BANG OR BIG FARCE?

After all the blather about Big Bang, Big Bang, a burning question still consumes me: can it really have happened that way? Did the entire vast universe of pulsars and quasars, of neutron stars and supernova, of galaxies – billions and billions of galaxies each with billions and billions of stars – did all this originate from a single explosion the size of a pinpoint? No, not even a pinpoint! Not a point or a thing at all but “a tiny bubble of spacetime a billion- trillion-trillionth

of a centimeter across."

And this infinitesimal bubble "popped spontaneously into existence out of a pure vacuum as the result of a random quantum fluctuation." That is to say our vast and immeasurable universe came from NOTHING! Well, I myself am nothing - nothing that is, in the way of a physicist, astronomer or cosmologist. But I am intensely interested in this question as a lover of truth – as a philosopher. For that is what the word philosophy means: 'love of wisdom.'

And as such I echo Sir Arthur Eddington who said "Philosophically the notion of a beginning of the present order is repugnant to me. I simply do not believe the present order of things started off with a bang. The expanding Universe is preposterous."

Let us make no mistake about what the big bangers are saying. Astrophysicists Fang Li Zhi and Li Shu Xian, in an article entitled "Creation of the Universe" (World Scientific, 1989) certainly make it absolutely clear: "The Time and space, they tell us, did not exist before the big bang. The universe emerged out of a "singularity" they say, a situation in which the laws of physics as we know them do not apply. None of the laws of science pertain. No, not the most fundamental law of science, the conservation of matter, the law which states that matter cannot be created nor destroyed but simply changes form incessantly. No, not even relativity is relevant, and it is relativity theory after all that big bangers employ for their mystifying hypothesis.

evolution of the universe from nothing is described by the big bang theory."

What can this mean? The laws of science fail at the big bang and it is not possible to know what happened - or if anything at all happened - before it. Think of it: We must accept an absolute limit on our knowledge, on our understanding of how the world works. We must not question: time began with the big bang and all questions about time before the big bang - before there was time! - are pointless. We may not speak of a cause of the Big Bang – it is impossible, impermissible.

Where have we heard this before? Have not we heard theologians claim that God created the universe, and when we ask them who created God, they arrogantly answer that such questions are beyond mortal minds?

In 1981 at a cosmology conference organized in the Vatican scientists were told that it was permissible to scrutinize the progression of the universe after the big bang, but they should not look into the big bang itself because that was the instant of Creation and hence the act of God.

Yes, the Catholic Church gets a big kick out of the big bang. As far back as 1951 Pope Pius XII declared that the Big Bang confirms the doctrine of creation ex nihilo, the dogma that the universe was created out of nothing.

We rightly deplore attempts of religionists to warp the great channel of evolution into the dead end of 'intelligent design'. And yet the big bang is just such a perverting project.

The big bang is the big daddy of intelligent design: it is creationism pure and simple. A universe created in an instant is the work of a creator. The big bang is just old religious creationism all dressed up in sophisticated scientific gear.

“What is the ultimate solution to the origin of the Universe? The answers provided by the astronomers are disconcerting and remarkable. Most remarkable of all is the fact that in science, as in the Bible, the world begins with an act of creation” - this from astronomer Robert Jastrow in Until the Sun Dies, 1977.

Cosmology today is all enmeshed with religion. Theologians, physicists, novelists, all tell us that big bang theory bears witness to a Christian creator. In the New York Times Book Review (February 1989), we are informed in a front-page article that because of the big bang scientists and novelists are reverting to God.

Does big bang creation differ from biblical creation? No, only in the number of years! The Bible claims that creation took place about 4000 years BC, and the big bang asserts that creation occurred about 15 billion years ago. The whole thing reeks of religion! They say the big bang left a background radiation. I say their Big Bang left a Big Stink: God FARTED and that was the Big Bang.

And so philosophically the big bang is not acceptable. But it is also unacceptable scientifically. It actually spells the death of science. Science is nothing unless it discovers the causes of empirical events. To nothing less than the ultimate repudiation of causality is where the big bang takes us.

The big bang is not a theory for atheists but for theists. A knowledgeable atheist is a scientific materialist: matter and energy exist forever and ever with no beginning and no end, constantly changing, moving, evolving... Why cannot the material universe exist from all eternity? Why not indeed! Because it is heresy to believe so, Augustine warned us two thousand ago. Infinity, he argued, belongs only to the deity; it is forbidden to the material universe. To say that the material universe is unlimited is to mistake the essential distinction between nature and God. It eliminates the need for God. Yes, Augustine sure knew whereof he spoke!

It would be amusing were it not so tragic that so many people have a problem with an infinite material universe but have no difficulty at all in accepting a god existing in eternity. Isn’t the one as easy to imagine as the other? No, in fact the material universe is far easier to come to terms with than futile attempts to grasp a ghost.

The philosophical objections to the big bang are colossal, but let us turn to strictly scientific objections. “The big bang today relies on a growing number of hypothetical entities, things that we have never observed - inflation, dark matter and dark energy are the most prominent examples.” So states an “Open Letter to the Scientific Community” (signed by over 300 scientists and others) and published in New Scientist, May 22, 2004.

“The successes claimed by the theory’s supporters,” it continues, “consist of its ability to retrospectively fit observations with a steadily increasing array of adjustable parameters, just as the old Earth-centered cosmology of Ptolemy needed layer upon layer of epicycles.”

