

Energy and information as two components of material existence

A physical being resides in physical time (i.e., has temporality), resides in physical space (i.e., has topicality), does work in physical space and time (i.e., has energy), and obeys physical laws (i.e., described by the equations of physics). As already emphasized above, the concept of the material has a larger scope than the concept of the physical, because every physical event is material, but not every material event is physical due to the existence of a special kind of material events that are different from the events of the physical order.

We will call the non-physical material sphere of being informational. Information events, unlike physical ones, are not localized in physical space, do not have physical energy and are described by laws that cannot be reduced to the laws of physical existence, but, like physical ones, they have a temporal organization (localized in physical time).

The recognition of the material non-physical component of being is conditioned, firstly, by the need to explain mental phenomena within the framework of materialistic ontology, because, as shown above, idealistic theories of consciousness do not agree with the epistemological completeness of physics, and, secondly, by the impossibility of generating events by purely physical systems that have non-physical properties, because otherwise we come to a violation of the causal closure of the physical world.

By virtue of the principle of ontological inseparability, an informational (material non-physical) entity under no circumstances can exist in isolation from a physical entity, and, therefore, an informational (material non-physical) event occurs when and only when the corresponding material physical event occurs.

Information has physical and phenomenal aspects. D. Chalmers thinks in the same direction, arguing that “information (or at least some information) has two basic aspects - the physical aspect and the phenomenal aspect. This proposition has the status of a fundamental principle that can underlie the explanation of the origin of subjective experience from a physical process. The physical aspect of information characterizes it quantitatively and represents a measure of the difference in the probabilistic description of the states inherent in the considered material system.

The phenomenal aspect of information characterizes it qualitatively and represents information (data) of a non-physical nature that exists on a physical carrier in the form of a representative code and correlates with processes of a physical order.

Within the framework of this information theory of consciousness, “the concept of information is taken in the sense generally accepted in science (proposed by N. Wiener) - as “message content”, “signal content””.

Information data arises, is stored and destroyed as a result of changes in the physical medium, and therefore they exist in time, but spatial localization is not inherent in them, since they are not identical to the physical medium, but correlate with it as with a coding structure. There is a physical carrier of information data in space, for example, a book or a computer hard drive, but the information data itself is not reduced either to the structure of ink on paper or to the distribution of charge in the semiconductors of a microcircuit.

Information exists at a certain time, but not in a certain place, because in a certain place you can find only a physical system that encodes information, but not the information data itself as such. In addition, information does not have energy, since, due to the principle of causal closure of the physical world, any energy-intensive action is performed by a physical entity, but not an informational one. You can throw an information data carrier at a wall and transfer momentum and energy to it, but you cannot throw the information data itself at the wall in order to achieve an energy effect.

In the physical space-time, the physical carrier of information data operates, and not the information data itself as such, because otherwise some physical events have non-physical (informational) causes. In other words, to explain one physical event, it is enough to appeal to other physical events and the laws of physical existence without the need to include special events of a non-physical (informational) order in their causal chains.

The principles of the causal closure of the physical world and the epistemological completeness of physics cast doubt on the existence of information in the phenomenal aspect, because it remains unclear how physical processes can be the cause of information (non-physical) states. In accordance with this point of view, information events are only a convenient and compact way of describing a large set of physical events and do not really exist by themselves.

“No one has yet seen either as a substance or as a property this mysterious information.... It does not exist in nature, just as fluids, phlogiston, ether, etc. do not exist.”

This means that the phenomenal aspect of information is reduced to the physical, and the semantic content of the message is reduced to syntactic structures that are implemented on a wider physical system than the material carrier of the message in question (for example, meaningful information recorded in a DNA molecule is reduced to a sequence of physical processes, which go beyond the DNA molecule itself and suggest the presence of the entire complex of physical structures of the cell).

Within the framework of the primary dualism of properties of the correlative type, information forms a single material whole with energy, which has an energy-informational nature. Therefore, we can talk about the energy-information principle, which is that any change in energy states is accompanied by changes in the states of the information order, and any change in information states is accompanied by changes in the states of the energy order. There is no information without energy, and there is no energy without information. Any material event is an energy-informational whole that has two sides of being - physical and informational.

At the same time, the informational being, unlike the physical one, is not localized in space, does not have energy and is described by laws that cannot be reduced to the laws of physical existence, but, like the physical being, is localized in time. Therefore, the two sides of material existence - physical and informational - are combined into a single material whole by the common attributive quality of temporality.

To overcome the descriptive and the ontological gap between physical and mental phenomena in ontologically unified Universe, it is necessary to create a “conceptual bridge” between two systems of concepts that do not have direct logical connections between themselves (mass,

energy, etc., in which physical processes are described, and meaning, value, purpose, will, etc. which describe the phenomena of consciousness .

The information that, on the one hand, on the other hand, it is described quantitatively as a measure of the orderliness of physical systems, and, on the other hand, it contains a qualitative aspect related to the content of information data.

The energy-informational principle within the framework of the primary dualism of properties of the correlative type makes it possible to cope with the anti-materialistic argument of the conceivability of zombies, which was put forward by the British philosopher R. Kirk in his article ("Sentience and Behavior"), indicating that "there is at least a logical possibility of the existence of an organism that is completely indistinguishable from a person in relation to anatomy, behavior, and other observable facts, but without consciousness."

The zombie argument can be decomposed into the following logical components: 1) the existence of zombies (i.e. beings physically identical to humans, but without a subjectively experienced inner life) is conceivable because it does not contradict the laws of physical science, and moreover 2) physical science can explain only the existence of zombies, but not creatures that have a subjectively experienced inner life that is not reduced to processes of the physical order, and since 3) beings with consciousness obviously exist, due to the fact that 4) the truth of reductive materialism implies the possibility explaining the ontological basis of any phenomena occurring in the Universe, based on the physical laws that govern the interaction of material particles and fields, then we must admit that 5) reductive materialism is false.

The primary dualism of properties of the correlative type, based on the energy-informational principle, undermines the fourth logical component of the zombie conceivability argument, denying the thesis according to which the ontological basis of any phenomena occurring in the Universe can be explained on the basis of physical laws governing the interaction of material particles and fields , because mental events are not derived a priori from events of a physical order, and the features of their being are established a posteriori as a result of tracking the correlative relationships between external and internal knowledge.

Strictly speaking, the existence of unconscious zombies is neither metaphysically nor conceptually unacceptable, since the reproduction of the physical constitution by virtue of the energy-information principle necessarily entails the reproduction of information states that correlate with the reproduced physical system.

A number of philosophical concepts that use an informational approach to understanding the phenomenon of consciousness state that physical (neurophysiological, biochemical and bioelectrical) processes encode the phenomenal content of mental experiences. However, the coding structure is not identical to the entity being encoded, because otherwise the code ceases to be a proper code pointing to something different from itself, and therefore the mental entity is not identical to the physical one, which is connected with it by code dependence relations.

If physical events are a code by which mental events are encoded in the neural networks of the brain, and at the same time mental and physical events do not coincide in essence, then this means that they go in an ontological link as two sides of a single material process. Moreover, one of the sides, the physical one, has the ability for energy action, while the other, the mental one,

does not have this ability and simply follows, like a shadow, the first one, being its ontological correlate.

The set of information data that exists on a physical medium in the form of an information code, due to its passive (an-energetic) nature, plays not a constitutive (defining), but a constative (representing) role, i.e. it does not constitute (sets, produces, generates, determines) the main parameters and properties of the surrounding world (for example, the value of fundamental constants, the number of spatial dimensions or the parameters of physical interactions), but only states (fixes, testifies, expresses, reflects) their energy realization in the form of material processes, which excludes the substantial dualism of the Cartesian type or Platonic idealism, which allows for the autonomous existence of ideal (informational) entities.

Thus, information is opposed to energy ontologically and phenomenologically (ie, in terms of being and essence) as an element of the surrounding world that cannot be reduced to it. On this occasion, the American philosopher and mathematician, the founder of cybernetics and the theory of artificial intelligence N. Wiener aptly remarks: "Information is not matter or energy, information is information. That materialism which does not recognize this cannot be viable at the present time."

True, here N. Wiener understands matter purely physically, identifying it with energy, and therefore contrasts matter and information, while in the theoretical model under consideration, energy does not exhaust all material existence, but is its integral component. Ideal and physical realities objectively coexist together, since physical reality alone, due to the principle of epistemological completeness of physics and the causal closure of the physical world, is not enough to give rise to all the variety of observed processes.

Ideal reality exists objectively, independently of the activity of sonania, and is just as important a component of reality as physical reality. It arises as a result of the interaction of objects (or processes) of physical reality and manifests itself as a reflection of the properties of some objects (or processes) in the structure of other objects (or processes).

