



KAPITEL 7 / CHAPTER 7⁷ HOLISTIC PARADIGM OF SCIENCE AND ITS DEVELOPMENT IN THE XXI CENTURY

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Introduction.

Holism is a very ancient paradigm of the nature of the universe, the nature of Man and the nature of their relationships. At the heart of this paradigm is a timeless wisdom, the existence of which many modern intellectuals deny because of their mentality. However, this denial does not mean its actual absence, as the seekers and lovers of this wisdom, the philosophers, are constantly convinced.

As the Ukrainian philosopher Viktoriya Gaidenko notes: "Modern socio-cultural reality, as heterogeneous, changeable, multivariate, plural, brings to life new, non-traditional, alternative, sometimes provocative approaches, which make it possible to move away from an unambiguous definition of reality and man and abandon the concepts of linearity and reductionism in favor of harmony, integrity, and diversity." In our case, in favor of holism as a paradigm of wholeness or a philosophy of harmony.

The holistic paradigm, which develops at the intersection of science, religion, and philosophy, is a kind of creative synthesis of universal human knowledge accumulated over thousands of years. This is the concept of wholeness, which is based on a completely new idea of the non-universality of the extremely broad concept of the multiplicity in the description of Nature and Man, which in turn means that in the final analysis the world does not exist as a multitude, but as an indivisible and indecomposable whole. The appeal to the idea of integrity at the present stage of the development of humanitarian knowledge seems to be especially relevant and timely.

The **purpose** of this chapter is to identify the opportunities and prospects of the emerging paradigm that expands the horizons of knowledge of unbiased researchers.

Research methods. Speaking of the holistic paradigm in science, it is quite logical to use a holistic approach to the study of this topic. The essence of this approach is the system of views, points of view, positions of different scientists, different

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countries and different specialties on discoveries in science, which can serve as the foundation for the formation of a new scientific paradigm.

What unites these scientists is their disappointment in the mechanistic mentality that dominates the modern science community, as well as their vision of the pressing problems not only of science, but of civilization as a whole, with the possibility of solving them with the help of a new scientific paradigm.

Within the framework of the holistic approach, general scientific methods of analysis, synthesis and systematization were also used.

7.1. Modern holism, origins, concepts and possibilities.

The origins of the philosophical foundations of holism go back to the ancient, philosophical and mythological teachings of both the East (India and China) and the West (Babylon and Egypt). In European culture, this idea was developed in the philosophical concepts of Pythagoras, Parmenides, Plato, Plotinus, Porphyry, as well as their numerous followers.

In some modern sources, holism is defined as an idealist doctrine, which fundamentally contradicts the very principle of holism, which cannot be either materialistic or idealistic, since it unites these opposite categories under the category of "wholeness" or "whole." At a time when between materialism and idealism stands the fundamental question of philosophy about the primacy of being or consciousness, holism answers it simply: in the beginning there was the Whole, which the Greeks of Antiquity designated as the Unified, the Incomprehensible, the Ineffable, the Taoists called this Whole "Tao", "Emptiness", the Hindus called "Brahman" or "Absolute".

In the language of modern astrophysics, our Whole is the initial state of the singularity of the Universe, which does not have in its realized form such definite objects as stable elementary particles with a non-zero rest mass, which are the basis of all material forms we perceive, does not have galaxies, stars, planets and everything that is on the planets, does not have space and time. But all of this is contained in the



state of singularity, potentially, as if in embryo, in the form of a program. What can we know about this super-dense vacuum point? That it is being and not being, mobile rest and self-identical distinction, that it is not manifested, not seen, not knowable, and all the other adjectives with the prefix "not." This is how all the ancient teachings described the nature of this First Cause!

Consequently, the inner nature of this Whole lies beyond all knowledge and even human imagination. However, the phenomenal world, the world of forms, which is manifested to us in sensations and is a manifestation of the Whole, is knowable. It is precisely this that modern mechanistic science studies, analyzing, dissecting, and breaking it down into parts and elements.