“In cosmology today doubt and dissent are not tolerated, and young scientists learn to remain silent if they have something negative to say about the standard big bang model. Those who doubt the big bang fear that saying so will cost them their funding.” The entire statement can be read at cosmologystatement.org

So vehement is opposition to anyone who criticizes the big bang that a madman reviewing Eric Lerner’s book, The Big Bang Never Happened: A Startling Refutation of the Dominant Theory of the Origin of the Universe, wrote that his work “deserves to be burned.”
For my part I will burn at the stake like Bruno but I will uphold as he did the concept of an infinite material universe. I will reverse Pascal’s Wager: I’ll bet my life on materialism. I will shout with Shakespeare in the thunderous tones of King Lear “Nothing will come of nothing!”

Something always comes from something. Where did the superclusters of galaxies come from? The moon orbits the earth, the earth orbits the sun, the sun travels around the Milky Way galaxy. Our galaxy circles around in a neighborhood of galaxies called a cluster, and a bunch of clusters rotate as a unit in a supercluster. A number of superclusters form a unit which in turn moves around its hub and this apparently goes on forever. In any case, supercluster complexes have been observed - huge sheets of galaxies called ‘great walls’ stretching over a billion light-years of space. They take hundreds of billions of years to form. But the pathetic big bang is only 15 billion years old. There is more in heaven and earth, dear big banger, than is dreamt of in your philosophy!

Yes, new objects are discovered constantly, larger and larger and further away, with absolutely no end in sight. Yet man, unable (or unwilling!) to comprehend a never-ending material universe will not take 'infinite' for an answer but must impose his ‘final limit’ on everything.

It is utter gibberish to chatter about the “creation of matter” – nonsense to talk about the “beginning of time.” Matter can neither be created nor destroyed and it exists through and only through time, space, and motion. The universe exists through all eternity, forever changing, moving, evolving... Matter and energy, energy and matter forever! A ‘beginning’ or an ‘end’ to the material universe? Every effort to find one will foolishly fail. And the big bang theory will fall before our earth makes ten more trips around the sun.

Post by “thatchickinpa” of January 14, 2024 at 11:10 AM

Are there references to substantiate the claimed facts in this essay? For example:

> Quote
>
> In any case, supercluster complexes have been observed - huge sheets of galaxies called ‘great walls’ stretching over a billion light-years of space. They take hundreds of billions of years to form. But the pathetic big bang is only 15 billion years old.

The largest known structure in the observable universe is the Hercules-Corona Borealis Great Wall. It is about 10 billion light years in length. I can find no reference to it - or any other structure in the universe - taking "hundreds of billions of years to form".

The age of the observable universe is approximately 13.8 billion years and is approximately 93 billion light years across (and expanding). There are explanations - supported by the math - as to why a simple speed of light and time calculation for distances does not work for determining its size (or distances).

Frequently Asked Questions in Cosmology

The *observable* universe means something different than "the universe", and the former is usually what is meant when people talk about it. Is it the former that is referred to in this essay?

The universe is potentially infinite - meaning that the size of the universe is currently unknown - and that link discusses it. The way I think of it is if I go outside in the dark with a candle, I only see as far as the light reaches. But there is more beyond it that I cannot see and is therefore unknown to me. As far as I know, there is only one constraint put on its age - it is at least 13.8 billion years old. It could possibly be infinite.

> Quote
>
> But in the meantime, I am not going to let the Lawrence Krausses of the world bother me by injecting doubt as to the existence of a possible supernatural factor into my day to day life.

I have his book, *A Universe from Nothing*, on my bookshelf, but I haven't read it yet (so many books, so little time) so I can't really comment on his theories. Has Krauss claimed / implied a supernatural force was responsible or is this being inferred? From his talks with Dawkins (that I've seen), he rails pretty hard against such things.

As a disclaimer, I am not a cosmologist and don't pretend to know the field well. With my rudimentary understanding I don't see how believing the theory of the Big Bang is inconsistent with Epicureanism or suggests a supernatural force.

Post by “Cassius” of January 14, 2024 at 11:14 AM

These are great questions and no I did not mean to imply that Krauss himself suggested a supernatural explanation, so I do need to clarify that. I read his book and watched his debate with Richard Dawkins on youtube so that's why his name is prominent in my mind.

Post by “Don” of January 14, 2024 at 11:39 AM

For reference, here's a thread from 2020 where we were discussing this topic:

Thread
Infinity and the Expanding Universe

Recently there was some discussion of the expanding universe, heat death, the infinite (in time and space) universe and the ramifications of these ideas. I just came across an image from 1750 of the universe comprised of infinite galaxies, which made me think that it might be useful to start a thread on the topic. Just in case anybody would like their mind blown!

epicureanfriends.com/wcf/attachment/1240/

Here's the article that the image came from:

...

Godfrey
July 23, 2020 at 4:50 PM

It includes a link to the Dawkins/Krauss video.

PS. I feel the need to emphasize that the Epicueans clearly conveyed that "nothing comes from nothing." But the texts may use that shorthand but elsewhere clarify that theymean "nothing comes from that which did not previously exist." Basically, everything gets recycled into something else in the infinite expanse of the universe - not just our little cosmos here but what Epicurus and others called The All in the texts, To Pan ΤΟ ΠΑΝ... Latin uses universus (From ūnus (“one”) + versus (“turned”), hence literally "turned into one") with the same meaning.