In order to separate the concepts of energy and information in relation to their ontological status, we introduce two levels of being of being: 1) endophenomenal and 2) exophenomenal. At the endophenomenal level of being, the existent has an internal phenomenology, i.e. has qualities that do not appear and are not manifested outside the entity in question in its physical interaction with another entity. No manipulations with the surrounding entity do not necessarily allow us to conclude from the effects produced that the entity under consideration has endophenomenal qualities.

In this sense, the subjective experience of the experiencing subject is an endophenomenon, since no external behavioral reactions or neural processes occurring in the brain make it necessary to conclude that there is an internal subjective life, if the researcher himself does not possess the corresponding endophenomenal qualities, i.e. e. does not experience them from the inside, which gives him the opportunity to conclude by analogy about the correlative relationship between the organization of the physical body and the presence of mental phenomena.

At the exophenomenal level of being, a material being has an external phenomenology, i.e. has qualities that are manifested and manifested outside the entity in question in its physical

interaction with another material entity. Manipulations with the surrounding world make it necessary to conclude from the effects produced about the presence of exophenomenal qualities in the entity under consideration. For example, the electric charge of elementary particles refers to exophenomenal qualities, since its presence can be necessarily concluded by observing the behavior of other elementary particles near the considered particles, which also have an electric charge.

However, no matter how much we peer into human behavior and study it using the methods of objective sciences, we will not be able to find anything else on the exophenomenal level of being, except for complexly organized energy processes that occur in the physical body and are known from the outside.

In accordance with this classification, a physical being is an exophenomenon, which is something definite only insofar as it manifests itself in interaction with another being, and an informational being is an endophenomenon, the essential certainty of which is not reduced to the interaction of a physical carrier with another physical being. An elementary particle is exactly what it is at the physical level of being, only in so far as it interacts with other elementary particles and it is meaningless to speak of it as an existing material entity outside of physical interaction. For example, the mass of a body is determined only in interaction with accelerating accelerators, and the charge of a particle is determined in electromagnetic interaction with other charged particles.

The energy density of the electromagnetic field is calculated by integrating the potential energy of interaction between all charges distributed in space, and accordingly, if there is only one point charge, then the electromagnetic field created by it does not have energy, since it does not participate in any electromagnetic interaction.

According to modern scientific concepts, the electromagnetic interaction between charges is carried out due to the exchange of virtual photons (unlike real photons, which ensure the transfer of energy and momentum in an electromagnetic wave), and, therefore, it is meaningless to talk about the electromagnetic field of a point charge, around which there is no exchange of virtual photons. In other words, a point charge that does not interact with other charges does not have an electromagnetic field, and along with it, the electric charge itself is absent.

Thus, a physical quantity is not simply manifested through physical interaction, but exists if and only if physical interaction occurs, just as it is meaningless to talk about the movement of a body in absolute emptiness (i.e., outside the energy-information interaction with other moving bodies)

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It follows that matter is a system of relations between physical objects. At the same time, the physical (external) side of matter, determined by the interaction of physical objects, turns out to be not self-sufficient, because if what enters into causal relations is reduced to a system of these relations and does not contain any ontological substrate, then we get a mathematical abstraction (as this happens, for example, in an ideal geometric space, where each point is essentially a system of relations with other spatial points) and we lose physical reality.

To preserve the latter, we must recognize the existence of a non-physical (internal) side of matter, which fills the interacting elements with content and does not allow them to degenerate

into a system of essentially empty abstract relations. This inner side of material existence within the framework of the primary dualism of properties of the correlative type is identified with informational data, which, by virtue of the energy-information principle, accompany any physical event.

Thus, information ensures the existence of a physical being as a coding structure, regardless of the system of relations with other physical beings (which manifests itself in pure quantum states described by a wave function, in contrast to mixed quantum states described by a density matrix).

This means that information should be understood attributively as an integral component of material existence, which in its phenomenal content correlates with the energy state of the material carrier.

Information data as such are not identical to the properties of the physical carrier (which are determined by the configuration of the constituent elements and their quantitative parameters), and therefore we can talk about the endophenomenal content of information that is not reducible to the phenomenology of a physical being (i.e., to its essential exophenomenal characteristics).

Information itself is not a physical object, but belongs to the world of ideal reality. Although, of course, for its manifestation, information needs objects (or processes) of physical reality, which serve as its carriers.

If a physical entity is outside the system of relations with another physical entity, then it retains its existence as a code that correlates with information data about its material existence, which has an internal essence determined by a possible (potential) interaction with another physical entity. Accordingly, a point charge that does not interact with other charges creates an electromagnetic field around itself at the level of possible (potential) being.

Energy information events have two main structural levels: 1) encoding and 2) encoded. Encoding (code) is a carrier of information that is correlatively associated with information data. What is encoded is information that is associated with the encoding medium as an informational correlate. The correlation between the coding carrier and the encoded content is heterogeneous, since they belong to different ontological levels (the coding carrier belongs to the exophenomenal level of material existence, and the encoded content belongs to the endophenomenal level of material existence).

Most of the information theories that exist today (statistical, combinatorial, dynamic, topological, algorithmic, etc.) consider it in the physical aspect and do not touch upon the phenomenal aspect, which cannot be expressed quantitatively in the form of mathematical equations and formulas. Attempts to include the phenomenal aspect of information in the modern scientific picture of the world are usually associated with decoding processes, which are the translation of one (coding) sequence of characters into another (encoded).

For example, in a DNA molecule, the coding sequence of symbols is the sequence of nucleotides, and the encoded sequence is the sequence of amino acids.

In modern philosophy, there are three main approaches to understanding the genetic status of information - attributive, functional anthropocentric.

According to the attributive approach, information is an attribute of material existence and is inherent in all physical systems.

Understanding information through reflected diversity, information acts as a universal property of matter, because both diversity and reflection are attributes of matter, i.e. inalienable properties of inanimate, living nature and society.

Information, in the broad sense of this term, is an objective property of reality, which manifests itself in the heterogeneity (asymmetry) of the distribution of matter and energy in space and time, in the uneven flow of all processes occurring in the world of animate and inanimate nature, as well as in human society and consciousness.

This definition concerns physical information, while ideal information needs a special discussion. In other words, attributivists of a materialistic persuasion ascribe to matter at its most elementary levels of organization only informational states of a physical type, but in no way phenomenal.

According to the functional approach, information is a mode of material existence and occurs only at a certain level of structural and functional organization of physical systems. The functional-informational level is typical for biological, social, and also artificially created technical systems that have the property of self-government, but are not inherent in simple physical systems of natural origin.

Information is such a reproduction by one system of the structure (diversity, etc.) of another, in which it is functionally distinguished and included by the reflecting system in the processes of management, life and practice. Representatives of the functional approach consider information already in a phenomenal aspect "as the content of a signal or message, as a designation of content received from the outside world, as designating something impact, but in fact they simply identify information and a signal, because a signal cannot be meaningless, and information cannot have no material carrier.

According to the anthropocentric approach, information is produced only by the human community and does not exist outside social systems. Information refers to the display in the human mind of knowledge and facts (information, data) used or encountered in various areas of human activity.

Information "is knowledge, messages, information about the social form of the movement of matter and about all its other forms to the extent that they are used by society, a person, are involved in the orbit of social life."

However, the anthropocentric approach eliminates information of natural origin and, in particular, its inherent shortcomings "are that within its framework it is impossible to find an adequate explanation of the genetic information of living nature."

According to this point of view, information does not exist outside the linguistic environment and self-consciousness, therefore, neither cybernetic systems nor living systems, which are not inherent in higher forms of consciousness, possess informational states. For example, the informational text of DNA is such only within the framework of human knowledge, but the DNA molecule itself does not contain any information, because it is identical to a complex

physical structure that interacts with other elements of the cell in accordance with physical laws, and no other properties other than physical, it is not inherent.

The first two approaches, in fact, do not contradict each other, but pay attention to different aspects of information: the attributive approach pays attention to the physical aspect of information (as reduced uncertainty), and the functional approach pays attention to the phenomenal aspect of information (as the content of transmitted messages). The physical aspect of information, being related to the physical characteristics of material systems, is obviously inherent in all material systems, regardless of the complexity of their structural and functional organization.

The third approach, like the second one, considers information in a phenomenal aspect, but contradicts both the first and second ones, because it claims that the ideal content of transmitted messages does not exist outside of a person's thinking and his social activity.

In order to make the classification of information states described above in relation to genetic status more complete and adequate, it is necessary to divide the attributive approach into weak and strong. The weak attributive approach states that only physical information is initially inherent in material systems. In accordance with the strong attributive approach, material systems initially have information states not only in the physical aspect, but also in the phenomenal one.

Objective reality has the property of dualism, since it simultaneously includes both physical and ideal reality, which have the properties of mutual reflection. As a result of this, that amazing and in many respects not yet known phenomenon arises, which we call information.