The ideas of holism are characteristic of many philosophical conceptions of development, including those influenced by the works of A. Bergson and A. N. Whitehead. A distinction is made between ontological holism (which asserts the supremacy of wholes over individual elements) and methodological holism (which explains individual phenomena in their connection with wholes). In a broad sense, holism is an attitude of taking into account all aspects of the phenomenon under consideration and a critical attitude towards any one-sided approach. Holism is widely popular in a wide variety of teachings. Its adherents were A. Lohmann, A. Meyer-Abich, J. Haldane, F. Capra, E. Laszlo, it became the basis of Gestalt psychology, the phenomenology of Husserl, a number of trends in social philosophy (K. Marx, E. Durkheim, N. Luhmann) and modern philosophy of science (the Duhem-Quine thesis, the ⁸Kuhn-Feyerabend thesis⁹).

Speaking of holism, it is necessary to mention the basic principles of holism, as they were expounded by the American scientist and philosopher Ken Wilber (A Brief History of Everything, 1996). The well-known publicist and popularizer of the philosophy of holism presents the true nature of our Universe as a multi-level and multi-layered Holon, which has absorbed and embraced all conceivable and

⁸ The Duhem-Quine thesis is the assertion that it is impossible to definitively determine the truth of a scientific theory.

⁹ The "Thesis of the Incommensurability of Kuhn-Feyerabend's Theories" **warns against a hasty and superficial criticism of theories without a proper understanding of the grounds and limits of this criticism.** This thesis defends the originality of any theory, the criticism of which is possible only on the basis of the principles of ontology and historicism.



inconceivable forms of life, each of which is whole in itself and at the same time a part of another, greater whole, i.e. whole/part. For example, a whole atom is part of a whole molecule, and a whole molecule is part of a whole cell, a whole cell is part of a whole organism, and so on.

Each of these objects is neither a whole nor a part, but a holon. Therefore, according to Ken Wilber, *the first principle of holism states* that reality is not made up of things or processes, not of the whole and its parts, but of the whole/parts, or holons, both when the scope of observation is increased and when it is reduced.

The second principle of holism states that since each holon is a whole/part, it has two tendencies or forces that support its properties of wholeness and partiality. On the one hand, it needs to maintain its integrity, identity, autonomy, or organization in order to simply exist in the environment, on the other hand, it also needs to be part of another whole on which its own existence depends. This applies equally to atoms, molecules, animals, and humanity. That is why it is so important for the holon man not only to have his own organization as a whole, but also to participate constantly in interaction with the whole. If it can't fulfill these duties, it will simply be destroyed, it will simply cease to be. These abilities of the Holon are "horizontal," but there are potentially "vertical" abilities in the Holon, which can be designated as "self-determination" and "self-disintegration."

"If a holon fails to maintain its organization or interaction, it can collapse completely. When it breaks down, it breaks down into subholons: cells break down into molecules, which in turn break down into atoms." [2,p.24] What's interesting about this decay is that the holons decay in the reverse order in which they were created. Therefore, this decomposition is self-decay or simply a separation into subholons, which also divide into constituents and so on. However, no less interesting is the reverse process, the process of growth, in the course of which new holons appear. The most striking example of this growth is any living thing, from a grain of wheat to a human embryo.

So we have organization and interaction operating on a horizontal level, and in the vertical dimension we have self-definition as an upward movement and



disintegration as a transition to a lower level. These four impulses – to be whole, to be a part, the impulse to move upwards and to disintegrate – are constantly affecting all the holons, and principle number two simply says that the holons have these four impulses. The rest of the principles are devoted to the interaction of these four forces. Self-determination is the reason for the evolution of holons from the universe, galaxies, planets to atoms, molecules, cells, organisms.