In modern physics, they're not saying "nothing comes from nothing" either. Their confusing shorthand provocative layman's "nothing" is just the quantum fields permeating all of space.

The idea of the cosmos - our observable universe - coming out of a quantum fluctuation... similar to what some cosmologists posit is the ultimate fate of our cosmos (NOT the universe remember) an unimaginable number of billions and trillions of years in the future - strikes me as elegant. The new cosmos and our current one doesn't/ didn't come from nothing. It was birthed from the very existing underlying structure of the infinite universe.

Post by “Don” of January 14, 2024 at 12:05 PM

btw, thatchickinpa ... I revised my post above with a lengthy PS after you 👍'd it. If you want to take that 👍 back, I won't be hurt 😄.

Post by “Don” of January 14, 2024 at 1:20 PM

For y'all's consideration (I have not watched the entire hour, but it's geared toward a lay audience)

https://youtu.be/zNVQfWC_evg?feature=shared

Post by “Cassius” of January 14, 2024 at 5:04 PM

I am watching Don's quantum fields video and I am reminded almost immediately that:

1 - Theoretical physicists tend toward the long-winded, no matter how excitedly they talk.

2 - The allusions to all the many experts who came before him in the same room and in front of the same table is a stark reminder that all of them "proved" to be "wrong" in the eyes of him in the early 2000's. Would a layperson be wrong in concluding that this presentation proves that it is impossible to be "right" in physics? And if it is impossible to have confidence in any conclusion in physics, what does that say about confident in anything else? This is not a difficult point to see, so what is the answer that this and similar speakers expect to be understood by their listeners?

3 - Does not that every-changing series of positions on physics amount to a practical philosphical position that it is impossible to be right?

4 - Putting aside the conclusions that I presume he will eventually reach, what does that mean for the many generations of people who lived and died before him? Were the benighted and lost in ignorance and suffer wasted lives because they did not have the opportunity to hear his presentation at Cambridge?

5 - Why do I keep thinking about the movie "Agora" and the Pythagoreans plotting the movements of the stars and planets just before the religious mobs broke in to destroy the science/library buildings and kill Hypatia herself? Would Epicurus, had he lived long enough, cited Agora as an example of how it is not important that we know "everything" but rather enough to be sure that there are rational non-supernatural explanations of things that allow us to live happily? Is it not all too possible that the disconnect between theory and practicality is a continuing problem, and that the halls of Cambridge will one day suffer the same fate as the library at Alexandria?

6 - Doesn't this also ring of the story of Polyaenus, who saw Epicurus' point and turned at least a part of his attention to the important of living happily, rather than making the study of geometry (or math, or whatever it was) an end in itself?

7 - Surely as his excited voice shows, there is a lot of pleasure in studying theoretical physics, and I presume all of us here share that to at least some degree. It would be pretty weird of an internet-based forum not to appreciate science, and I think we have a healthy respect for it. But is the dogged pursuit of ever-smaller particles while leaving unexamined the impact that has on society (at the very least, ourselves and our friends) pretty much the equivalent of "sex, drugs, and rock-n-roll" in regard to its ultimate impact on our "health" if we pursue it without regard to wider issues?

8 - Can it really be true that someone like this speaker can divorce his scientific theories from the impact that they have on himself and his friends? Does get around to addressing that by the end of the presentation?

These are things that occur to me in the intervals of constant interruptions that have prevented me from finishing yet! 

Post by “kochiekoch” of January 14, 2024 at 6:13 PM

Hi Cyrano and all! 

The Big Bang doesn't necessarily have to be the beginning of things. There is a theory, called "Conformal Cyclical Cosmology", promoted by Nobel Prize Winner Roger Penrose, which seems to fit the facts. The theory postulates a universe infinite in time, with no beginning, which expands forever.

I always wondered, when thinking about the Big Bang, what happens when the universe in the far future reaches maximum entropy? BANG? 

https://www.youtube.com/watch?v=JeahffPMR5c

Post by “Cassius” of January 14, 2024 at 6:22 PM

> Quote from thatchickinpa
>
> The observable universe means something different than "the universe", and the former is usually what is meant when people talk about it. Is it the former that is referred to in this essay?

To me *that's* the key to almost all the issues in these debates. The chasm seems to be that for most of 2000 years when people talked in educated circles about "universe" they meant "Everything" and not "what we can observe."

In this presentation around the 45 minute mark that's where this really pops up. He starts talking about "universe" and seems to be referring to "observable universe" though the terminology to a layman is still as it was 2000 years ago - universe means everything.

I don't mean to sound like Cicero criticizing Epicurus, because it's perfectly acceptable to re-define your terms if you are going to be clear about it.

But for example in Don's video, it appears to me that he's talking to an audience of educated laymen. Educated laymen don't need to be misled by suggesting to them that "everything" is 13.8 billion years old.

It seems to me that the decision to talk in one of these terms or the other is itself a huge philosophical issue and needs to be answered philosophically if you're going to be clear and dedicated to the "truth," rather than simply being caught up in the excitement of your own pleasurable exploration of the latest theories.