The strong attributivism of information includes the naturalistic dualism of D. Chalmers, the theory of integrated information of D. Tononi, the theory of perceptronium of M. Tegmark, the theory of quantum interactive dualism of G. Stepp and the theory of quantum neurocomputing of Hameroff-Penrose.

Concepts of consciousness that attribute non-physical properties to matter, from which properties of a mental nature can be obtained in the process of evolution, are reproached for the logical and conceptual isolation of causes and effects, since the basis of reasoning is a concept that initially needs a constructive explanation.

For example, A. Shimoni, Professor of Philosophy and Physics at Boston University, criticizing R. Penrose, who adheres to a panprotopsyche point of view, notes that in his concept of mental being, "the formulation of a problem is declared to be its solution."

However, neither weak attributive, nor functional, nor anthropocentric approaches make it possible to explain the emergence of the endophenomenal content of information states (in particular, mental phenomena), since physical systems, due to the principle of causal closure of the physical world, can only generate code dependencies that are determined by the interaction of physical elements and do not initially contain any phenomenal content.

But then neither consciousness, nor subjective experience, nor knowledge can exist, i.e., in particular, a reasonable and conscious person cannot exist, which contradicts our direct experience. If initially the simplest systems do not have phenomenal-informational states, then

the emergence of information in the phenomenal aspect turns out to be the same insoluble problem as the emergence of non-physical consciousness in the physical world.

In order to substantiate the strong attributivism of information in the phenomenal aspect, we consider two arguments, one of which we will call the argument from the absence of identity, and the second - the quantum mechanical argument.

The argument from non-identity is proof from the contrary. If we adhere to the functional approach, then information states in the phenomenal aspect are not inherent in elementary physical objects, but only physical properties, structures and configurations are inherent. However, then there are neither ontological nor logical grounds for isolating genetic information, because, being in DNA and RNA molecules, in principle, it is indistinguishable from their physical structure and the mutual arrangement of nucleotides that encode genetic information.

Rising to higher levels of organization of material systems, we come to the conclusion that consciousness is also not characterized by information in a phenomenal aspect, because, in principle, it is now indistinguishable from the physical structure of the neural circuits of the brain.

Thus, if the phenomenal aspect of information does not exist at the elementary level of physical existence, then it cannot arise at any arbitrarily higher level of organization of material systems due to the principle of causal closure of the physical world, because physical events themselves can generate only other physical events, but by no means phenomenal-informational, which are not actually physical.

Therefore, in order not to lose the phenomenal content of information data without violating the epistemological completeness of physics, it is necessary to recognize the truth of the attributive approach, according to which information, along with energy, is inherent in matter in general.

The quantum-mechanical argument refers to the fact that a weighty proof of the attribution of information is found in the modern quantum-mechanical picture of the world, which is based on a special ontology that is different from the ontology of classical reality. To explain the behavior of quantum objects, it was necessary to create a new conceptual system of concepts that allows building a consistent and coherent interpretation of a large array of empirical facts that do not fit into the framework of classical physics.

In the transition from classical to quantum ontology, the basic categories change, including the category of information. In classical physics, information has only one physical aspect, while in quantum physics it also acquires a phenomenal one, thanks to which physical objects can exchange not only energy, but also information in the sense of certain phenomenal data.

It is this phenomenal aspect of information that makes it possible to explain, outside the conceptual system of classical physics, many quantum effects associated primarily with the interference of probabilities and the nonlocal interaction of physical objects.

Consider a repeated experiment with quantum entangled states, which clearly demonstrates the existence of the phenomenal aspect of information at the elementary level of physical existence. Using certain technical manipulations, it is possible to prepare two elementary particles in a quantum-entangled state, separable in coordinate (i.e., located at different points in physical

space) and inseparable in spin (i.e., located in a superposition of two states with a spin directed "up" or "down").

After the elementary particles scatter in different directions and find themselves at a great distance from each other, we, acting on one of them, measure the spin. In this case, the physical properties of the second particle change instantly, and its spin passes from the superposed state to the classical one (i.e., acquires one of the values corresponding to the "up" or "down" direction).

From the point of view of classical physics, the superposition of states is not related to objectively existing physical processes, but to the lack of knowledge about the hidden parameters that strictly determine the physical quantity under consideration (in our experiment, the direction of the spin of an elementary particle), just like a probabilistic description of the behavior of a coin, falling on a smooth surface "heads" or "tails" up, is determined not by the structure of the physical world itself, but by our own insufficient knowledge of the initial characteristics of the tossed coin.

However, the Coshen-Specker theorem and the experimentally confirmed violation of Bell's inequalities convincingly prove that the uncertainty of quantum phenomena (in contrast to the uncertainty of classical phenomena) is not epistemological, but ontological in nature, i.e. is determined not by a lack of information about the initial conditions of the experiment, but by the very structure of the surrounding world.

Consequently, after the collapse of the wave function, when both quantum-entangled particles at the moment of measurement made on one of them pass from a superposition of two states into one specific state, not only does our knowledge of the physical parameters of the surrounding world change, but the surrounding world itself changes in their physical properties. In this case, the second particle is instantaneous, i.e. regardless of the distance to the first particle, "knows" that a measurement has been made over the spin of the first particle.

There can be no exchange of energy between the two considered particles, which contradicts the special theory of relativity, which states that no interaction is carried out at a speed greater than the speed of light. This means that interaction takes place between them on a different, non-physical (non-energy) basis, i.e. information-phenomenal level of being.

In this experiment, the second particle receives from the first not an energy signal (which cannot reach it due to the limitation imposed by the special theory of relativity), but informational data, i.e. she "learns" about the change in the physical state of her quantum-entangled partner and immediately reacts to this information data in the form of a change in her physical state.

As an example of information exchange between material systems without energy contact, we can cite the experiment of a negative result proposed by the German physicist Mauritsius Renninger. In accordance with this experiment, the source of elementary particles is surrounded by a sphere, the inner surface of which is covered with a light-sensitive substance. There is a hole in the sphere, and if a light flash does not appear on its inner surface after some time, this means that the elementary particle has flown through the hole.

As a result, the collapse of the wave function that describes the behavior of the elementary particle occurs and its physical properties change, although there was no energy interaction between the elementary particle and the light-sensitive sphere.

Usually, in the scientific literature, such non-local behavior is explained by the fact that micro-objects in a quantum-entangled state, before the act of measurement, are a single, inseparable whole, and therefore, in reality, no energy signal transmission occurs between them. However, the separability in coordinates still makes them non-identical micro-objects, because they are located in different regions of space and directly interact only with their local environment.

This means that information belonging to one physical system can be given to another physical system in its information-phenomenal content, and not only in terms of energy influence, as happens in classical ontology. Thus, philosophical reflection on the quantum mechanical picture of the world necessarily proves the existence of a special non-physical component in the interaction of elementary particles.

It is this non-physical component that is information in the phenomenal aspect, due to which many quantum effects are explained that cannot be explained within the framework of classical physics.

Within the framework of the attributive concept of information, only syntactic properties can be attributed. According to the functional concept, it has not only syntactic, but also semantic properties (content, meaning, value indication) and pragmatic properties (the ability to express a causal action, its purpose, serve as a control factor).

Any information has two aspects - syntactic (physical) and semantic (phenomenal). Information, which has only one syntactic aspect, is not information itself (as a real-life phenomenon), since it is completely reduced to the interaction of physical structures. It should be understood that the semantic component of information can belong to different ontological levels.

The semantic component of the lowest ontological level is inherent in elementary physical systems and represents information data about the physical parameters of the system under consideration, such as mass, charge, energy and momentum. If we assert that such an elementary level of information does not exist and that in this case it is indistinguishable from the properties, location, structure and state of objects, then the argument from the absence of identity is triggered and, as a result, the entire sphere of internally experienced mental phenomena is eliminated.

In order to preserve the phenomenological premise, without losing the phenomenal content of information data, and the materialistic principle, not allowing the existence of non-material (spiritual) forces that determine the existence of a material being, it is necessary to dwell on the attributive approach, according to which information is inherent in matter in general.

The attributive approach is consistent with the energy-information principle, which asserts that any material being has exophenomenal (physical) and endophenomenal (informational) sides of being. There are no changes in the energy states of a material system that would not be accompanied by a change in its information states, and there are no changes in the information states of a material system that would not be accompanied by a change in its energy states.

In the above experiment, a change in the informational state of the wave function that describes an inseparable superposition of the spin of two quantum-entangled particles entails a change in the energy state of the second particle, as a result of which the quantum world passes into the classical one.

Information is suitable for the role of the ontological basis of consciousness, and, accordingly, mental phenomena can be considered as modes of informational existence, since the existence of information does not contradict two main premises (phenomenological and causal).

First, the existence of information satisfies the phenomenological premise, since information in its phenomenal content is not identified with the structures and properties of the physical carrier. Understanding the mental level of being as a special level of being of information systems is characteristic of modern cognitive science.