To understand the driving forces of evolution, Ken Wilber cites *a third principle*. It says: in the Cosmos, new holons are constantly emerging with the energy of creativity. "Creativity, holons, are the basic categories we need before we can talk about anything else!" [2,p.26]. But creativity, as we know, is a manifestation of the Spirit – the human on our plane of existence and the Cosmic on the universal plane. In a word, the Cosmos develops in the process of creative emergence, and in this emergence new beings appear, new holons, new wholes are formed. In other words, something governs the development of the world beyond chance. This is a very important point of modern holism, and we will dwell on it a little later. At this point, it is necessary to mention another principle, *the fourth*, which states that when the holons arise in the process of the creative impulse, they form holarchy, or, in common terms, hierarchy. "Natural hierarchy is simply the order of increasing whole units, e.g., from particles to atoms, from atoms to cells, from cells to organisms; or from a letter to a word, then to a sentence, and then to a paragraph. A whole on one level becomes a part on another. In other words, normal hierarchies are made up of holons. And so, according to Koestler, the hierarchy should be called "holarchy." And he's absolutely right. Indeed, all processes of growth, from matter to life to mind, take place as natural holarchies, or as an increase in order, holism, wholeness—wholes become parts of new wholes—and this is the natural hierarchy or holarchy"[2,p.28].

Thus, holarchy is one of the basic principles of holism: the higher dimension provides a model that unites and binds the separated and isolated parts into a unity, within which there is a kind of connection between the holons, which ensures this unity. In other words, the Higher is the cause of the lower, the Complex begets the Simple, not the other way around. The dialectic of evolution and involution reveals the



meaning of the existence of almost all forms of life in the Universe.

These are the basic principles of holism formulated by Wilber. There are twenty of them in total, but the rest seem to complement these four, which can be designated as the cornerstones of the holistic paradigm.

Thus our universe is a Holon, encompassing a myriad of holons, from atoms to galaxies, each of which holds within itself the direct presence of the transcendent First Principle.

There is the possibility of complex metamorphoses between all the holons of our universe, since everything is made up of a single fabric and is organized according to a single order. The connection with the First Principle is carried out in all directions, through "substance," through "essence," through "object," and through "subject," since the First Principle is in the center. Therefore, any movement inward or outward theoretically leads to the same ultimate reality, the reality of the First Principle, which is present at the heart of things.

The First Principle itself is immovable and unchanging, but reveals itself through the unlimited abundance of its manifestations, through the intricate fabric of the universal pattern created from the trajectories of beings and things.

In this picture of the world, there is a special concept of causality and time (sequence, duration). Here the causal factor is not outside the phenomenon, but within it, and the events are essentially connected not diachronically but synchronically, as is manifested in cyclism. Eternity is present within temporal duration, since the substance of the world and one of the aspects of the First Principle coincide.

In this article, we will look at two theories that can support the holistic paradigm: the anthropic principle in modern cosmology and David Bohm's theory of implicate order.

7.2. The anthropic principle in modern cosmology.

The idea that man is the link between Heaven and Earth, the spiritual and material



worlds, was central to both the Eastern and Western philosophical traditions, including the esoteric teachings of ancient Babylon and Egypt. For a while, it was lost in the European region thanks to the spread of the so-called "Copernican Revolution". By denying the earth's prominent position in cosmic dynamics, Copernicus began a tradition that influenced scientific thought for four centuries.

From the standpoint of conventional astronomy, our planet can indeed be considered as the most ordinary astronomical object out of a huge number of similar planets that orbit stars like the Sun in other galaxies. However, Earth is not just a planet, but a home for humanity and other species that are atypical of many astronomical bodies. For the existence of all biological diversity, including the existence of man and the thinking spirit or mind associated with him, certain favorable conditions and special factors are required, which in a certain sense testifies to the atypical nature of our position in the universe.

