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CONSCIOUSNESS AND CYCLICITY OF THE UNIVERSE

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Abstract: In the present paper, by using a uniform time axis for the whole universe, infinite intervals on that axis as well as the axiomatic method, it has been substantiated that the consciousness of the universe and its perfection have no beginning and no end in time. That reasoning implies that the universe has a rotatory character in time, i.e. it is cyclic.

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1. Introduction

The present paper has dealt with the cosmic problem, concerning the periods of existence of the consciousness of the universe, considered as one whole. In the philosophical theories, treating it, different viewpoints have been expressed. However, they are far from being sufficiently rigorously substantiated or are given with a certain inaccuracy and do not provide any solution to the problem. The author has given a solution to this problem [1]. However, the journal, where it was published, was not so widely known and, unfortunately, the result has remained without any response or any discussion at all. The present paper refers to some ideas of the author, published in the above work, and develops them still further.

A great number of the people are convinced that the consciousness of the universe has got a beginning in time, but, perhaps, it has got no end. In this

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paper, by using the axiomatic method, by introducing a uniform time axis as well as infinite time intervals, we have substantiated that the consciousness of the universe and its perfection have no beginning and no end in time. The basic tool has been the axiomatic method, chosen with the aim of imparting a certain logical-mathematical interpretation of the solution of the problem itself.

The concept of infinity has been used widely in mathematics. We cannot hardly imagine the existence of this science without using this concept, notwithstanding the unique maxim of the German mathematician Dawid Hilbert, according to whom no concept in mathematics needs precision so much as the concept of infinity. It is by the use of that concept, namely, that a great number of results, possessing a theoretical character and attaining remarkable applications, both in the remaining sciences and in practice, have been achieved in mathematics. We should mention here the introduction of the infinite cardinal numbers in the set theory at the end of the 19-th century by the German mathematician Georg Cantor with its numerous theoretical applications.

We will point out that we have considered the consciousness of the whole universe and not of any subsystem of its. However, we do not necessarily suppose an infinity of the universe, we only suppose that the time of the universe has no beginning and no end, since our considerations hold true for the finite case as well.

The basic convention in our analysis is the assumption of an infinite existence of the universe up till the present moment. We introduce an uniform infinite time axis for the whole universe as well as infinite intervals $(-\infty, t)$ and $(t, +\infty)$ of this axis, where t is an fixed moment of time, and we are convinced that these two concepts would lead to no future complications and contradictions. Further on, we will consider fixed moments, infinite and finite intervals, which we will sometimes call "periods" and we will suppose that they are on the chosen time axis. In view of the above considerations we accept the following axiom.

Axiom 1. The existence of the universe have no beginning and no end in time, i.e. there exist the intervals $(-\infty, t)$ and $(t, +\infty)$ for the universe, where t is an fixed moment.

At first the basic considerations will be connected with the time interval $(-\infty, t)$ which participates in the following definition.

Definition. We call an eternal existence of the universe its existence in any infinite interval $(-\infty, t)$, where t is a fixed moment (the interval can be closed from the right side).

The eternal existence of matter and the universe, as a whole, give us an irrefutable grounds to accept the following axiom.

Axiom 2. Any eternal existence of the universe generates a consciousness.

In order to abide by a certain strictness and rigidity of presentation, we will introduce the following definition in which an arbitrary subsystem of the universe, different from the universe itself, will be called a proper subsystem of the universe.

Definition. We say that a proper subsystem of the universe has no beginning in time, if before every arbitrary moment t_0 from the existence of the universe, there is, at least, one moment $t_1 < t_0$, in which this subsystem exists.

We will note explicitly that this definition is not relevant to the universe itself.

We will show that Axiom 2 is equivalent to the following assertion.

Proposition 1. *The consciousness of the universe has no beginning in time, i.e. before every arbitrary moment t_0 from the existence of the universe there is, at least, one moment $t_1 < t_0$, at which the universe has a consciousness.*

Axiom 2 implies Proposition 1. Indeed, let t_0 be an arbitrary moment from the existence of the universe. In the interval $(-\infty, t_0)$ the universe has existed eternally. Therefore, by Axiom 2, it generates a consciousness at one moment $t_1 \in (-\infty, t_0)$ at least. Since $t_1 < t_0$, then we obtain that before the arbitrary moment t_0, the universe generates a consciousness. Consequently, the consciousness of the universe has no beginning in time, i.e. Proposition 1 holds true.

Proposition 1 implies Axiom 2. An arbitrary eternal existence of the universe is in some interval $(-\infty, t)$. Since, by Proposition 1, the consciousness has no beginning in time, then in this interval there is, at least, one moment t_0, at which the universe generates a consciousness, i.e. the eternal existence of the universe in the interval $(-\infty, t)$ generates a consciousness. Therefore, Axiom 2 holds true.

Consequently, Axiom 2 and Proposition 1 are equivalent, i.e. Axiom 2 $\Longleftrightarrow$ Proposition 1. We will prove that these two statements are equivalent to the following assertion.