American psychologists P. Lindsay and D. Norman write: “We consider the human body as an active information converter, always striving to generalize and interpret incoming sensory data, to interpret and restore information stored in memory, using various algorithms and strategies . First of all, we are talking about the assumption that the human brain is an organ that processes cognitive information.

Consciousness is an emergent, informational property of a cognitive system, which, having absolutely no need for the mythical attributes of “ideality”, in principle cannot be reduced to its material substrate (for example, neuron networks of the brain, etc.), although, of course, depends on him.

The French neuroscientist S. Deane develops the theory of the neural workspace, according to which “consciousness is the transmission of a single information flow in the cerebral cortex: the basis of this process is a neural network, the meaning of the existence of which is reduced to the active transmission of relevant information within the brain.

It should be noted here that the informational approach to understanding mental experience is effective only when it takes into account the phenomenal aspect of information. If we use only the physical aspect of information in conceptual constructions, then it will not be possible to create a complete, exhaustive model of the psyche, because no actual physical processes, decomposable into functional components, will rise in the process of evolution to the level of internally experienced mental phenomena that have ontological unity and integrity, as pointed out by many critics of the informational approach to understanding consciousness.

In particular, the American expert in the field of artificial intelligence D. Weizenbaum shows that, within the framework of the informational approach, understanding a certain phenomenon is identical to writing a computer program that implements it, while any computer program is unable to model the ontological unity of consciousness.

The non-physical nature of information is easily detected by its phenomenal properties, which, in an obvious way, differ from the properties of physical objects, because, in comparison with the latter, it has neither mass, nor weight, nor momentum, nor charge, nor temperature, nor spatial dimensions. Therefore, if we understand consciousness as a form of informational existence,

then it is not reduced to physical (neurophysiological, biochemical and bioelectrical) processes occurring in the human brain, while maintaining a unique ontology of mental experiences.

Thus, a single material process associated with the activity of brain neural networks has two ontological components – exophenomenal (physical) and endophenomenal (informational), each of which has its own unique ontology. A similar point of view is shared by R. Penrose, B. Russell and D. Chalmers. According to the latter, subjective-mental phenomena are informational data enclosed in objective-physical patterns of the brain, i.e., in other words, “experience is information from within, physics is from outside”.

Subjective experience can be interpreted as information about a particular phenomenon of reality. The understanding of physical and mental being as two sides of the same material whole is characteristic of the ontological ideas of the famous physicist, the founder of quantum mechanics, W. Pauli, who writes: “It would be best if physics and the psyche could be understood as additional aspects of one and the same reality.”

Secondly, the existence of information satisfies the causal premise, since information, having a non-physical existence, correlates with physical processes, but at the same time does not in itself affect the latter, because other physical processes always act as their causes, and there is no need embed informational (non-physical) entities into the cause-and-effect chains of physical events and, accordingly, add informational (non-physical) quantities to physical equations (if we retain the content of phenomenal data for information, and do not reduce it to a physical characteristic of ordered systems with reduced entropy, as happens in the statistical information theory of K. Shannon).

Thus, information, being a correlate of physical processes, lies in the ontological basis of consciousness, due to which the mental level of being does not violate the principle of causal closure of the physical world.

In addition to the principle of ontological inseparability, information being is subject to two more basic principles: 1) the principle of invariance and 2) the principle of supervenience. The principle of invariance boils down to the fact that the same information data can exist on different material carriers, because different physical objects can have the same properties, which are expressed in the corresponding information data.

For example, any elementary particle carries information about its charge, spin and mass. Since the same charges, spins and masses can be inherent in different elementary particles, then, consequently, different physical objects acting as an information code can encode the same information data (for example, the same thermodynamic state of a gas can be due to different physical states of the molecules).

This state of affairs also applies to higher levels of information being, in contrast to the level associated with the properties of an exophenomenal nature, which are manifested in the interaction of physical objects. For example, the same genetic information is stored in many DNA molecules present in the cells of a living organism, and the same photograph can be recorded on different computer media.

However, the principle of invariance has a narrow meaning, since, despite the fact that individual information data can be implemented on different physical media, the latter remain non-identical in the entire set of information states that correlate with their states of the physical order.

The principle of supervenience follows from the principle of invariance and the principle of ontological inseparability, according to which information data is correlated with physical processes within the framework of a single material (energy-informational) entity. At the same time, any changes at the informational level of being are necessarily accompanied by corresponding changes at the physical level of being, but not all changes at the physical level of being are necessarily accompanied by corresponding changes at the informational level of being.

Strictly speaking, due to the energy-information principle, any changes in the information states of the material system as a whole lead to a change in its energy states, and any changes in the energy states of the material system as a whole lead to a change in its information states, but some part of the latter associated with the configuration physical elements and the causal relationships between them can remain unchanged.

Information is supervenient on a physical medium in the sense that the presence of differences in information data is impossible in the absence of differences in the physical properties of the medium, just as the presence of differences in a computer program is impossible in the absence of differences at the physical level of being in the hardware configuration of a computer. A certain physical state of a material being uniquely correlates with some information data, but at the same time, the same information data can correlate with different states of the physical carrier.

Since the state of the physical system depends on its interaction with the external environment, then two physically identical subjects will have non-identical mental experience in different environments, and in the same environment two physically non-identical subjects can have identical mental experience, which, as shown above, corresponds to the concept of externalist separatism.

Thus, the physical state of the brain unambiguously correlates with a certain mental experience, but a certain mental experience, in turn, can correlate with different physical states of the brain, which makes possible the identity of intentional states, firstly, in the same subject in different times, ensuring the unity of self-consciousness, and, secondly, in different subjects at the same time, ensuring the intersubjectivity of communication.

The initial interpretation of the supervenience of consciousness belongs to the American philosopher D. Davidson, who, trying to combine the determinism of physical being and the freedom of mental being, comes to the conclusion that mental properties are determined by physical properties, but at the same time they are not reduced to the latter and are not derived from them a priori. Therefore, physics cannot reveal the essence of psychological phenomena, but, nevertheless, the existence of the latter is identified with the existence of the neural networks of the brain.

According to the theoretical model of the primary dualism of properties of the correlative type, mental phenomena are not only in being, but also in essence are not identical to physical phenomena, and therefore the supervenience of consciousness is reduced to the fact that it has a

secondary character and is generated by processes of a material order within the framework of the correlation between mental and physical phenomena. events.

If we assume that the same physical processes can correlate with different mental phenomena, then this means that different encoded experiences can correspond to the same physical (neurophysiological, biochemical, and bioelectrical) code.

If two brains come to the same physical state in different ways, then, despite the physical identity, they are in different mental states, because the latter contain memories of the past, which they did not have identical. This leads to the conclusion that two physically identical subjects can have different mental experiences, and, consequently, the local supervenience of consciousness is violated.

However, due to the fact that information data does not play a constitutive (defining), but a constative (representing) role, i.e. do not constitute (set, produce, generate, determine) the main parameters and properties of the surrounding world, but only state (fix, testify, express, reflect) their energy realization in the form of physical processes, they must state the same phenomenal content with the equality of physical component of the material whole, and therefore the assumption in question is false.

The statement that one and the same brain, being in a certain state (structural and functional), can generate different mental experiences, does not fit into the physical picture of the world just as much as the statement that the same computer, which is in a certain state, does not fit into it. state (structural and functional), can perform various logical calculations.

If we assume that the same physical processes correlate with the same mental phenomena, then two subjects with identical bodies under identical conditions must behave in the same way, which indicates the identity of their mental experience.

But the mental experience of two subjects cannot be identical even if their physical carriers are identical in all respects, because in mental experience there is a moment of self-consciousness that cannot be copied due to the fact that self-consciousness is always personal and unique (private) self-consciousness, which implies the self-perception of oneself exactly here and now and precisely in this physical body, and not in any other.

If we assume that identical self-consciousness can reside in two different bodies, even if they are identical, then we deprive it of its own mental nature and reduce it to something physical, which is already developing our thought within the framework of the eliminativist theory, which contradicts the phenomenological premise.

This contradiction, as shown above, is removed due to the fact that in the Universe there are no two absolutely identical bodies, the physical state of which is non-local in nature and depends on the interaction not only with the surrounding objects, but also with the entire Universe as a whole.

Thus, the physical state of the brain unambiguously correlates with mental experience, but mental experience, in turn, can correlate with different physical states of the brain (due to which two physically identical subjects will have non-identical mental experience in different environments, since the same and the same physical structures, due to its physical influence, will

correlate with different mental experiences, and in the same environment, two physically non-identical subjects can have identical mental experiences, since, due to the supervenience of consciousness and the invariance of information data, different physical structures can correlate with the same mental experience).

Due to the supervenience of consciousness and the principle of invariance, which also applies to mental phenomena, if understood as modes of informational existence, the same mental experience can be experienced by different subjects or by the same subject at different times, which, in particular, ensures unity of the experiencing subject and the unity of the experienced world in the representative experience of different experiencing subjects, which cannot be explained from the standpoint of physicalism, which identifies mental properties with the properties of physical systems.

