

Can the Universe Come from Nothing?

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Abstract

Once scientists have come to the conclusion that space-time is not fundamental but emergent, now many things will change in physics and cosmology. One such change is that cosmologists can no longer hold that the universe has originated from nothing.

Keywords: Universe, nothing, space-time, emergent, God, cosmology.

Once scientists have come to the conclusion that space-time is not fundamental but emergent, now many things will change in physics and cosmology. One such change is that cosmologists can no longer hold that the universe has originated from nothing.

This is because an entity that is emergent cannot emerge from just anything or nothing; it can emerge from some particular entity or entities only. Those scientists who are saying that the universe can and will create itself from nothing because there is a force such as gravity, are also saying along with it that space-time can also originate from nothing. So, here they are claiming that at the beginning of the universe space-time was fundamental because it had come straight from nothing, thus not requiring the prior presence of any particular entity/entities from which only it could emerge in case it was emergent.

But whatever knowledge scientists have acquired about the external world is from the present universe only. From the present universe, scientists have acquired the knowledge about space-time that it is not fundamental. So, if they now claim that at the beginning of the universe space-time was fundamental, then our question to them will be: From where have they acquired the knowledge that space-time was fundamental at the beginning of the universe? Is it from the present universe? Or, is it from some supernatural source? Or, is it their intuition?

Have they themselves observed the universe directly coming from nothing? So, what is their source of knowledge that space-time was fundamental at the beginning?

Once I have argued with an atheist that God is spaceless and timeless and he has countered that existence is a function of time and space. If at no place and no time does 'god' exist, then 'he' does not exist. If I disagree, then I should present evidence for God.

In reply, I have written that whatever exists within the universe exists within the space and time of the universe. But within which space and time does the universe as a whole exist?

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We know the universe is expanding. But when it is asked within which it is expanding, the reply we usually get from the cosmologists is that it is not expanding into anything, which means the universe as a whole is not embedded within any higher space and time. So the universe as a whole is not within any space and time. For that reason we do not say that the universe does not exist.

If the universe can exist not being within any space and time, then God can also exist not being within any space and time. So he cannot dismiss God solely on this reason. He will have to provide some other better reason.

But my reply does not convince him at all. He comments that I am unable to understand cosmology. Again he repeats the same argument that existence is a function of time and space, etc. He also writes that I have yet to demonstrate that anything can exist outside space and time.

So again I have replied to him that from his last two comments it appears that he knows nothing about the new development in modern physics. That is why he does not know that all his concepts and thoughts about space and time have become obsolete and back-dated.

Scientists working with the quantum theory of gravity are now saying that space and time are not fundamental and that they have emerged from some non-spatiotemporal entity. Not only they, but string theorists, causal set theorists as well as scientists working with loop quantum gravity are also saying the same thing that space and time are not fundamental.

Non-spatiotemporal is a new scientific term for the old term spaceless and timeless. Instead of saying spaceless and timeless these scientists are now saying non-spatiotemporal. But the meaning remains the same; there is something non-spatiotemporal/spaceless and timeless in nature from which space and time have emerged.

Yes, it is true that they have not yet acknowledged that this non-spatiotemporal entity (NSE) is a conscious entity, yet it is also true that they have ultimately acknowledged that there is something non-spatiotemporal/spaceless and timeless in nature. Thus all his objections about anything spaceless and timeless become null and void.

It is not the job of the scientists to manufacture truth, but to discover it. So, if there is a spaceless and timeless being, then scientists will also discover it one day. Up till now they have discovered that there is one spaceless and timeless entity in nature.

This time he poses these questions to me:

- 1: Who said it's an entity?
- 2: Where is this timeless and spaceless being? I should show evidence for it.

He also states that I should provide some evidence for my claims.

So I again write to him that if he is fully convinced that he is in possession of truth, then he should be bold and courageous enough to face all those scientists who are now saying that space

and time are not fundamental. So instead of posing these questions to me, he should directly pose them to those scientists. And he should also try to convince those errant scientists that they are all talking nonsense.

But he disagrees and says that he is just waiting for me to back my claims.

This time I reply to him that maybe he is lacking courage and conviction enough to directly confront those scientists, but that does not mean that his cowardice will be the determining factor as to why I will have to endorse his viewpoint here rather than that of the scientists.

I also inform him that whatever may be the circumstances, I will always prefer to go with the scientists and not with an ordinary atheist like him. And I will try to understand why they are saying such things now:

1) ...[T]he idea that the universe and its material content might not, at bottom, be `in' space and time, that these seemingly fundamental ingredients are just appearances of something more fundamental, would, if borne out, shatter our conception of the universe as profoundly as any scientific revolution before.