Post by “Cassius” of January 14, 2024 at 6:38 PM

> Quote from Don
>
> In modern physics, they're not saying "nothing comes from nothing" either. Their confusing shorthand provocative layman's "nothing" is just the quantum fields permeating all of space. The idea of the cosmos - our observable universe - coming out of a quantum fluctuation... similar to what some cosmologists posit is the ultimate fate of our cosmos (NOT the universe remember) an unimaginable number of billions and trillions of years in the future - strikes me as elegant. The new cosmos and our current one doesn't/ didn't come from nothing. It was birthed from the very existing underlying structure of the infinite universe.

Just watched it and Don's summary is good. Bottom line of his talk is that the latest theories don't talk in terms of "particles" anymore but rather "fields" - though as the lecturer demonstrates, it's easy to fall back into using the word particle because of the way fields tend to clump together. But in the end whether particle or field, most fair-minded people I think would consider a field to be "something," and thus as Don says the cosmos doesn't come from nothing, but from the underlying structure of the infinite universe.

All of which leaves the biggest questions that Epicurus wanted to address, such as whether there is something outside of "this observable universe" that these physicists are talking about (something which implicitly might be "god") totally unanswered. That larger question is at least as important to our daily lives as it is to get a better understanding of fields.

To be clear again I really enjoy watching presentations like this given by people who are obviously enthusiastic about them. But there's a line between this and philosophy that makes the latter a better contender for "Queen of the Sciences."

It seems to me that Epicurus had a great respect for "science" in the way that this lecturer is pursuing it, but he also kept it in perspective as not sufficient for determining how to live one's life. That seems to me to be the right balance.

Post by “Don” of January 14, 2024 at 10:51 PM

> Quote from Cassius
>
> All of which leaves the biggest questions that Epicurus wanted to address, such as whether there is something outside of "this observable universe" that these physicists are talking about (something which implicitly might be "god") totally unanswered. That

> larger question is at least as important to our daily lives as it is to get a better understanding of fields.

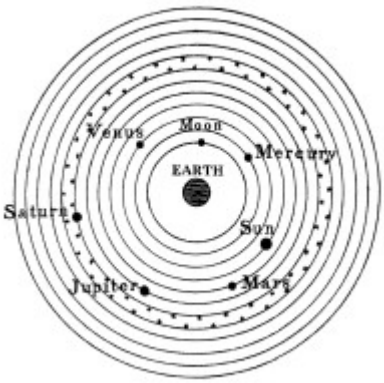
From my perspective, Epicurus answered the question of "is something outside of 'this observable universe'" explicitly. The answer was yes. The cosmos (kosmos ΚΟΣΜΟΣ), from everything I have read, is akin to our idea of an "observable universe." I'm going to use K kosmos instead of C cosmos because we tend to define cosmos as the "universe" colloquially, but I want to get across the idea of the ancient kosmos. The kosmos is the world-system in which we live. The Library of Congress has a wonderful article on ancient Greek cosmology:

https://www.loc.gov/collections/finding-our-place-in-the-cosmos-with-carl-sagan/articles-and-essays/modeling-the-cosmos/ancient-greek-astronomy-and-cosmology/

Important points:

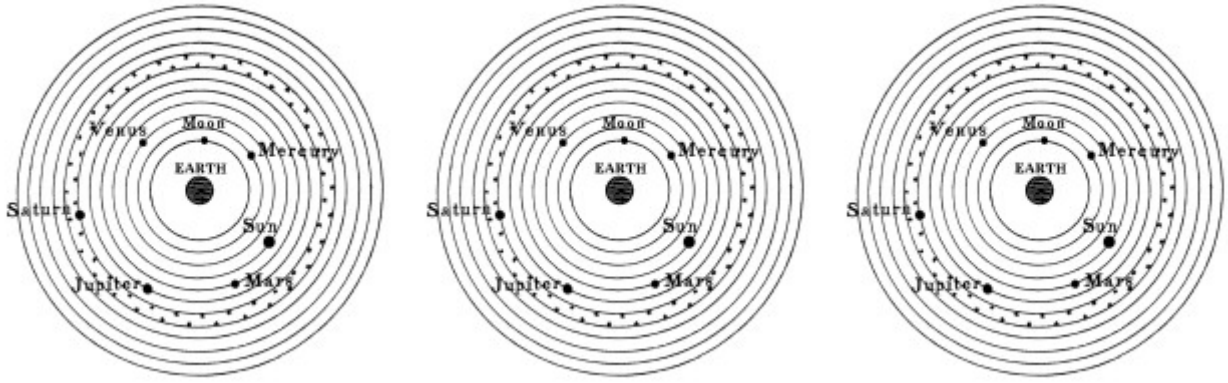
- From the 5th c BCE, it was known we live on a sphere.
- "In this system the entire universe was part of a great sphere. This sphere was split into two sections, an outer celestial realm and an inner terrestrial one. The dividing line between the two was the orbit of the moon."

The other stars and planets were thought of as spheres, too, since even Epicurus wrote against people thinking the stars and wandering stars were gods because they were perfect spheres. So, it would have been theoretically possible to travel to other "worlds" - other spheres - without leaving our kosmos. See the diagram below...



So, that's OUR kosmos.

Epicurus also posited other kosmoi - other world-systems - that would be other kosmoi somewhere else in The All, the universe. Such as..