In classical science at the end of the 19th century, the English scientist Alfred Wallace made an attempt to reconsider the problem of man's place in the universe, but this time from an anti-Copernican position. In fact, he re-substantiates the previously existing concept of astronomical anthropocentrism, looks for arguments in its favor and draws conclusions in which the basic idea of the anthropic principle can be easily seen: "Man is the crown of conscious organic life could have developed here on Earth only with the presence of this monstrously vast material universe that we see around us" [3, p.286].

The European scientific community began to address the theme of the unity of the Macrocosm and the Microcosm much later, towards the end of the 20th century, thanks to the efforts of two scientists, Robert H. Dicke and Brandon Carter.

Brandon Carter formalized this idea in his paper "Large Number Coincidences and the Anthropic Principle in Cosmology," which he delivered at the International Astronomical Union Symposium in Krakow (Poland) in 1973. In this report, the author contrasted the "Copernican principle" with his "anthropic principle" as a qualitatively new approach to solving the problems of physics and cosmology of the 20th century. The essence of this new approach is to take into account the fact of the existence of



humanity in the analysis of the physical and cosmological properties of the universe. In the same report, Carter introduced two versions of the anthropic principle: "weak" and "strong," the distinction between which later became standard practice. The first indicates the limitation of the conditions necessary for the existence of the observer, the second – the position of our planet in the Universe, on which the conditions that led to the appearance of the observer were realized [4, p.291-292].

In the years that followed, physicists and astronomers began to actively and fruitfully develop cosmological versions of the anthropic principle, known to us from the formulation of B. Carter, among which the idea of the Multiverse, the cosmological infinity of worlds, in which the existence of our universe is no longer a mystery, began to enjoy the greatest authority.

The third stage in the development of the debate over the anthropic principle was the so-called accomplice principle put forward by John Wheeler. From the standpoint of the participatory principle, the anthropic approach turns out to be insurmountable. The role of man, the observer, in the structure of the universe, according to this principle, is immeasurably greater than previously thought. In this way, not only the object, but also the subjective aspect is introduced into the anthropic principle, and it acquires a meaning different from the non-quantum anthropic principle. Wheeler asks a question of fundamental importance not only for cosmology but also for quantum ideas themselves: "By giving rise to the participating observers at some limited stage of its existence, does not the universe in turn acquire through their observations that tangibility which we call reality? Isn't this a mechanism of existence?" [5,p.202-247]. The answers to these questions, the scientist notes, are beyond the scope of today's capabilities. We have no idea, Wheeler observes, what to do in an extreme situation where a very large number of observers and a very large number of observations are at play. You'd think we'd only understand how simple the universe is for the first time when we know how strange it is.

The next important stage in the history of the anthropic principle is considered to be the publication in 1986 of the monograph J.D. Barrow and F.J. Tipler "The Anthropic Cosmological Principle"[6], where the final, eschatological version was



presented. If the first three versions sought to answer the question: why the modern universe is the way it is, what is the fundamental role of the observer in determining its existence, then the fourth or final one deals with a number of problems: a) what is the physical structure of the future universe from the point of view of the possibility of unlimited continuation of the process of intelligent life in it; (b) what is the active role of the mind in influencing the large-scale properties of the universe to enable the continuation of life; c) in what qualitative certainty the Universe and life itself reach at the final point of the evolution of the system: the physical Universe + intelligent post-humanity.

This work aroused great interest in the scientific community, as well as numerous discussions on the pages of major scientific, philosophical and even religious publications.

In essence, the concepts of Tiplers and Wheelers are modifications of the strong anthropic principle, thanks to which the anthropic principle began to be interpreted within the framework of a particular philosophical and philosophical tradition. Going to the philosophical level was quite logical, because it was at this level that "anthropic arguments" arose, and only then some of them were used to give "anthropic features" to other levels of comprehension of this phenomenon.

Finally, the theological anthropic principle or the principle of expediency was proposed, the author of which is I.L. Rosenthal, who bases his explanation of the relationship between the fundamental constants and forms of matter – both at the micro level and for complex forms of matter and life – on the thesis of the "deep purposefulness and harmony of physical laws" that ensure the existence of the basic stable states of matter (nuclei of atoms, atoms, stars, galaxies) [7, p.115-116].

