

Essay

## On Emergent Space-Time & the Existence of God

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### Abstract

Has anybody ever thought that if it is true that space and time are not fundamental entities in Physics, but only epiphenomena arising from other yet more fundamental entities, then at the same time it might not be true that the universe has originated from nothing? If space and time are emergent entities only (epiphenomena) arising from other yet more fundamental entities, then were they emergent also when they made their first appearance at the beginning of the universe? Or, were they fundamental entities at that time? If we claim that they have originated from nothing at the beginning of the universe, then they were fundamental entities at the beginning, simply because they have originated from nothing and not from those yet more fundamental entities. If they were fundamental entities at the beginning, then how and when did they become emergent by losing their fundamental nature? However, if they were emergent at the beginning also, then would they not require the prior presence of those fundamental entities from which only they could arise? Being epiphenomena arising from other yet more fundamental entities, was it possible for them to arise from nothing?

If the above argument is correct, then it cannot be the case that the universe has originated from nothing, but from those fundamental entities from which only space and time can emerge. That means all those hypotheses that try to explain the origin of the universe from nothing are all false hypotheses only.

**Keywords:** God, emergent space-time, epiphenomena, fundamental entity.

What follows was basically a dialogue between an atheist and me.

One question that atheists generally asks is: who created the creator? The answer is that God does not need a creator because it has actually been shown that God is a bunch of several zeroes. Can anybody show that the universe is also a bunch of several zeroes and so universe would also need no creation? However universe would not need any creator if it can be shown that everything in this universe, including its origin also, can be explained by natural means without invoking any outside agent.

But the question is: can it be explained in that way? Below is just one problem:

One may argue that the universe is still nothing, because there is as much energy as there is negative energy; so:  $\text{Energy} + - \text{Energy} = 0$ . So basically we still are where we started; the universe is just a more complicated state of nothing.

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However, if the universe is still nothing, then that will mean that initially the universe was nothing and that it has still remained nothing, because its total energy has always remained zero. But when initially the universe was nothing, it was not that only its energy was zero. Its space, time and matter were also zero. So if the universe still remains nothing, then why should it be that only its total energy remains zero but not its total space-time? What is the logic behind that? So, if the universe still remains nothing, then not only the total energy, but the total space-time of this ever-expanding universe must also always remain zero.

But have the scientists like Krauss, Hawking and others provided any explanation as to how this total space-time always remains zero?

Here I have mentioned just one problem, but there are other problems also. No scientist can answer whence appeared those quantum mechanical laws without which no cosmological model is complete. In that sense quantum mechanical laws have the same status as that of the theistic God; origin of both remains unexplained and mysterious. However the question 'who created God?' can be answered and it has already been answered. Whereas the question 'who created quantum mechanical laws?' has not yet been answered.

Then there is the fine-tuning problem. There are about 30 numbers within the laws of physics that include the masses of the elementary particles and the strengths of the fundamental forces, the values of which cannot be predicted by any scientific laws. Rather scientists have to find their values from actual experiments only. If these numbers have slightly different initial values at the big bang, then the world, and life as we know it, would probably never have come into being.

The question is: why do these numbers have the values that they have? At present scientists cannot answer this question from within their known physics and they resort to multiverse hypothesis for its explanation. But up till now there is no direct experimental evidence that there are other universes beyond our universe and so at present multiverse has remained a theoretical probability only. But there are some scientists within the scientific community who think that even if multiverse is real, yet multiverse will not help us solve any single problem within our universe, because physics in each and every member of the multiverse would be the same as that of our universe.

So long scientists will not be able to solve these problems their claim that the universe does not need any God will not be trustworthy. Here the atheist would perhaps say that zero cannot create anything. If zero does not have any power to create anything, then how has zero energy created such a vast universe?

Again the Atheist may argue that first of all I need to actually demonstrate such a god. But as because I am saying god has been "demonstrated to be zeroes", which doesn't make any sense, so he is willing to bet that I have been duped into some hippie kool-aid. He would also suggest actually thinking for a moment who is more likely to have analyzed these things more rigorously, the guy that said god is a sequence of zeroes, who probably hasn't achieved anything in his whole life in regards to his career as a professional, or the elite scientists in the history of the

world from around every country that have granted us literally every piece of technology we see around us today.

If God created universe, who created God? The atheist was requested to go through this article but he has not gone through it. So here is a quote of the first paragraph of that article:

‘Earlier it was impossible for us to give any satisfactory answer to this question. But modern science, rather we should say that Einstein has made it an easy task for us. And Stephen Hawking has provided us with the clue necessary for solving this riddle. Actually scientists in their infinite wisdom have already kept the ground well-prepared for us believers so that one day we can give the most plausible and logically consistent answer to this age-old question.’