- The emergence of spacetime in quantum theories of gravity by Nick Huggett and Christian Wuthric

2) Nathan Seiberg of the Institute for Advanced Study at Princeton said, "I am almost certain that space and time are illusions. These are primitive notions that will be replaced by something more sophisticated."

- Donald D. Hoffman in *The Abdication Of Space-Time* (Edge.org)

3) Many physicists, such as Stephen Hawking of the University of Cambridge, think that relativity theory must give way to a deeper theory in which space and time do not exist. Classical spacetime emerges out of quantum entanglements through the process of decoherence.
- Vlatko Vedral, *Living in a quantum world*, Scientific American, June 2011

4) Space (or spacetime) does not exist fundamentally: it emerges somehow from a more fundamental non-spatio-temporal structure. This intriguing claim appears in various approaches to quantum mechanics and quantum gravity.

- *Composing the World Out of Nowhere*

He replies that none of the above points to 'god.' Nor does it support my claims. Nor have I demonstrated that a 'god' could live there. Let alone does.

What follows is my final reply to him:

I thought that I would not make any further comment here, but his last comment compels me to change my decision.

I do not know whether he has heard the name of Richard Carrier. He is an atheist. He has written somewhere that from logical point of view there is no reason as to why someone or something cannot move with a speed greater than that of light, but it is physically impossible.

What does it mean? It means that by logic alone we cannot decide what is physically possible or not. For doing that we need experiment and observation.

Similarly we can say by logic alone we cannot decide what is physically real or not. Here also we need experiment and observation. Let me give one example:

‘Classical human reason, defined in terms of common sense notions following from our own myopic experience of reality is not sufficient to discern the workings of the Universe. If time begins at the big bang, then we will have to re-explore what we mean by causality, just as the fact that electrons can be in two places at the same time doing two different things at the same time as long as we are not measuring them is completely nonsensical, but true, and has required rethinking what we mean by particles.’(This is from an article by scientist Lawrence Krauss that he wrote after a debate between him and William Lane Craig and posted by P.Z.Myers in his Freethoughtblogs Pharyngula, dated April 5, 2011.)

He is saying existence is a function of space and time. So, as per him for something to exist it must be within some space and time. But if he sticks to this principle up to the end, then he will find that he has been ultimately driven to an infinite regress.

Let us start from the earth.

Earth exists within the solar system.

The solar system exists within the Milky Way galaxy.

The Milky Way galaxy exists within the local cluster of galaxies.

This cluster again exists within some super-cluster of galaxies.

This super-cluster of galaxies exists within the universe.

The universe exists within the multiverse.

The multiverse exists within some super-multiverse.

The super-multiverse exists within some super-duper multiverse.

The super-duper multiverse exists within some supra-multiverse.

The supra-multiverse exists within some supra-dupra multiverse.

In this way we will have to go on up to infinity, because we cannot stop anywhere.

Here everything will be within some space and time, but for that he will have to pay a heavy price; there will be an infinite regress.

If he wants to stop this infinite regress, then he will have to stop somewhere in the middle. Let us say we stop at level X; this X might be the universe, or the multiverse, or the super-multiverse, or the super-duper multiverse, or any assembly beyond or higher than the last one. Whatever might be this X, it will not be within any space and time, because beyond it there will be absolutely nothing. This X will be the ultimate reality and this ultimate reality will be spaceless and timeless.

So, here there are only two options:

- i) In one case everything will be within some space and time, but there will also be an infinite regress;
- ii) In the other case there will be no infinite regress, but here the ultimate reality will not be within any space and time.

An infinite regress is generally avoided, because a never-ending chain of causes cannot ultimately produce anything. However it is up to him what he will do.

Repeated observations of the phenomenon of quantum entanglement have compelled the scientists to come to the conclusion that at some deeper layer in the universe there is no space and time. That is why connection between two entangled particles is established instantaneously, defying all the space-time separation between the two. That is the reason as to why scientists are now saying just like the mystics that 'space and time are illusions' and that 'the universe and its material content might not, at bottom, be 'in' space and time'.

It is not the job of the scientists to manufacture truth but to discover it. If there is a spaceless and timeless God, then scientists will also discover it one day. Up till now they have discovered that there is something spaceless and timeless in nature from which space-time has emerged.

So, scientists have been able to deliver this much up till now. For the rest of the bags and baggage, we will wait.