To date, there are many theories explaining how it becomes possible that complex physical systems give rise to subjective reality. All these theories, as shown above, can be divided into reductive and non-reductive. Reductive theories are of a physicalist nature and reduce mental phenomena in relation to a qualitative essence to objectively fixed processes of a physical order. Non-reductive theories are non-physicalist in nature and assert a unique ontology of mental phenomena, which is not reducible to the ontology of a physical being.

Reductive theories cope with the psychophysical problem, because if the mental being is a kind of physical being, then the interaction between the physical being and the mental is ultimately reduced to the interaction between different types of physical being. However, reductive theories experience difficulties in solving the ontological problem of consciousness, because they cannot explain mental properties that are inexpressible through the properties of the physical order.

Non-reductive theories, on the contrary, cope with the ontological problem of consciousness, since they allow material systems to have properties that are inexpressible through the properties of the physical order, but experience difficulties in solving the psychophysical problem, because the interaction between the physical being and the mental, which is no longer a kind of physical, violates the principles of the epistemological completeness of physics and the causal closure of the physical world.

Attempts to avoid a vicious circle and combine physicalism with the irreducible nature of mental phenomena include quantum theories of consciousness that identify mental properties with properties of the quantum order (which corresponds to the reductive point of view), but at the same time deny the possibility of a full description of the internally experienced qualitative content of mental events in physical terminology (which corresponds to the non-reductive point of view). Such theories are initially based on two inconsistent settings, which can lead to incoherent conclusions.

Strange as it may seem at first glance, R. Penrose's Platonism is combined with the position of radical physicalism, but "at the same time, the fundamental circumstance is pushed into the shadows that such physicalist optimism is incompatible with the interpretation of the mental as a purely belonging to the world of ideas.

Nevertheless, quantum theories of consciousness deserve attention, because, firstly, they are the most developed form of physicalism, which is consistent with the modern scientific picture of

the world, and secondly, they contain heuristic potentials for solving a number of problems related to the existence of mental phenomena, and , thirdly, can be restructured in such a way that, as a result, the difficulties associated with inconsistent basic settings disappear.

Within the framework of the scientific worldview, the reductive approach to understanding the phenomenon of consciousness is the most popular, because if we rely on materialistic positions and believe that physical processes lie at the ontological basis of the Universe, then we must admit that social phenomena are reduced to psychological, psychological - to biological, biological to chemical, and chemical to physical.

Since physical being is rooted in the being of micro-objects whose behavior is described by the laws of quantum mechanics, then the ultimate ontological basis of consciousness should be based on quantum mechanical laws, and the conceptual basis for understanding mental phenomena should be based on quantum mechanical concepts.

Quantum concepts of mental experience seem promising, because, as D. Chalmers notes in his report “Consciousness and the collapse of the wave function”, in a situation of causal closure of the physical world, “physics leaves a giant causal hole in the form of a collapse of the wave function”. In other words, using quantum effects, one can try to fit non-physical consciousness into the physical world without violating the epistemological completeness of physics.

Further analysis of quantum theories of consciousness is built on the basis of solving two main problems of the existence of mental phenomena: 1) a qualitative problem associated with the emergence and existence of internally experienced subjective phenomena of consciousness in a causally closed physical world (How does it become possible that physical systems give rise to non-physical consciousness, if causally -investigative chains of physical events do not contain anything non-physical?), and 2) a psychophysical problem caused by the interaction of consciousness and the body under the condition of epistemological completeness of physics (How does it become possible that non-physical consciousness affects the physical body, if it is enough to explain physical processes physical laws, properties and characteristics?).

The American psychologist, anesthesiologist and neurobiologist S. Hameroff and the British physicist and mathematician R. Penrose developed the quantum theory of consciousness (the theory of quantum neurocomputing), according to which quantum information processes in the neural microtubules of the brain play a key role in the occurrence of mental phenomena. Tubulins, proteins involved in the formation of the structure of neural microtubules, are the physical carriers of qubits, the smallest elements for storing information in a quantum computer.

S. Hameroff explains such localization of mental phenomena by the empirical fact, according to which anesthetics affect the physical structure of neuronal microtubules of the brain, causing loss of consciousness during anesthesia.

R. Penrose connects mental states with the phenomenon of objective reduction (OR), which is a spontaneous collapse of the wave function, not caused by interaction with the environment. According to R. Penrose, the basis of such a spontaneous choice of one of the superposed possibilities and the transition of quantum existence to the classical one are the effects of quantum gravity associated with the fundamental structure of space-time.

Tubulin tubules, which form the cytoskeleton of neurons, protect the quantum processes occurring inside them from premature decoherence under the influence of the external environment, which allocates enough time for objective reduction, which underlies the ontological basis of mental order phenomena.

R. Penrose writes about this: “In a system of micropipes, inside a neural network, large-scale quantum mechanical events can occur that form “intelligent events” from individual OR-possibilities. The required effective insulation can be provided by a layer of ordered water molecules on the walls of the tubes.”

Mental processes cannot be algorithmized in the classical sense, because they reflect the functioning of a neural quantum computer, the efficiency of which is much higher than computers of the classical type.

The study of neurophysiological processes in the human brain has shown that the speed of movement of the action potential along the nerve fiber and the time of synaptic transmission do not provide the real-life speed of the mechanisms of thinking and memory, i.e. the processes of thinking and memory are a fraction of a second faster than the transmission of nerve impulses.

The universe as a whole, just like the set of microtubules of the brain, is a quantum computer that accumulates, stores and transforms information. Therefore, we can talk about the universal consciousness, which is realized in the computational operations of the universal quantum computer, by analogy with the individual consciousness, which is realized in the computational operations of the neural quantum computer.

When a person dies, his consciousness in the form of quantum information merges with the quantum information that exists in the universal quantum computer. In this sense, it can be argued that the human soul, which is a self-learning program of individual consciousness, does not disappear after the death of the physical body.

A person after clinical death talks about a long tunnel, bright light and exit from the body, because his soul in the form of a clot of quantum information leaves the microtubules of the brain for some time, and then returns again from the universal quantum computer.

Such a theory borders on a religious worldview, because if the Universe is identified with a quantum computer, and the human soul is identified with a program implemented in quantum information processes, then the question arises about the Programmer, Creator, God, who wrote the universal programs and ensured the existence of conscious beings. Therefore, the ideas of S. Hameroff and R. Penrose in philosophical literature are criticized as inconsistent with the materialistic worldview from methodological and conceptual aspects.

Methodologically, the Hameroff-Penrose theory loses its empirical basis, given that not all anesthetics affect the physical structure of neuronal microtubules of the brain, and, therefore, the disappearance of consciousness during anesthesia cannot be explained by quantum information processes occurring inside them alone.

In addition, the Hameroff-Penrose theory contradicts the theory of decoherence, since neural microtubules are too hot and exposed to the environment, which greatly limits the time during which quantum computing can be performed.

In particular, this is confirmed by the calculations of the professor of the Massachusetts Institute of Technology M. Tegmark. In his article “The Significance of Quantum Decoherence in Brain Processes,” he shows that quantum states in the microtubules of the brain, as a wet, warm, and noisy system, decohere before reaching an energy level that provides an influence on neural order processes.

Arguing with such objections, S. Hameroff and R. Penrose notice that not only micro-objects, but also macro-objects, can demonstrate quantum properties and be in a quantum entangled state, which concerns, for example, the phenomena of superconductivity and superfluidity, as well as a thought experiment with Schrödinger's cat.

The phenomenon of quantum coherence, opposite to decoherence, i.e. which does not lead to the destruction of quantum-coherent states, is observed in biological systems, for example, in the processes accompanying photosynthesis, when photons absorbed by a plant are converted into energy, which, being in a superposition of potential states, propagates through a set of chromophores along several paths simultaneously before being transformed into nutrients.

Arguing their point of view, S. Hameroff and R. Penrose develop the theory of orchestrated objective reduction (Orchestrated Objective Reduction, abbreviated as Orch OR), according to which the quantum information states responsible for the generation of consciousness in the neural microtubules of the brain avoid decoherence, which increases the time a gap of quantum information computing, which is “orchestrated” (tuned like different musical instruments in a single orchestra playing) by feedback from proteins associated with neural microtubules of the brain.

Conceptually, the Hameroff-Penrose theory, while reducing the physical basis of mental phenomena to quantum informational processes occurring in the neural microtubules of the brain, still does not explain the existence of consciousness, since it remains unclear how it is fundamentally possible that these quantum informational processes generated by activity of complex physical systems, give rise to something non-physical (mental), thereby violating the causal isolation of physical events.

“How, with the help of quantum OR... can one explain the very quality of subjective reality, which is a virtual reality, information given to a person in a “pure” form (since its brain carrier is always eliminated for him)?”.

