

The Problem with the Universe from Nothing (Part II)

Himangsu S. Pal*

ABSTRACT

Scientists have shown how the total matter-energy content of the universe has always remained zero. If the universe appeared out of nothing, initially there was no space, time, matter and energy. However, we are not satisfied with this explanation and want to know how the total space-time content of the universe has always remained zero. Otherwise, scientists will have to explain as to whence appeared the extra residual space-time that was not already there at the beginning.

Key Words: Universe, nothing, substance, space, time, energy, matter, gravity.

When scientists say that the universe can simply come out of nothing without any divine intervention, they think of the universe in terms of its energy content only. In the book 'The Grand Design', page 281, scientist Stephen Hawking has written that bodies like stars or black holes cannot just appear out of nothing, but a whole universe can.¹ The message is very clear from this: The total energy of a whole universe is zero and that is why it can come out of nothing; but stars or black holes will fail to do so, because their total energy is not zero. But universe means not only its energy; universe means its space-time as well. So if we now apply the same logic to space-time as well, then we can say that the total space-time of a whole universe must also always have to be zero, because in that case only a whole universe can appear out of nothing. Here my question is: How does the total space-time of an ever-expanding universe always remain zero?

As the universe appeared out of nothing, so initially there was no space, time, matter and energy. Scientists have successfully shown how the total matter-energy content of the universe has always remained zero. But we are not satisfied with that explanation, we want something more. We also want to know how the total space-time content of the universe has always remained zero. And it should always remain zero if the universe has actually appeared out of nothing. Otherwise scientists will have to explain as to whence appeared the extra residual space-time that was not already there at the beginning.

If stars or black holes cannot appear out of nothing simply because their total energy is not zero, then can a whole universe appear out of nothing if its total space-time is not zero?

The last question above will further boil down to this one: Do the physicists think that energy cannot just appear out of nothing, but space-time can, supposing that the total space-time of the present universe is not zero?

* Correspondence: Himangsu S. Pal. E-Mail: sekharpal1946@rediffmail.com

Or, do they think that like life, mind and consciousness, space and time are also emergent entities only, and therefore, not directly coming from big bang nothing?

Something can appear out of nothing provided that the totality of that something always remains zero. Actually anything can come out of nothing if this condition is fulfilled. This is the principle which some scientists have relied upon when they have proposed that our universe could have arisen out of nothing due to a quantum energy fluctuation in a void. They have found that the total energy of the universe is exactly zero. The total energy being zero, the total matter will also be zero due to matter-energy equivalence. If the total matter as well as the total energy of the universe is zero, then why should they have to come from anything at all? They could have come from nothing as well. So these scientists have proposed that our universe has simply appeared out of nothing. But when they have proposed this theory, they remained totally oblivious of the fact that universe means not only its matter and energy, universe means its space-time as well. So, if the universe has actually appeared out of nothing, then just like matter and energy, space-time also has appeared out of that primordial nothing. So like matter and energy, the total space-time also should always remain zero.

However, if it is the case that space-time has not directly appeared out of nothing, then the total space-time need not have to be zero. No sane person on this earth will ever say that the total number of human beings in this universe must always have to be zero, because no sane person believes that human beings have directly appeared out of nothing. However if 'x' has directly appeared out of nothing, then logic and common sense dictates that the totality of that 'x' must always have to be zero.

Here it may be objected that there is a law of conservation of matter and energy in science, but that there is no such conservation law for space-time. So there is no violation of conservation law if nothing generates so much of space-time. Even if it is conceded that this is a valid objection – here I must say that I do not think so - it can still be pointed out that there is one more reason that can be given as to why the total space-time of the universe should always remain zero. This reason we find in Einstein's general theory of relativity. As per GTR space, time and matter are so interlinked that there cannot be any space-time without matter. Similarly there cannot be any matter without space-time. If there cannot be any space and time without matter, then the total matter of the universe being zero, the total space-time of the universe should also always be zero. So we can say that GTR alone gives us sufficient reason to conclude that if the total matter of the universe always remains zero, then the total space-time of the universe should also always remain zero. Here the question becomes quite irrelevant as to whether the universe has originated from something, or from nothing.

So from GTR we come to know that the total space-time of an ever-expanding universe should always remain zero, but we do not know yet how it does actually remain zero.

If science cannot give any satisfactory answer to this question, then the naturalistic world-view of modern science will prove to be inadequate for explaining the real world.

Reference

1. S. Hawking & L. Mlodinow (2012), *The Grand Design*, pg. 281 (Bantam Books: New York).