Proposition 2. *There exists an infinite, decreasing and unbounded below sequence of moments in which there is a consciousness of the universe.*

Proposition 1 implies Proposition 2. We will construct, by induction, an infinite, decreasing and unbounded below sequence $t_1, t_2, ..., t_n, ...$ of moments,

such that at every moment t_n a consciousness of the universe exists. For the moment $a_1 = -1$, by Proposition 1, namely, there is a moment $t_1 < a_1$, at which a consciousness of the universe exists. Let $a_2 = \min(-2, t_1)$. There is, by Proposition 1, a moment $t_2 < a_2$, at which a consciousness of the universe exists. We set $t_0 = 0$. Let n be an arbitrary natural number. Let us suppose that we have constructed the moments t_i and a_i on the time axis, such that

$$a_i = \min(-i, t_{i-1}), \quad t_i < a_i, \quad i = 1, 2, ..., n-1,$$

and at the moment t_i a consciousness of the universe has existed. We set $a_n = \min(-n.t_{n-1})$. There is, by Proposition 1, a moment $t_n < a_n$, at which a consciousness of the universe exists. In this way we obtain an infinite, decreasing consequence $t_1, t_2, ..., t_n, ...$ of moments on the time axis such that at every moment t_n there is a consciousness. Since for every $n \quad t_n < a_n \leq -n$ is fulfilled, then $t_n < -n$. Therefore, the consequence $t_1, t_2, ..., t_n, ...$ is unbounded below, i.e. the proposition holds.

Proposition 2 implies Proposition 1. This fact is obvious.

In this way we obtain that Axiom 2 $\Longleftrightarrow$ Proposition 1 $\Longleftrightarrow$ Proposition 2, i.e. Axiom 2, Proposition 1 and Proposition 2 are equivalent.

The following definition can be rendered in more than one ways but we will dwell upon only one of them.

Definition. We call a perfection of the consciousness of the universe its maximal, highest level of development.

Keeping in mind the above equivalence we can assume that if the consciousness of the universe has no beginning in time, it then reaches its perfection at one moment at least. Or, more precisely, we can formulate the following axiom.

Axiom 3. If there exists an infinite, decreasing and unbounded below sequence of moments in which there is a consciousness of the universe, then this consciousness reaches its perfection at one moment t_0, at least.

Using Axiom 3, by analogy with the proofs of Proposition 1 and Proposition 2, we can prove the following two assertions.

Proposition 3. *The perfection of the consciousness of the universe has no beginning in time.*

Proposition 4. *An infinite, decreasing and unbounded below sequence of moments exists in which the consciousness of the universe reaches its perfection.*

It is clear that the considerations, we have effected, can be transferred, in an analogical way, for the interval $(t_0, +\infty)$, where t_0 is a fixed moment, i.e. we can prove the following two assertions (analogous to Propositions 1 and 4,

respectively).

Proposition 5. *The consciousness of the universe has no end in time.*

Proposition 6. *An infinite, increasing and unbounded above consequence of moments exists in which the consciousness of the universe reaches its perfection.*

It is obvious that the moments of the existence of the consciousness of the universe, indicated in the Propositions 2, 4, 6 and Axiom 3, can be extended, in a natural way, at least, for finite intervals (periods) of time. In this way we obtain that the perfection of the consciousness of the universe has no beginning and no end in time. Or, more specially, there does not exist any initial finite period of time when there is a consciousness of the universe, and before every finite period of time, the consciousness of the universe has existed and has reached its perfection an infinite number of times.

The above reasoning give us a grounds to conclude that the consciousness of the universe is primary in time and that the assertion "matter is primary and the consciousness is secondary" is not absolute but it is relative. Obviously, our considerations are valid not only for the consciousness as a special biological form of motion of matter, but for every higher form for its, for example, for the biological and for the social form of motion, considered abstractly, for the whole universe. We can adduce the following special example, concerning the remaining forms of motion of the universe. If we accept the axiom that any eternal existence of the universe generates its great explosion, then, by analogy with the proof of Proposition 2, we can prove that the universe has had an infinite number of great explosions.

Since every form of motion of matter (of universe) repeats and reachs its perfection infinitely many times, then we can conclude that the universe has a rotatory character in time, i.e. it is cyclic. Therefore, we can claim a cyclicity of the universe as well as a cyclicity of the forms of motion of matter.

We will point out that in some philosophical theories (see, for example [2]) an ungrounded assertion, concerning the invariability of the universe, as a whole, has been presented. In order to prove the invariability of the whole universe we will have to establish that the moments of perfection of the forms of motion cover the whole time axis. This supposition seems to be unreal. This is impossible if the universe is finite. For an infinite universe we do not see for the time being, a way either to refute it or to prove it.

The ordinary intuition suggests that the obtained above results are acceptable for the future but not for the past. At the same time, the authors' intuition

is exactly contrary. Namely, if we exclude eventually the infinity of the universe, then its eternal existence is a striking fact, since an actual infinity in time is accomplished for the universe, while the realization of the infinite existence in the future is a mathematical fiction only and it can never be accomplished in the real world. Therefore, the existence of the universe in the past has an indisputable priority over the existence in the future.

In spite of this intuitive consideration we obtained, employing axiomatic presentation, that the perfection of the forms of motion (of the universe) in the future is equal in rights to the perfection of the forms of motion in the past.

References

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