S. Hameroff emphasizes that his theory, developed jointly with R. Penrose, is a kind of panprotopsychism, according to which the components of mental experience belong to the class of elementary entities that make up the fundamental geometry of space-time, which needs serious additional justification.

R. Penrose openly states: “It seems to me beyond doubt that some kind of proto-mentality must be associated with each manifestation of the OR operation, but it is in some sense “tiny””. Physical systems at all levels of structural and functional organization are characterized by "self-observation", due to which they fix changes in their discrete states.

The degree of manifestation of proto-consciousness (which under certain conditions becomes consciousness) depends on the complexity of the structure of the physical system, which acts as

its material carrier. S. Hameroff argues that protoconscious states, which differ from conscious ones in the absence of the Self (the difference between protoconsciousness and consciousness can be likened to the difference between chaotic noise and ordered music), should be inherent in neutron stars containing giant accumulations of Bose-Einstein condensate, and also the Universe as a whole during its inflationary expansion, when it was a single quantum superposition before the onset of objective reduction.

If someday it will be possible to simulate the functioning of neural microtubules of the brain on a quantum computer, then such a program will no longer have protoconscious, but conscious states, which could be designated as the quantum concept of strong artificial intelligence.

Arguing with the authors of the quantum theory of neurocomputing, M. Tegmark in his work "Consciousness as a state of matter" states that "consciousness can be understood as another special state of matter", which he calls perceptronium. In his reasoning, he relies on the theory of integrated information by D. Tononi, according to which a physical system with mental states is characterized by information content (the ability to accumulate a large amount of information) and integration (the integrity of the accumulated information data that cannot be decomposed into separate elements without losing essential content).

M. Tegmark formulates five basic principles inherent in physical systems that have mental states: 1) the presence of a large information capacity, 2) the ability to process information, 3) independence in certain states from the surrounding world, 4) irreducibility to a set of individual elements, 5) selectivity for useful information. He substantiates all these principles, relying on the basic provisions of quantum mechanics.

In addition, he makes a strong statement: "All structures that exist mathematically also exist physically." Using it, he develops a theory of self-aware substructures that make it possible to explain the existence of consciousness in the physical world.

Despite the controversy of the theory of perceptronium, one can agree with M. Tegmark that the quality of integration is not inherent in physical systems as such, since they can be considered as a set of interacting elements in a certain way without losing any physical parameters. Mental events have self-identity in the sense that they have an internal unity that binds into an ontological integrity the totality of qualitative data that changes in the temporal stream of consciousness.

In contrast, physical events do not have self-identity in the sense that they do not have an inherent unity, since by themselves they do not form an ontological integrity and are constantly changing in the temporal flow of the Universe. The unity of a physical object does not belong to itself, but to sensory perception and intellectual description, while the physical object itself does not have a stable emergent integrity.

Therefore, the essence of the physical world exists only at the level of mental representation and is not an ontological, but a linguistic phenomenon, because, as B. Russell notes, "a word can have an essence, but a thing cannot."

The mental being, unlike the physical one, has self-identity, and this not only draws a clear demarcation line between its being and the being of physical things, but also makes its existence

unique in the sense that it retains its ontological unity invariant to the transformations of mental content.

Hence, by virtue of the principle of causal closure of physical events, it follows that, in addition to physical properties, material objects must have properties of an informational order, which, in fact, provide the qualities of information content and integration, and without which the emergence of consciousness (which is a single whole, indecomposable into separate components without loss of essential characteristics) in the material world would become fundamentally impossible.

The integrity of consciousness does not find adequate physical correlates at the level of classical materialistic ontology, but it can be explained by appealing to the non-classical organization of material systems due to the principle of integrity inherent in quantum ontology. To this end, it is necessary to introduce into the physical ontology "the concept of the unified, understood as an expression of the specific property of the indecomposability of quantum systems into sets of elements.

However, the integrity of quantum objects, which are actually physical, also needs to be explained, because physical objects themselves, reduced to the interaction of constituent elements, do not possess any ontological integrity. It is this circumstance at the level of the basis of materialistic ontology that makes it possible to reasonably add phenomenal information to physical energy, which ensures the ontological unity of quantum mechanical systems.

Another representative of the quantum approach, the American physicist G. Stepp, creates the theory of quantum interactive dualism, according to which, just as in the theory of quantum neurocomputing, consciousness is identified with the fundamental property of matter. is identified with the fundamental property of matter.

He bases his concept on the philosophical views of W. Heisenberg, borrowing from him the central idea, which boils down to the fact that "in nature, atoms are not "real "things. The physical state of an atom, or a complex of atoms, is only a set of "objective tendencies" for specific kinds of "real events."

Real events in their classical form are actualized at the level of consciousness, while in themselves (beyond conscious observation) remain non-actualized superpositions of potential states. Mental events are associated with the collapse of the wave function and affect the choice of the physical state included in the quantum superposition, which ontologically substantiates free will, because at the physical level of being, superposed states are realized in a purely random way.

G. Stepp does not recognize the causal closure of the physical world and allows its violation in neural processes, where mental states are realized. However, M. Velmans reasonably objects that such a point of view contradicts the first law of thermodynamics, which, in accordance with modern neurophysiology data, is valid in any complex biological systems.

In Everett's interpretation, all members of the quantum superposition after the collapse of the wave function do not disappear without a trace, but continue to exist in separate classical worlds. This point of view, based "on the identification of consciousness with the separation of

(classical) alternatives (equivalent to the separation of parallel worlds)", despite the obvious advantages associated with understanding the ontological function of consciousness (as the separation of superposed alternatives), also has serious disadvantages, due, before of everything, by the fact that the splitting of consciousness in the multi-world space of Everett means either that (1) we are aware of ourselves simultaneously in many parallel worlds, which, obviously, does not happen, because we perceive and remember a single life, and not many of its possible manifestations, or the fact that (2) only one of the parallel existing doubles has consciousness, however, in this case, either the surrounding people turn out to be unconscious zombies, or we must recognize the existence of a pre-established harmony, due to which all the surrounding people from a variety of alternative options choose exactly the one which we ourselves choose, or the fact that (3) the personality itself continuously multiplies into many physical duplicates, while such an assumption is unacceptable, because otherwise a situation arises of duplication of the ontological unity of self-consciousness, which contradicts its subjective nature, according to which the conscious the subject has internal access to his own experiences, and not to anyone else's.

There is another variant in which each observer is "split" into many double observers, one for each of Everett's worlds. This statement logically follows from the linear nature of the equations of quantum mechanics, because if after the decoherence of the states of the measured object, the measuring device, the brain of the observer and his consciousness, we leave all the members of the resulting superposition describing the mixed states of the listed objects, then the consciousness of the observer is no exception and also must be split into many possible doubles, each of which, in the framework of Everett's interpretation, belongs to a separate classical world.

The ability of a person (and any living being), called consciousness, is the same phenomenon that in quantum measurement theory is called state reduction or alternative selection, and in Everett's concept it appears as the division of a single quantum world into classical alternatives.

However, such an approach, as already noted above, contradicts the unity of the conscious subject, who is aware of his own inner life, and not any other, and therefore cannot be split into parallel existing duplicates. The transition of consciousness into a mixed state after decoherence with the observed device makes it a physical phenomenon with all the ensuing consequences.

In addition, it remains unclear why my consciousness chooses one alternative, and the consciousness of my double - another, because initially my consciousness and the consciousness of my double take root in a single proliferating consciousness.

If such a choice is determined by my personal volitional effort, then, denying the theory of pre-established harmony, we come to the conclusion that this state of affairs is not consistent with the personal volitional effort of the double, because, firstly, each double limits the choice of other doubles by its choice, and, secondly, the number of duplicates does not depend in any way on their own choice due to the fact that the world is split according to its immanent physical laws.

If such a choice is not determined by my personal volitional effort, then consciousness, being a causally irrelevant phenomenon, turns out to be a nomologically and evolutionarily useless appendage to the processes of the physical order.

Summing up the philosophical analysis of attempts to solve the qualitative problem in quantum theories of consciousness, it should be noted that the quantum nature of an event in itself does not make it mental and does not explain the emergence of subjective reality. D. Chalmers writes about this: “Quantum theories of consciousness eventually suffer from the same failure in explanation as classical theories. In any case, experience must be regarded as something that goes beyond the physical properties of the world. Quantum mechanics could perhaps help characterize the psychophysical connection, but quantum theory alone cannot tell us why consciousness exists.”

Quantum theories of consciousness developed by scientists who are related to the natural sciences (in particular, M.B. Mensky, R. Penrose, G. Stepp, M. Tegmark, S. Hameroff) are of a physicalist nature, since they reduce consciousness to physical processes (which, despite the fact that they correspond to the quantum, and not the classical region of being, still remain proper physical processes) and thereby lose the phenomenal (qualitative) content of mental experience.