Here I would like to draw the reader's attention to the etymological connection between the concepts of "holon" or "whole" and the concept of "goal" (according to the Greek telos – accomplishment, completion; end, highest point, limit, goal; teleios – complete, complete, accomplished, final, perfect). As we can see, the achievement of the goal at the same time means the completion of the action, the closing of the circle, the acquisition of completeness, perfection, beauty, and therefore wholeness.



This is a very important point in understanding holism. We do not know whether I.L. Rosenthal understood this when he worked on his theory.

At present, these issues have been analyzed in a fairly extensive literature, the incomplete bibliography of which includes more than 350 titles. There are several reasons why there is so much attention to this topic. First, the anthropic principle embodied the answer to one of the age-old philosophical problems about the relationship between man and the universe. Secondly, the anthropic principle sheds new light on the problem of the nature of the universe itself.

Further development of discussions about the nature of the universe and man's place in it has taken the scientific community to qualitatively new levels. With renewed enthusiasm, scientists began to look for solutions to topical problems of natural science and philosophy: the problem of reducing entropy in developing systems, the problem of the direction of time, the problem of black holes, the pulsating universe, and finally the problems of consciousness and free will, which logically leads to the development of the ethical and aesthetic aspect of the anthropic principle.

The discussion called the "anthropic principle in cosmology", which arose at the end of the 20th century, became an object of interest for several decades of many specialists from various fields of science. It can be said that at this time there was a real anthropological turn, the action of which has not yet been completed and promises us many more interesting findings, theories and concepts.

Already the beginning of the 21st century was marked by an increase in interest in the problem of the nature of consciousness, the problem of the relationship between consciousness and the brain, the study of the human brain, which led to the emergence of modern neural networks and new problems associated with the growth of research in the field of artificial intelligence. However, there is another theory at the origins of these discoveries, which should be recalled in this article.



7.3. David Bohm's Implicate Order.

David Bohm is an English physicist, a member of the Royal Society of London, known for his work on quantum physics, philosophy, and neuropsychology. In 1980, he published his book *Wholeness and the Implicate Order*, which outlined the theory of implicate order. The point of this book is to show readers and the scientific community how implied potentials unfold from a universal, undisturbed field into clear phenomena before collapsing again. This approach has provided a valuable new interpretation of quantum mechanics and the basis for the emergence of new ideas not only in physics, but also in a number of other fields.

For many years, Professor Bohm was particularly interested in the hidden philosophical meaning of quantum physics and the theory of relativity, and the problem of creating a metaphor that could clarify their meaning to the general public, who were not familiar with the mysteries of higher mathematics. He felt that this was important because the mechanistic worldview that now dominates modern science and society has led to a state of increasing fragmentation, both within the personal experience of human beings and in society as a whole.

The scientist notes that by now the mechanistic worldview has reached its most complete development in physics, especially during the 19th century, when its triumph seemed almost complete. From physics, mechanism—that is, the mechanistic relation—spread to other sciences and to almost all spheres of human activity.

In comparing the holistic and mechanistic paradigms, Bohm draws our attention to the fact that in the mechanistic paradigm the world is reduced to a collection of basic elements, such as atoms, electrons, protons, quarks, and so on. To these may be added various kinds of fields that extend continuously in space, such as electromagnetic and gravitational. These elements are fundamentally external to each other, not only in that they are that they are separated in space, but more importantly, in the sense that the fundamental nature of each is independent of the fundamental nature of its neighbor.

This means that their interaction is external, without affecting their internal nature. Therefore, the mechanistic paradigm was mainly concerned with systems and



developed a systems approach to their study.