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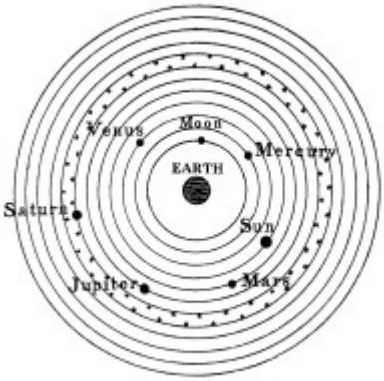


with, supposedly the gods residing in the metakosmos/intermundia/"the space between world-systems."

That's my perspective on how Epicurus envisioned The Universe. There is plenty of space "outside our observable universe." It's just filled with other kosmoi with their own worlds, animals, humans, and even philosophers.

Post by “Cyrano” of January 15, 2024 at 12:42 AM

Well, folks, I’m overwhelmed. I’ve been a member of this group only twelve days. In that short time I posted three items here. But I don’t know if I have much more to say.

My first post was the Cyrano de Bergerac presentation which was very well received; it created a bit off a stir here. My second post, about King Lear, was no less successful.

But now with this third, (the Big Bang), I’m afraid my mind is blown. Your responses are so many, so comprehensive and exhaustive, that - I’m sorry - but I doubt I can reply to all.

I am struck by the comments of thatchickinpa regarding the **Hercules-Corona Borealis Great Wall.** It drove me to a little bit of research.

“The Hercules–Corona Borealis Great Wall is the largest known superstructure in the universe. The structure contradicts theories about the evolution of the universe. The structure is 10 billion light-years away, which means that we see the structure 10 billion years ago, when the universe is only 13.8 billion years old, and its light was just approaching us. The 3.8 billion year span of time is too short for a giant structure 10 billion light-years long to form. Even Istvan Horvath, the discoverer of the structure, says he has no idea how the structure has formed in that amount of time. For now, the existence of the structure is still a mystery for cosmologists.”

"The Hercules–Corona Borealis Great Wall is larger than the theoretical upper limit on how big universal structures can be," Dr. Jon Hakkila, an astrophysics professor at the College of Charleston in South Carolina and one of the astronomers who discovered the structure stated. "Thus, it is a conundrum: it shouldn't exist but apparently does."

“The idea of the Big Bang might be proven false as a result of this incredible cosmic structure.”

I’ll try to keep up with you guys but you are way ahead of me. I’m glad, however, that my post has engendered so much and so great a discussion.

Post by “Bryan” of January 15, 2024 at 1:27 AM

(Regarding post #13)

In minute 15 he says that the field operates while being "*never touched*" and "*without ever touching,*" and says "*the field is real... you can affect things far away using the field without ever touching it.*"

How can something be affected without contact?

In minute 20 "*There are no particles in the world, the basic fundamental building blocks of our universe are these fluid-like substances that we call fields*"

What is a "substance that is not made of any particles"?

In minute 22 he tells us to imagine a total empty space, and then shows us an animation of all the "fields" that operate within a total empty space, "*even when the particles are taken out, the*

field still exists"

How can total empty space fluctuate? What is moving?

The presenter says (agreeing with Empedocles and the Talmud) that the world is made of 4 elements and in locations where he cannot find any of these four elements (but nevertheless finds movement), he accepts the conclusion that the void itself can move and be affected! We are thus presented with the idea of immaterial force fields! With the smoke of obfuscation provided by equations which he says *“parts of which no one on the planet understands,”* his magic show turns into a comedy act!

I appreciate his honest comments regarding the LHC’s failures to lend much support for the standard model *“all of these fantastic, beautiful ideas that we’ve had, none of them are showing up at all... my impression is that most of my community is a little bit shell-shocked by by what happened, there is certainly no consensus in the community to move forward.”* (minute 55)

He may have meant to say “there is no consensus in the community [where] to move forward” but what he did say was closer to the truth. They will keep asserting their beliefs and will keep looking for any evidence that could possibly be interpreted to confirm them.

True atoms are smaller than our machines have been able to see or measure, we can only detect their effects -- this does not mean there is nothing there! Empty space does not move and can not be affected in any way.

Post by “Don” of January 15, 2024 at 7:33 AM

> Quote from Bryan
>
> In minute 15 he says that the field operates while being "never touched" and "without ever touching," and says "the field is real... you can affect things far away using the field without ever touching it."
>
> How can something be affected without contact?

That was a physical demonstration by Farday and a demonstrable effect of the electromagnetic field. He may have stated it in an unfortunate layperson, non scientific way, but the effect is

real. The electromagnetic field is "invisible" to our naked unaided eyes, but using the right equipment, you can see it, detect it, use it. It's not supernatural or eerie or anything like that. He's just using "touching" in a colloquial, touch it with your finger sense. If real. It what makes what we're doing online possible as well.

15:28 touched the needle. It was amazing. You could make something move without ever going near it,

15:34 without ever touching it. We're kind of jaded these days. You can do the same experiment. You can pick up your cell phone. You can press a few buttons.

15:40 You can call somebody on the other end of the earth within seconds. But it's the same principle.

15:45 But this was the first time it was demonstrated that the field is real. You can communicate using the field.

15:51 You can affect things

Post by “Don” of January 15, 2024 at 7:57 AM

> Quote from Bryan
>
> In minute 20 "There are no particles in the world, the basic fundamental building blocks of our universe are these fluid-like substances that we call fields"
>
> What is a "substance that is not made of any particles"?

There are "particles" just not as we have become accustomed to think of them. The metaphor he uses of waves on the ocean seems appropriate as long as it's not taken literally.