Therefore, D. Chalmers rightly notes that quantum characteristics at the energy level of being remain a kind of physical characteristics, and, therefore, as part of solving the difficult problem of consciousness, it is necessary to supplement them with characteristics of a different, non-physical order, which is achieved by introducing the energy-information principle and understanding matter as an ontological unity of energy and information already at the most elementary levels of organization of material systems.

In addition to the phenomenal (qualitative) nature of internally experienced experience, quantum theories try to explain the very ontological possibility of an interactive interaction between consciousness and body. In this case, the problem boils down to the fact that such an interactive interaction contradicts the principle of the epistemological completeness of physics and the causal closure of the physical world and, ultimately, is not consistent with the law of conservation of energy.

Using the principles of quantum mechanics, one can try, without going beyond the materialistic worldview, to preserve the causal closure of the physical world using the Heisenberg uncertainty principle, which states that the more accurately we measure one of the two canonically conjugate quantities (coordinate and momentum, time and energy), which, mathematically speaking, are described by non-commuting operators, the less precise becomes the other canonically conjugate quantity.

Moreover, this state of affairs is due not to a lack of knowledge about the fluctuations of a quantum system as a result of the measurement being carried out (i.e., as a result of the interaction of the measuring device with the measured object), but by the very nature of quantum existence, which was experimentally proven by the violation of Bell's inequalities.

In other words, the Heisenberg uncertainty principle, according to which micro-objects have an energy uncertainty that allows them, as it were, to borrow physical energy from nowhere, and then give it away to nowhere, is not epistemological, but ontological in nature (it is not related to our knowledge of the object under study, but to its objective being).

The tunnel effect is based on this quantum property of matter, thanks to which an elementary particle can overcome a potential barrier that is larger in magnitude than the energy of this

elementary particle itself. Within the time interval exceeding the time interval that the elementary particle spends on overcoming the potential barrier, the law of conservation of physical energy is fulfilled, since its energy before and after overcoming the potential barrier remains unchanged, but, nevertheless, within this small time interval, the particle It borrows a certain amount of energy so that overcoming the potential barrier becomes energetically feasible.

Based on the ontology of quantum reality, it can be assumed that the mental activity of the brain is of a quantum nature and consciousness is a discrete flickering phenomenon, which, in accordance with the Heisenberg uncertainty principle, alternately borrows energy from neurophysiological processes in the human brain, then returns it. back, and also there is a reverse process of borrowing and giving energy from the phenomena of the physical order.

The phenomenal content of the psyche flickers discretely, existing for a small period of time, which allows for the uncertainty of the physical energy expended on the production of the corresponding mental processes. At the level of neural activity of the brain, processes are generated and immediately disappear that correspond to the phenomenal content of the psyche and affect the behavior of a living organism as a whole, just as virtual particles are born in a physical vacuum and immediately annihilate without violating the law of conservation of physical energy.

Thus, all our thoughts, emotions and desires, in a word, all the events of conscious mental life, turn out to be virtual phenomena in the sense in which modern physicists speak of virtual particles born from vacuum and disappearing over time, the uncertainty of which is determined by the uncertainty of energy . born and disappearing particles.

Just as the physical vacuum "boils" with virtual particles, the human brain "flickers" with mental phenomena, and each such discrete flickering separately does not lead to a violation of the energy conservation law, because the time allotted to it is so small that it covers the uncertainty of the energy spent on mental activity of consciousness.

This point of view is consistent with the earlier Hameroff-Penrose theory, provided that in the neural microtubules of the brain, coherent states alternate with decoherence processes, forming a sequence of discrete phenomena that make up the qualitative content of mental experience. Since, sooner or later, decoherence still occurs under the influence of the environment, then, within the framework of the theory of quantum neurocomputing, mental experience is a sequence of discrete events that fall into two types of alternating phases - quantum and classical.

S. Hameroff and R. Penrose in their joint article "Consciousness in the Universe: A Review of the Theory of Orchestrated Objective Reduction" argue that the theory of orchestrated objective reduction is "a theory that suggests that consciousness consists of a sequence of discrete events, each of which is a moment of objective quantum state reduction".

Phases of isolated quantum superposition are replaced by classical phases that occur as a result of orchestrated objective reduction, as well as reduction due to the interaction of neural microtubules with other elements of the brain and the outside world as a whole. The phase alternation is consistent with the neurophysiological rhythms of the brain, for example, with 40 hertz gamma oscillations of the electroencephalogram.

The quantum-flickering existence of consciousness allows us to explain how, without violating the principle of causal closure of the physical world, the physical being influences the mental, and the mental being influences the physical. In addition, it becomes clear why the subjective sphere of being is objectively inaccessible to external observers, who can only indirectly, relying on their own experience, judge the experiences of another subject, because from a physical point of view it is impossible to get inside the flickering consciousness from an external reference system according to the same the very reason why it is impossible to catch a particle participating in the tunnel effect when it slips under a potential barrier.

However, such interactionist attempts to preserve a special ontological status for mental phenomena, allowing them to interact with the neural structures of the brain, have a significant drawback, which is due to the fact that it still remains incomprehensible (even if we use the Heisenberg uncertainty principle, which allows us to avoid abandoning the law of conservation of physical energy), how something physical (which exists in physical space and has physical energy) can be transformed into something nonphysical (which does not exist in physical space and does not have physical energy), and vice versa, how something nonphysical (which does not exist in physical space and not possessing physical energy) can turn into something physical (existing in physical space and possessing physical energy), because such a transformation requires a special intermediate link that has both physical qualities (topical and energetic nature) and non-physical qualities (atopic and anenergetic character), i.e., in other words, such an intermediate link must be a material idea or ideal matter, which contains a logical contradiction.

The above analysis shows that quantum mechanical concepts are not enough to cope, firstly, with the difficulties inherent in classical physicalism, which eliminates the phenomenal content of subjective experience, and, secondly, with the difficulties inherent in non-reductive theories of consciousness, which, while maintaining interactive interaction between the non-physical consciousness and the physical body, ultimately, come to a violation of the principles of the causal closure of the physical world and the epistemological completeness of physics.

The quantum approach cannot explain why physical processes are accompanied by processes of a mental order, because no quantum-mechanical descriptions reveal the phenomenal internally experienced content of consciousness. Mental states are not identical to physical states, but are accompanied by them and do not exist without them. Quantum mechanics can provide specific processes (first of all, in the form of wave function collapse), which are the physical basis of processes of the mental order, but they do not reveal, in relation to the latter, being just physical processes, their internally experienced subjective reality.

Since the physical being, being precisely physical, can only have physical states, then in order to explain the existence of mental phenomena in the physical world, the quantum approach needs a significant addition, which boils down to the energy-information principle, which states that matter is an ontological unity of energy and information, those. there is no change in energy states without changing states of the information type, and there is no change in information states without changing states of the physical type.

Realizing this, R. Penrose and S. Hameroff lean towards panprotopsychism, but identify proto-mental states with quantum-physical ones, which does not allow them to rise to a qualitatively new level of subjective reality.

Between physicalist (classical or quantum) and mental descriptions of processes related to the inner sphere of consciousness, there remains an irreparable gap, because, firstly, physicalist descriptions do not grasp what is experienced by the experiencing subject himself, and, secondly, it is impossible from physicalist theories to deduce the mental properties of an internally experienced mental experience (for example, it is impossible to explain, by appealing to the physical processes occurring in the neural networks of the brain, why the color red is experienced by a conscious subject exactly as it is experienced, and why it is experienced at all and we do not exist as physically complex unconscious automata).

Thus, quantum mechanics contains heuristic possibilities for understanding the existence of mental phenomena, since, firstly, it is the final point of the reduction of high-level phenomena to low-level ones, and, secondly, it contains natural laws that allow coping with the psychophysical problem without violating the completeness of physics and the causal closure of the physical world, but at the same time, it needs an energy-information principle so that it would be possible to build a reasonable transition from physical events to mental (non-physical) and explain the emergence and development of consciousness as a subjective-mental integrity in an objective-physical the world.

Read this part for now. The next one will be about the experiment and Schrödinger's cat, etc. There are other topics that you know about, such as digital holography and image restoration, compression methods for off-axis digital holograms using frequency filtering of scalar, vector and wavelet compression, analysis of the applicability of scalar and vector quantization for digital hologram compression, etc.

I read a lot about this, it became interesting after I was engaged in data recovery from data drives, usb, etc. for a long time, these topics have something in common. Very interesting for self-development. The holographic principle is in everything, Michael Talbot is right, and not only him.

There is a topic - the development of algorithms for classifying images of biomedical preparations. I know about it, but I haven't done it.

The first problem of flatness: the observable Universe today is spatially flat with great accuracy, but evolves from the early Universe only with an extremely large adjustment of parameters. Secondly, the model faces the problem of causality, i.e. horizon problem. The modern Universe has evolved from an early phase where the Universe consists of a large number of causally unrelated regions. Since different regions in the early Universe did not interact with each other, inhomogeneities in the Standard Model of the Universe should be observed in the modern Universe. There are other problems, such as monopole problems and so on.