An important step in the transition from a mechanistic to a holistic worldview was Einstein's theory of relativity, on the basis of which the scientist proposed a set of continuous fields that permeate all space, in which particles are considered as relatively constant and independent structures in those limited regions where the field is strong. Hence, each particle is explained as an abstraction of a relatively independent and stable form, and the universe is seen as an unbroken wholeness in current motion. The universal field was seen here as a type of mechanical system, more subtle than a collection of particles, but the field approach was still an important step away from the mechanistic worldview, although it remained within its general scheme.

A more effective turn towards holism was made by quantum theory. First of all, all the action in it takes place in the form of what are called "discrete quanta". Second, it has been discovered that all matter and energy appear to have a dual nature—in the sense that they can behave either as a particle or as a field—or wave—according to how they are treated in experiment.

The fact that everything can be either wave-like or corpuscular according to the medium, which in this case is the observational apparatus, is understandably incompatible with mechanism, since in mechanism the nature of each thing must be fairly independent of its context. And this is quite similar to an organism, because organisms are very dependent on their context[9].

And finally, the phenomenon of non-locality. As it turns out, in some cases, there can be a connection between particles that are at a considerable distance. This violates the classical requirement of locality, according to which only things that are close to each other can affect each other. All three of these propositions of quantum physics completely reject mechanism as both a paradigm and a type of thinking.

Reflecting on the phenomenon of non-locality, which contradicts not only common sense, but also Einstein's theory of relativity, which imposes strict limits on the speed of propagation of interactions, David Bohm came to the conclusion that elementary particles interact at any distance not because they exchange mysterious signals with each other, but because their "separation" is an illusion. In other words, at



some deeper level of reality, interlocking particles are not separate objects at all, but are actually extensions of something more fundamental and whole. The scientist came to this conclusion by observing the effect of holography[10].

Nonlocality indicates that all objects and processes in the universe are interconnected and part of the whole. This is the essence of the holism of modern physics. Quantum physicist Henry Stapp described the discovery as perhaps the most significant in all of science. Not only microscopic, but also enormous domains are non-local. Cosmologists Menas Kafatos and Robert Nadeau A number of works have been devoted to the study of nonlocal properties of space: «The Conscious Universe»(1990), «The Non-Local Universe: The New Physics and Matters of the Mind» (1999), «The Conscious Universe: Parts and Wholes in Physical Reality»(2013)[12].

But what's most interesting is that the scientists who founded quantum mechanics – such as Schrödinger, Dirac, Pauli and others – all understood this. Over time, however, this understanding faded as physicists increasingly focused on using quantum mechanics as a system for calculating experimental results, and each time a new textbook was written, some of the philosophical significance of quantum theory was lost. So now we have a situation where most physicists don't realize how radical the meaning of quantum mechanics is.

David Bohm sees a way out of this situation in the unification of two theories – relativity and quantum – the theory of the hologram. He draws the attention of his readers and colleagues to the idea of the universal integrity of the universe, which unites both theories and builds on it in his reflections.

Taking the principle of the hologram as a method of modeling, the scientist explains to us the nature of reality as motion itself, in which information about the whole object is dynamically folded in each part of space, and then unfolded in an image.

According to David Bohm, the world as we know it is only one aspect of reality, its "explicit" or "unfolded" order. The matrix that generates it is the "hidden" (implicit) order, that is, as a rule, the sphere invisible to us, in which time and space are curled up. In order to understand the implicit order, Bohm considered it necessary to consider



consciousness as an integral component of the "holomotion" (the world as a hologram in dynamics), and therefore included it in the "unfolded" order.

In this way, consciousness and matter are interrelated and interdependent, but they have no causal connections on the "explicit" level of reality. They are nested projections of a higher reality that is neither matter nor consciousness in its pure form. Successful experiments gave Bohm's theory solidity, and Benoit Mandelbrot's fractal geometry, which describes the ordered chaos of nature, also demonstrated the "holographic" principle of the infinite embedding of self-similar structures into each other on the basis of very simple mathematical relations.