This whole presentation gets at the discussions we've all had on the forum in the past about different levels of perspectives and reality at different levels of perception. “By convention sweet and by convention bitter, by convention hot, by convention cold, by convention color; but in reality atoms and void.” from Democritus. This presentation could be summed up “By convention atoms and void; but in reality waves and fields.”

We don't exist at the level of waves and fields, we live our lives in the macroscopic world. But we make use of the knowledge gained by quantum field theory every day in our electronic devices. But pleasure and pain don't need to be understood at the subatomic level to guide our lives. We're flesh and blood and bone and brain interacting with other physical, emotional creatures trying to get through the day.

For me, the idea that the particles that make me are ripples on a cosmic ocean, connecting me to every other thing in the universe, is awe-inspiring in the best way. No gods necessary. Just the infinite structure of an infinite universe bubbling up here and there.

Post by “Cassius” of January 15, 2024 at 8:54 AM

> Quote from Don
>
> For me, the idea that the particles that make me are ripples on a cosmic ocean, connecting me to every other thing in the universe, is awe-inspiring in the best way.

I'm not disagreeing at all, just this thought occurs to me --- does an analogy of ripples on an ocean have any different emotional impact or philosophical implication than the particles in space analogy?

What about the entire structure of the use of "atoms" as the basis for regularity in the processes of nature. We've been talking about the field theory in terms of nothing from nothing, but is it any more difficult to also construct from the field theory the basis for the regularity at which we see the world proceed without the direction of any gods?

I suspect there's no real difference, but worth a thought probably.

Post by “Don” of January 15, 2024 at 9:54 AM

> Quote from Cassius
>
> does an analogy of ripples on an ocean have any different emotional impact or philosophical implication than the particles in space analogy?

For me, no difference.

I get the same sense of awe when thinking that the iron in my blood was forged in the heart of long dead stars, the oxygen I breathe is from the respiration of plants, the light that enters my eyes from Orion's Belt has been traveling for unimaginably long times before I sense it. It's only a matter of different levels of thinking about my connection to other people, other life forms, and the vast universe itself.

PS. And I need to add that that connection isn't metaphorical or mystical or supernatural, it's literal. I am literally connected to everything else in a physical, tangible, material way. From the atoms that make me up coming from dead stars, to the air I breathe coming from plants, the acquintances and friends and relatives and acestors I have that come from all over the world, I am a result of all those connections rippling and bubbling and waving through the cosmos and out into the infinite All.

Post by “Bryan” of January 15, 2024 at 10:50 AM

When he shows the equation that “explains everything” yet nevertheless states that there are “parts of which no one on the planet understands,” I think he is playing the game Diogenes of Oinoanda mentions below:

“[Others do not] explicitly [stigmatize] natural science [as unnecessary], being ashamed to acknowledge [this], but use another means of discarding it. For, when they assert that things are inapprehensible, what else are they saying than that there is no need for us to pursue natural science? After all, who will choose to seek what he can never find? Now Aristotle and those who hold the same Peripatetic views as Aristotle say that nothing is scientifically knowable, because things are continually in flux and, on account of the rapidity of the flux, evade our apprehension. We on the other hand acknowledge their flux, but not its being so rapid that the nature of each thing is at no time apprehensible by sense-perception.” (Diogenes of Oinoanda, Fr. 5, trans. Smith)

“…if [the Stoics] call [thoughts] empty on the ground that, while they have a corporeal nature, it is exceedingly subtle and does not impinge on the senses, they have expressed themselves wrongly, [since it was necessary to call] them corporeal, despite their subtlety. If on the other hand they call them empty on the ground that they have no corporeal nature at all – and it is in fact this rather than the former which they mean – how can the empty be represented? What then are they?... for films which are so subtle and lack the depth of a solid constitution cannot possibly possess these faculties.” (Fr. 10)

I feel that the explanation the presenter repeats -- basically the endorsed explanation since the world wars -- simply takes pre-suppositions from other schools, which are contrary to our school, and then labors to argue that recent experiments and technological advances prove their pre-suppositions correct.

Post by “thatchickinpa” of January 15, 2024 at 12:05 PM

> Quote
>
> I am struck by the comments of thatchickinpa regarding the **Hercules-Corona Borealis Great Wall.** It drove me to a little bit of research.

It is an interesting structure, and I find it fascinating. But as you probably saw, there is doubt whether it even exists. More studies are needed using the THESEUS satellite which won't be put into orbit for at least another decade.

I am curious why you chose the quotes you did. Do you feel that they support your point?

If so, I will ask the same thing as before - how are these sourced? When I plug them into google, the first and third are referenced in two websites - one I've never heard of, the other simple wikipedia - neither which are sourced themselves. The second looks like it is from HuffPo where the scientist is just basically saying "I don't know how it came into existence" which is quite common in most scientific fields for new discoveries. More data is needed.

And the blurbs themselves aren't claiming or denying anything about the structure itself & the Big Bang, and therefore have no evidence attached to them.

My point is not to convince you or anyone else to accept the Big Bang as true. It is for those stumbling onto this thread who may not be sure to always question the facts presented, their sources, whether the points presented are cherrypicked, etc. While not believing the Big Bang happened probably won't hurt anyone, there are other cases of other science denial that could cause a lot of pain.