The purpose of quoting this passage here is to show that the same elite scientists that have granted us literally every piece of technology we see around us today have also prepared the path for us believers so that we can argue for the existence of God.

Now let us first see what would be the attributes of a creator God. Here I will repeat the same argument here that I have given in the article [2] for showing how it can be concluded that a creator God would always be spaceless, timeless and immaterial.

So as per logic a creator God must necessarily have to be spaceless and timeless, because this is the one and the only one logically possible consequence of being the creator of a universe.

Now let us see how believers have described their God. About the supernatural God it has been said that he is omnipotent, omniscient and omnipresent. About the same God it has also been said that he is spaceless, timeless, changeless, immortal, all-pervading, one, unborn, uncreated, without any beginning, without an end, everlasting, non-composite and immaterial.

So it can in no way be denied that God has been described as spaceless and timeless by the believers.

Now let us see what science has done here. Science has also given its full support to this logical concept of a creator God by showing as to how it is possible to be spaceless and timeless.

So it can in no way be denied that science has shown how it is possible to be spaceless and timeless.

Now let us ask ourselves this question: why has science done this? If God is purely imaginary and non-existent, then why is it that science has provided such explanations for the attributes of a purely imaginary and non-existent God? What shall we have to conclude from this? Shall we have to conclude that those highly intelligent persons who have provided these explanations were not intelligent at all and that that was the reason as to why they failed to distinguish between what was actually real and what was purely imaginary? Or shall we have to conclude that this God is objectively real?

Not only that. Phenomenon of quantum entanglement has compelled the scientists to conclude that space and time are not fundamental at all and that space and time have emerged from something more fundamental that is spaceless and timeless. Here are two relevant quotes:

If there were a dividing line between the quantum and the classical worlds, we could use the space and time of the classical world to provide a framework for describing quantum processes. But without such a dividing line—and, indeed, without a truly classical world—we lose this framework. We must explain space and time as somehow emerging from fundamentally spaceless and timeless physics... 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)

Indeed, a number of serious physicists have for some time by now stated that our usual perception of TIME is wrong, due to the fact that TIME, as much as SPACE, are NOT fundamental entities in Physics, but ONLY ... epiphenomena arising from OTHER yet more fundamental entities ...” (Personal e-mail to me)

We have already seen that God is described as spaceless and timeless. And we now see that scientists are also saying that space and time have somehow emerged from fundamentally spaceless and timeless physics.

So, if there is indeed a God, then at the beginning of everything there would be an entity that would be spaceless and timeless. Scientists have not yet admitted that there is a God. But they have at least admitted this much that space and time are not fundamental entities at all and that the more fundamental entity from which they have emerged is indeed spaceless and timeless.

**Some implications of emergent spacetime:** That space and time are emergent would also have two more implications. It would imply that those fundamental entities from which space and time have emerged cannot be within any space and time and it would also imply that they cannot be material. They cannot be within any space and time simply because space and time have emerged from them and therefore there was no space and time prior to the emergence of space and time. Being thus spaceless and timeless they would also be immaterial. This is because GR has shown that space, time and matter are so interlinked that when there would be matter, there would be space and time as well. So, if those fundamental entities were material, then there would also be space and time along with those material entities. In that case there would already be space and time prior to the emergence of space and time, which is an absurdity.

However, it has already been shown that there can be only one single entity in spaceless and timeless condition [3]. It means that the entity from which the universe has originated is spaceless, timeless and immaterial.

Theistic belief has two parts. In one part theists hold that life, mind and consciousness were already there before the beginning of the universe, because before the beginning there was God and God is life, mind and consciousness itself. In the second part they hold that there was no space and time before the beginning, because before the beginning there was God and that God

is spaceless and timeless. So as per the theistic belief life, mind and consciousness are fundamental, because they were already there before the beginning of anything, but space and time are not, because there was no space and time before the beginning. Up till now scientists have refused to acknowledge that the first part of the religious belief is true and they still hold that life, mind and consciousness are emergent entities only. But forced by the circumstances scientists have been driven to the conclusion that the second part of the religious belief is essentially true, that space and time are not fundamental, but emergent only.

I hope within some fifty or hundred years from now on scientists will be again driven to the conclusion, and this time also they will be forced by the circumstances only, that life, mind and consciousness are indeed fundamental and not emergent .

Once it is admitted by the scientists that space-time is not fundamental, but emergent, now all the atheistic nonsenses can be very easily countered.

## Reference

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