

## THE LAW OF THE UNIVERSE FUNCTIONING AND THE CAUSES OF SELF-ORGANIZATION OF MATTER

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*The material presented in this article is an attempt to solve the problem of identifying the causes of self-organization of matter according to the Law of the Universe functioning, which was stated and substantiated by author, i.e. the law of consecutive complete exhaustion of possibilities contained in the material basis of the Universe (meaning the Universe that includes the whole objectively existing world).*

*Key words: Universe, the Law of the Universe functioning, matter, self-organization.*

## ЗАКОН ФУНКЦИОНИРОВАНИЯ ВСЕЛЕННОЙ И ПРИЧИНЫ САМООРГАНИЗАЦИИ МАТЕРИИ

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*В статье предпринята попытка решить задачу выявления причин самоорганизации материи, основываясь на сформулированном автором Законе функционирования Вселенной – законе последовательного полного исчерпания возможностей, содержащихся в материальной основе Вселенной (имеется в виду Вселенная, исчерпывающая собой весь объективно существующий мир).*

*Ключевые слова: Вселенная, Закон функционирования Вселенной, материя, самоорганизация.*

The material presented in this article is an attempt to solve the problem of identifying the causes of self-organization of matter. The fact is that the information available in the modern science and practice, in my view, allows speaking about the causes of self-organization of matter.

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Here we have in mind the Law of the Universe functioning, which was stated and substantiated by me, i.e. the law of consecutive complete exhaustion of possibilities contained in the material basis of the Universe (meaning the Universe that includes the whole objectively existing world).

According to this law, when all possible changes contained in the material basis of the Universe come to an end, because the Universe is uncreated and indestructible, there necessarily starts a new, subsequent cycle. This means that absolutely complete, successive repetition of periods of qualitative changes occurs in the Universe, resulting in the emergence and disappearance of concrete forms of matter. In other words, in the Universe, regardless of whether it is pulsating or not, there is an eternal and endless repetition of the finite.

Thus, if the Universe as a whole is pulsating, then the Big Bang should happen every time when the Universe reaches the maximum strictly defined degree of density. Both the next cycle of expansion of the pulsing Universe and its subsequent cycle of compression must repeat identically, since the total energy in the Universe is always the same. The Universe as a whole can also pulsate only on condition of absolutely repeated consistently successive cycles of expansion and contraction, since only under this condition all the states of the Universe would be equal. Otherwise, the Universe would have to be created. However, as we know, uncreatability and indestructibility of matter is proved by all the scientific data and practice.

It should be emphasized that there are theoretical and experimental data available, which provide strong evidence that the number of potentially possible changes and transformations of material objects making up the whole world is finite.

As is known, as early as in 1890, long before E. S. Fedorov determined the structure of crystals, all possible combinations of symmetry elements in space were derived on strictly mathematical basis. E. S. Fedorov and A. Schoenflies proved that there can only be 230 such spatial symmetry groups [See: *Bokiy*, 1971: p. 64].

We also know that this conclusion later became a firm foundation of modern crystal chemistry – the theory of the atomic structure of crystals. At present, over two dozen of thousands of crystal structures were identified, and there is no single structure among them that would contradict Fedorov's theory.

It follows from the abovesaid that matter does not have an infinite number of degrees of freedom of changes, and therefore cannot acquire an infinite variety of forms. In this regard, in the uncreated and indestructible

Universe there must occur infinite repetitions of a finite number of changes and transformations of matter.

I would like to draw one more example as another confirmation of the fact that matter does not have an infinite number of degrees of freedom of changes, and therefore cannot obtain an infinite number of different kinds of shapes.

Each thing that makes up the Universe disappears, dissolves, ceases to exist due to its interaction with the environment before it exhausts all the potentially possible changes contained in its material content (in this connection we can rightfully speak not about sporadic, but about deliberate nature of the outcomes of material things interaction).

Let me also mention such evidence of truth that the matter cannot have an infinite number of free changes and transformations. We will speak about the fact that quantitative increase of elementary particles in atoms cannot last indefinitely, and it has a certain ceiling. And, although there may be much more atoms in molecules than elementary particles in atoms, the number of atoms cannot increase indefinitely in molecules either.

Thus, the material content of things making up the world, the Universe, and, therefore, the material basis of the Universe, as a whole, even with the account of the dark matter present in it, there is limited potential for change.

According to the Law of the Universe functioning, in the nature there may only be the order, the chaos, and the transition from the chaos to the order, or vice versa.

In this regard, we can agree with I. R. Prigogine who stressed that "the sense of the chaos is not in the fact that it puts a limit to our consciousness, – the chaos allows restating the things that we should know in a new way" [*Prigogine, Stengers, 1994: p. 254*].

In my view, the nature follows not only the path of order of its forms and processes, not only the path of development. It follows the path of consistent realization of any changes and transformations, resulting in the existence of both the processes of development and the processes of regression. In this regard, progress cannot be the single highest necessity.

I would like to emphasize that all the processes of self-organization of matter in nature, without any exception, are the result of the Law of the Universe functioning.

In conclusion, I would like to note that I do not think that this law is the ultimate truth, because in the course of the time new facts, new developments may be discovered, and it may be considered erroneous. However, it seems to me that if we proceed from the current level of scientific knowledge, the law of the Universe functioning would be true.



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