> Quote
>
> In this presentation around the 45 minute mark that's where this really pops up. He starts talking about "universe" and seems to be referring to "observable universe" though the terminology to a layman is still as it was 2000 years ago - universe means everything.
>
> I don't mean to sound like Cicero criticizing Epicurus, because it's perfectly acceptable to re-define your terms if you are going to be clear about it.

I haven't viewed it yet, but most physicists use "universe" as a shorthand for "observable universe". I think its because not much is really known about the universe outside of what can be observed, so it can be safely assumed. It is confusing for those outside the field though. IMO most technical experts are generally poor at communicating their findings outside of their fields.

Post by “Cassius” of January 15, 2024 at 12:32 PM

> Quote from thatchickinpa
>
> My point is not to convince you or anyone else to accept the Big Bang as true.

This might be understood in what you are saying, but I would say that I wouldn't entertain any doubt that our "corner of the universe" came to be as a result of an explosion from a central

location. To the extent that is what big bang implies, I would be fine with it as I would not challenge the idea that the data shows everything in our observation expanding. (I am not aware of anyone challenging that part.)

The points in dispute would be whether what exploded came from nothing, and whether the universe as a whole is indeed unbounded, such that these big bangs are infinite in number and going on eternally, expanding and then collapsing without end.

Post by “Cassius” of January 15, 2024 at 1:12 PM

> Quote from Bryan
>
> yet nevertheless states that there are “parts of which no one on the planet understands,”

Giving Tong (the presenter) the benefit of the doubt (that the person who suggested that part of the equation understood what he was suggesting) to me this emphasizes how necessary it is to understand the limits of the equation rather than oversell it. In the end, can you take that overall equation and actually do anything with it other than perhaps predict the output of some experiment that you've developed in parallel with the equation? It's not like being able to conceptually state the equation is equivalent to an incantation that can bring something into being from nothing. In the end you are always working from what was there already to change it, not bringing something into being from nothing.

> Quote from Bryan
>
> After all, who will choose to seek what he can never find?

This is a line that strikes me as super-important every time I read that. I remember years ago in a Facebook discussion someone made the comment "But yeah, people do that all the time," and he was probably right that they do, at least in a way. But in most cases sane people don't keep searching for things that they know they can never find, and that's where the philosophical point comes in that you have to have an opinion about whether something really exists or not before you decide to invest your life into looking for it. And it seems to me pretty important to start off at the very beginning of this discussion finding some common ground and being clear about the playing field. People like Tong and those who are persuaded by Epicurus are confident that natural answers exist which could answer the questions if we had further details, and so we go on pursuing those details. But that presumption that there is a natural answer is a big one, and can't be left to implication.

> Quote from Bryan
>
> how can the empty be represented? What then are they?... for films which are so subtle and lack the depth of a solid constitution cannot possibly possess these faculties.”

Yep. That's a visual description of the disconnect. No way that they video of the globs moving around is what most people would understand by the term "empty."

> Quote from Bryan
>
> I feel that the explanation the presenter repeats -- basically the endorsed explanation since the world wars -- simply takes pre-suppositions from other schools, which are contrary to our school, and then labors to argue that recent experiments and technological advances prove their pre-suppositions correct.

Yep. I don't see a reason why most of what is being said could not be stated in traditional "universe means everything" and "nothing means nothing" terms. It's as if somewhere along the line someone decided to intentionally shift the traditional meanings of the words explicitly to undercut the Epicurean interpretation of an eternal and infinite universe. In fact the more I think about it, what possible "good" reason was there to shift the meaning of "universe" and "nothing" *other than* to distance themselves from the ultimate conclusions?

Post by “Cassius” of January 15, 2024 at 1:17 PM

Aside: I find this subject fascinating, but sometimes I too wonder if we are chasing rabbits down holes where we have no business going.

But then I look back at Epicurus saying explicitly in the letter to Pythocles that these exact subjects should be included in basic studies so as to escape from superstition, so I think we're doing the right thing.

[116] ... All these things, Pythocles, you must bear in mind; for thus you will escape in most things from superstition and will be enabled to understand what is akin to them. And most of all give yourself up to the study of the beginnings and of infinity and of the things akin to them, and also of the criteria of truth and of the feelings, and of the purpose for which we reason out these things. For these points when they are thoroughly studied will most easily enable you to

understand the causes of the details. But those who have not thoroughly taken these things to heart could not rightly study them in themselves, nor have they made their own the reason for observing them.

Post by “Martin” of January 16, 2024 at 8:50 AM

> Quote
>
> ... the LHC’s failures to lend much support for the standard model ...

in comment #20 is wrong. Everything the LHC has found so far confirms the standard model. So far, the LHC has failed to find new physics beyond the standard model, and calling that "failure" is odd.

Calling fields "fluids", "fluid-like substances" or just "substances" appears to be misleading. Other than that, David Tong's presentation is well done.

Post by “Cyrano” of January 16, 2024 at 11:30 PM

Cassius asks me to relate the circumstances around my *Big Bang* paper. I wrote it 15 years ago as a member of the Rossmoor Atheist/Agnostic Group in the senior community in which I live. It was my purpose to champion materialism, the philosophy I have maintained for 60 years.

That stalwart devotion explains why I am so delighted to find your website. For you folks champion **Epicurus,** foremost of all the great Greek materialists.

Oh, there are other websites that host philosophical discussions: *PhilPeople, Reddit >> AskPhilosophy, I Love Philosophy Forum, The Philosophy Discussion Forum,* and more... I have not even begun to explore them, so happy am I here.