Most physicists are skeptical of Bohm's ideas, but there are some proponents, including Roger Penrose of the University of Oxford, the creator of the modern theory of black holes; Bernard d'Espagnat of the University of Paris, one of the leading authorities on the conceptual foundations of quantum theory; and Brian Josephson of the University of Cambridge, winner of the 1973 Nobel Prize in Physics. By the way, he believes that the *Hidden Order* Boma may one day lead to the inclusion of the concept of a Supreme Mind in the scientific model of the world[13].

David Bohm's work on universal wholeness and his assumptions about hidden order are already beginning to influence various disciplines. His ideas are the core of what is known as the "holographic paradigm." These ideas have provided a new way of understanding a large number of phenomena, ranging from some problems in quantum physics to health care, social organization, religion, and the processes in the human mind itself.

As an example, consider the philosophical hypothesis that the reality around us is a simulation (most often assumed to be a computer simulation). To make the simulation look realistic for the recipient, the program adapts to the recipient's perception, forming material objects, the mind and consciousness of the recipient. The main work in this area is considered to be the article by Nick Bostrom "Proof of Simulation", published in 2003[14].

As is well known, long before Bostrom, the most iconic philosophers in both Europe and Asia were interested in such ideas. In ancient Greece, Pythagoras founded



a school that studied the basic philosophical concept of the illusion of everything that exists and the reality of numbers and their infinite combinations, which form all the phenomena of observable existence. The idea that reality is nothing but illusion was put forward by the ancient Greek philosopher Plato, following Pythagoras, who came to the conclusion that only ideas are real, and other objects are only their shadows, reflections. Aristotle followed the same approach, but with the correction that ideas are expressed in material objects. In addition, the position of the illusory nature of the real world is one of the key ones in some religious and philosophical teachings, for example, in a number of Indian philosophical schools, within the framework of which the concept of maya is considered. Maya is the illusion of being, in particular, the everyday existence of a human being against the background of the existence of the Eternal Absolute (Brahman in Hinduism or Nirvana in Buddhism). The same idea can be found in the Taoist masterpiece "The Butterfly's Dream", which belongs to the pen of Chuang Tzing.

In our time, the simulation hypothesis has long gone beyond the boundaries of philosophical judgments, and the question of an objective description of the world, that is, independent of human presence, perception, will, and desire – the main criterion of scientific nature – has recently not only aroused the curiosity of physicists, but has also been taken quite seriously.

Since the beginning of the 21st century, the Western scientific community has been actively discussing Eric Verlinde's theory of gravitation, based on the same principle of the hologram that was first formulated by D. Bohm. In Verlinde's theory, gravity is explained by the difference in the density of entropy in the space between the two bodies and in the surrounding space. The attraction of two macroscopic bodies (and the inverse square law) is explained by the increase in total entropy with a decrease in the distance between the bodies. i.e., the transition of the system to a more probable (realized by a greater number of microstates) macrostate[15].

According to this theory, all the bits of information that describe our reality can be encoded in the very structure of space-time. This theory obeys the Second Law of Thermodynamics, and also relies on string theory, black hole theory, and quantum



information theory.

Apparently, this theory inspired Melvin Wopson, professor of information physics at the University of Portsmouth, who called the law he discovered "The Second Law of Information Dynamics". Based on this law, the scientist developed quantum information theory, in which he proposed to consider information as another form of matter, as a fundamental block of the universe, and even published an experimental protocol that allows you to test the simulation hypothesis.

The article has sparked heated debate and even confusion among some physicists, as well as traditional skepticism. However, the recent scientific development of information physics—the principle of equivalence of mass, energy, and information, which in turn follows from Rolf Landauer¹⁰'s principle—does not rule out the possibility of an artificially simulated universe.

The Law of Infodynamics is based on the concept of entropy (a measure of disorder that increases over time in an isolated system), but unlike the Second Law of Thermodynamics, the entropy of systems containing information states must remain constant or decrease over time. In other words, the average amount of information transmitted by an event should tend to a minimum value.

In his article, Wopson describes the application of this law not only to digital information, but also to atomic physics, genetics, mathematical symmetries, and cosmology, and provides scientific evidence that supports the hypothesis of artificial reality. According to the scientist, the Second Law of Information Dynamics opens up effective tools for scientific research at the intersection of physics and information science and a number of other sciences.

The main consequence of the Second Law of Infodynamics is the minimization of the information content associated with any event or process in the universe. If the physical entropy of the constantly expanding Universe tends to the maximum, then the informational entropy tends to the minimum value, which creates the balance of forces necessary for the operation of the super-complex structure of the Universe: «The main

¹⁰ A principle that states that **when one bit of information is lost in a computing system, a small amount of heat is generated in proportion to the temperature of the system.**



consequence of the second law of infodynamics is the minimisation of the information content associated with any event or process in the universe. This in turn means an optimisation of the information content, or the most effective data compression. Since the second law of infodynamics is a cosmological necessity, and appears to apply everywhere in the same way, it could be concluded that this indicates that the entire universe appears to be a simulated construct or a giant computer»[16].

It is also interesting that, according to Melvin Wopson's hypothesis, the mysterious dark matter, which accounts for about a quarter of the matter in the cosmos, is the information content of the Universe, the result of information processes occurring in its simulation. This form of matter does not interact with the electromagnetic field and is therefore inaccessible to direct observation. It manifests itself only as a gravitational influence on the surrounding galaxies, anomalously increasing the rotation speed of their outer regions. What's more, the new law answers one of science's most puzzling questions: Why does symmetry dominate the universe and not the other way around?

Wopson's research mathematically demonstrated that objects with high symmetry correspond to the least information entropy. Moreover, symmetry is not just a mathematical concept, it goes beyond the discipline, uniting mathematics, chemistry, biology, cosmology, genetics, physics and philosophy, because it is present at all scales, playing an important role in the structure and behavior of matter in the universe.

As we can see, the new paradigm that is developing before our eyes creatively unites all the achievements of modern science with a philosophical foundation, which will make it understood and accepted by different groups of scientists, sometimes opposing each other in their ideological beliefs.

Findings.

Throughout history, there has been a succession of worldviews, i.e., general ideas about the cosmic order and the nature of reality as a Whole. Each of these views



expressed the essence of the spirit of its time, and each, in turn, had a profound effect on the individual and on society as a whole, not only physically, but also psychologically and ethically. These influences were by nature manifold, but among them all one of the most significant was the idea of a universal order which the ancient philosophers called Harmony.

Despite the time and geographical barriers, all the concepts presented by us are united by the understanding of the World in which we live as a single integral organism or Holon, in which everything is interconnected with each other, everything interacts with each other and everything complements each other. This is the key idea of holism, and it is now shared by many scholars in different countries.

"Everything" is an extremely abstract concept, expressing an integrated Wholeness, the highest degree of unification of everything, without exception, an exhaustive embrace of every conceivable object. Abstracting from the properties and relations of a multitude of material, ideal objects and subjects, the concept of "All" is identical with the concept of "Absolute." However, not all philosophers who think in this way go so far. However, just as with the concept of "one", "beginning" or "first principle", "foundation", "cause" or "first cause", "totality", "wholeness", etc. All these categories are synonymous and are actively used in the holistic concept, but not all authors who develop the ideas of holism refer to them. Do they consider them unscientific or extra-scientific? Let's leave this question open. The task of the holistic paradigm is to unite all parts of universal human knowledge into a single harmonious and consistent picture of the world, which would be able to form the same worldview and perception of the younger generation through the education system[17].

“According to the holistic concept, life is one and every being (holon) is characterized not only by the subtlest internal homeostasis, but also by elusive and innumerable connections with all other holons and with the entire Whole. Man as a thinking creature plays an important role in this finely tuned interaction of everything with everything, which is why it is so important for him to have an adequate worldview and attitude that can be formed by means of modern science and education”[18].