I have a few other papers I would like to share with you all, but I hesitate for fear they may not be appropriate. For example, I would like to post something on Democritus, a paper even more zealous in defense of materialism - more than the de Bergerac, the King Lear, and the Big Bang.

But it mentions Epicurus only in passing. Shall I clear it first? With you, Cassius?

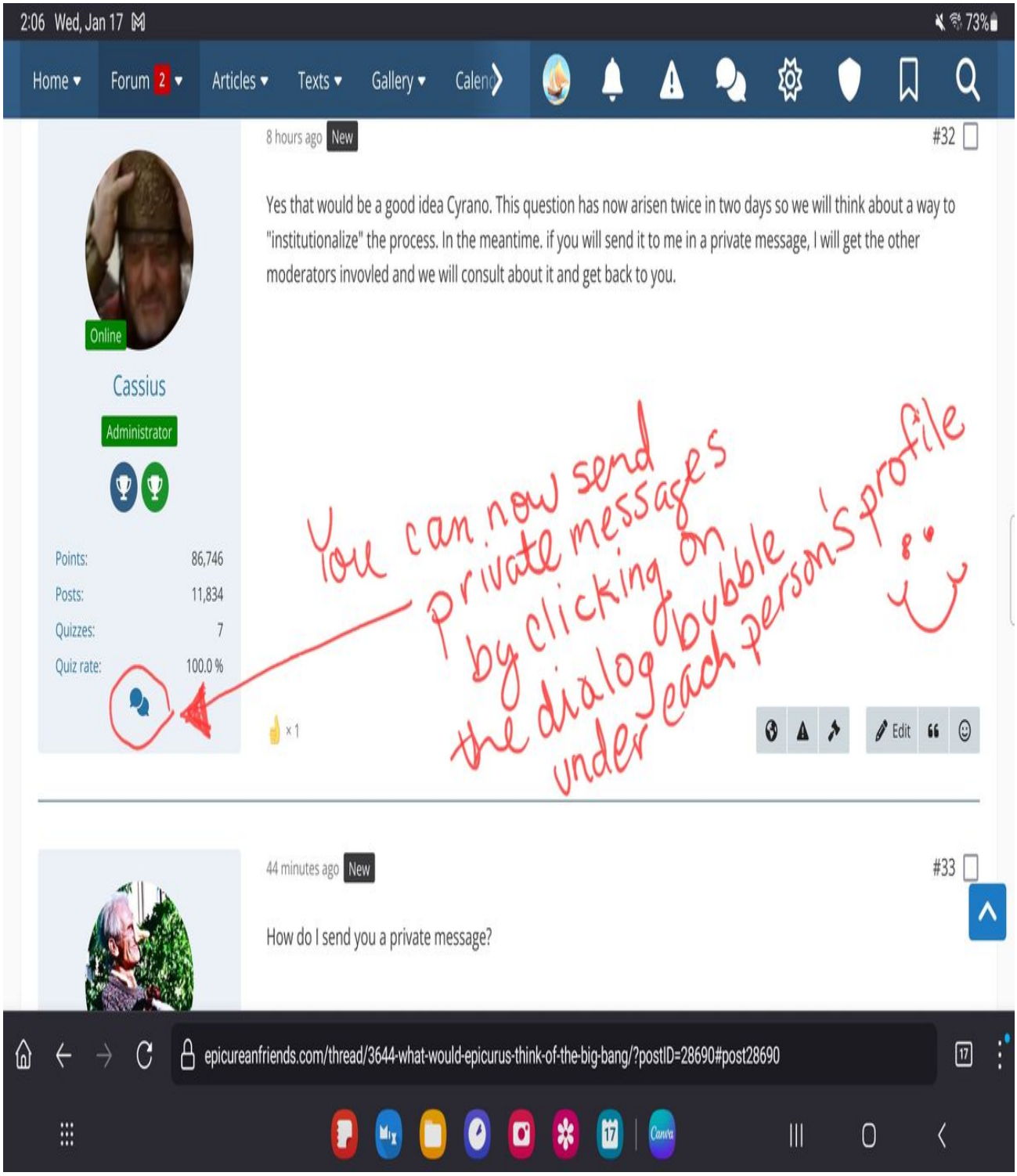
Post by “Cassius” of January 17, 2024 at 6:05 AM

Yes that would be a good idea Cyrano. This question has now arisen twice in two days so we will think about a way to "institutionalize" the process. In the meantime. if you will send it to me in a private message, I will get the other moderators invovled and we will consult about it and get back to you.

Post by “Cyrano” of January 17, 2024 at 1:21 PM

How do I send you a private message?

Post by “Kalosyni” of January 17, 2024 at 2:11 PM



Kalsoyni here, answering on behalf of Cassius.

Cyrano, This new feature was just added, so you can just click on the dialog bubble under each person's profile on the left hand side of any post.

Post by “Cyrano” of January 17, 2024 at 6:21 PM

Thanks a lot, Kalsoyni.

Post by “Cyrano” of January 17, 2024 at 6:50 PM

I'm sorry, Cassius. I stupidly sent the message to you two or three times, because I could not find it under the 'Recent Activity' of my page. Then I realized it would not be there because I am sending a private message to you, not a post for the entire gang to read. I'm still learning my way around this very complex website. Sorry...