There is a wonderful paradigm known as cosmological inflation that successfully solves these problems. Most importantly, quantum-mechanically small perturbations can be generated within its framework, which leads to the formation of structures in the Universe. Thus, it is clear that the standard model of the Universe must be supplemented with an early stage of accelerated expansion, i.e. inflation.

You can still list clever paragraphs, but all this is very difficult for the perception of an ordinary person.

A little about the text as a metaphysical category.

The text as a special object of study has attracted the attention of scientists since ancient times. Tens of thousands of books, hundreds of thousands of articles are devoted to the study of various aspects of this phenomenon. There are many definitions of the concept of "text".

The inconsistency and polyphony of these definitions are due to the fact that their authors occupy different ontological positions. The concept of "ontological position" denotes a system of coordinates that determine the promotion of conceptual ideas and the choice of research areas, even in cases where scientific knowledge is devoid of appropriate reflection and avoids a clear description of the original axioms.

The ontological position presupposes the allocation in the world of universal existence of certain segments, fragments, fields, which are taken for real-life and need to be studied. Thus, we recognize that the object of interest to us exists before our interaction with it, although we understand that such an interaction changes its configuration.

We have to remind about this, because modern philosophical and scientific thought is characterized by a reorientation from the traditional substantive-objective interpretation (what?) to a functional-procedural understanding (how?). It seems that any "games" with the so-called normative ontology, according to which the "thing as such" does not exist, since it always represents a mystified relationship between a person and the world, makes any study of the real world meaningless. Another thing is that there can be many ontological positions, which means that there can be many different knowledge systems that claim to be true.

The following are some ontological positions that predetermine different approaches to understanding the phenomenon of "text".

A text is a set of certain elements that, in their interaction, determine its features.

The text is a kind of integrity with inalienable characteristics.

Text is an element of a larger system that defines the properties of a particular text.

Text is a category used to describe processes such as speech and communication.

Text is a product or resource of social relations and social activity.

The text is a fixation of an extrahuman mind, a divine revelation, a product of the mystical contact of a brilliant personality with the laws of the Universe, etc.

We single out the last position, because, despite the fact that it was historically the first, its heuristic potential has not yet been exhausted.

Text as a hologram of the universe. Starting a conversation about the approach to understanding the text under consideration, it is worth recalling that the first authors of the sacred books were convinced that they were only translators of divine truth. One of the oldest sacred books, the Vedas, was written down in the 16th century BC. e. According to Hindu belief, the "Vedas" were

not compiled by people, but were sent down to mankind by the gods through the holy sages. The Bible, according to Christian theologians, is a collection of texts, the specific authors of which were Jewish prophets, judges, kings, apostles.

However, all biblical writers (or those who claim to be authors) claim to have drawn their inspiration from communion with God or his messengers. The Lord revealed to them what was hidden from the eyes of other people, helped them to see this world and everything that happens in it. The task of the prophet was to express this revelation with human concepts and words in suitable imagery and appropriate literary form. For this reason, in the Christian tradition, the Bible is called Holy Scripture.

The Quran, the holy book of Muslims, consists of the revelations of the prophet Mohammed, which Allah sent down to the believers through him. In Islamic tradition, it is believed that the Quran descended into the world from Almighty Allah in full on the Night of Qadr (Night of Power), but the Angel Jabrail (Archangel Gabriel) transmitted the Quran to the Prophet Muhammad for 23 years. The holy book of Muslims consists of 114 suras (chapters). All suras are divided into Meccan suras, which contain revelations given to the prophet Magomed by the angel Jabrail before moving to Medina, and Medina suras, written down from the words of the prophet after he arrived in Medina.

We remove the question of who actually was the author of those works that have become global pointers of truth and the right path. The main thing in this case is a clear understanding that behind the author's back there is something that significantly surpasses the author in its significance. And it is precisely the belief that the source of the meanings set forth in the sacred texts is initially infallible that has made (and continues to make) these texts a powerful tool for influencing the consciousness and behavior of people, despite the fact that the biblical understanding of history is fundamentally erroneous.

Ancient Greek thinkers were also sure of the existence of a single world essence, which manifests itself in human creations. The famous story about the cave and the people chained in it, which Socrates tells Plato's brother Glaucon in Plato's dialogue "The State", is about this. Eidos (ideas of things) in Plato's view exist on their own, that is, they have ontological independence. The real things that people deal with in everyday life are reflections of ideas.

Some things correspond to their ideas less, some more. It is not difficult to guess that, according to Plato, the latter are better, because they more fully convey the being of a thing as itself. An idea presupposes not only a general idea of a particular thing, but also the very meaning of its existence. The same ideas are developed by Plato in the Parmenides dialogue.

Let us turn to the philosophy of the German romantics, who were convinced that creativity in general and literary creativity in particular is the result of a mystical connection between a particular individual and the infinity of the universe. In The System of Transcendental Idealism, F. W. J. Schelling argued that all art is an expression of the infinite in the finite.

The early romantics viewed the world as a two-sphere system, containing the sphere of the infinite (higher, transcendent, unknown, "thing in itself") and finite (lower, material, embodied, having a limit). The higher and lower spheres exist simultaneously, in parallel. A person is able

to see and comprehend the infinite in everything limiting "through the revelation of love, an artistic act or wandering from the sphere of the finite to the sphere of the infinite."

The text is the primary given (reality) and the starting point of any humanitarian discipline. Everywhere there is a real or possible text and its understanding. Research becomes questioning and conversation, that is, a dialogue. We do not ask nature, and she does not answer us. We pose questions to ourselves and organize an observation or experiment in a certain way in order to get an answer. Studying a person, we look everywhere and find signs and try to understand their meaning.

It is worth recalling the name of one Russian scientist, V.V. Nalimov operates with them, on the other hand, they (meanings) constitute its (consciousness) content.

Only unlike real texts, which, once fixed on paper, lose the ability to change their content, a person can constantly rewrite the text of his consciousness anew. Consciousness, according to Nalimov, is open to the world. It is with him in a relationship of communication, in which, asking questions, consciousness receives an answer to them, as if from nowhere.

This "from nowhere" Nalimov calls the "World of Metasemantics". The scientist himself does not dwell on a detailed analysis of the concept of "World of Metasemantics", but from the context of his works it is clear that in this matter he adjoins the Neoplatonic tradition, postulating the existence of higher worlds, or, to be more specific, the existence of the cosmic Mind, which is the source of all possible meanings.

At present, there are many supporters of the idea that behind a particular author (philosopher, researcher, writer) stands Something called the consciousness of the Universe. The authors of many books on the concept of panpsychism put forward various arguments in defense of this concept. In particular, they refer to the research of physicists, which showed that the initial conditions of the Universe are ideally tuned in order for life to have a chance to develop. There is an estimate of the chance of the existence of life in the Universe as $1 \cdot 10^{229}$, from which we can conclude that we cannot leave such an insignificant probability without explanation. Luck has nothing to do with it; we need a rational explanation for how something like this happens.

Thus, if we try to summarize centuries-old reflections on the text within the framework of this paradigm in one phrase, it will sound something like this: the text is a fragment of a hologram depicting our Universe.

This is the same coordinate point on the graph, only modern equipment cannot fix such values.

As an analogy with $1 \cdot 10^{229}$, although why only 10^{229} , we can assume that 10^{230} , etc., you can give the maximum length of the Windows computer name, the ASCII + Windows character table 1251, the number of lines in Excel when creating databases, the number of notes, everything again, these are matrices, but not unlimited, but containing restrictions, and all this despite the fact that all the most advanced scientific software in the world is written in C, C ++, Python, I mean that if we take the text as conscious a set of symbols or signs, someone gave it to us for communication and deliberately limited it in the form of a matrix, then we get the same causal relationship in the form of two-way communication, i.e. the text is a fragment of a hologram depicting our Universe, or, according to analogies with programming, human-machine

interaction between the operating system and the user through the program interface, which is carried out through API functions, a stream of bytes, etc. It turns out that we constantly communicate with God, and he with us, but in everyday life we do not notice this.

Why are you interested in this particular approach? Because it provides an opportunity to find a breakthrough in the field of text research. This breakthrough is associated with the development of an anthropological approach to the text. We are talking about the approach according to which the text is considered as a medium that connects the outer and inner worlds of a person.

An anthropological approach to the text. According to the anthropological approach, an adequate understanding of the essence of the text involves embedding this category in the conceptual series, which is based on the concept of "life world", that is, that environment, that environment in which an individual resides at every moment of his life. The concept of "life world" is actively explored by philosophers.

The life, psychological world of a person contains special phenomena (first of all, difficulty and pain), which, although they are completely psychological and belong exclusively to life reality, but at the same time, as it were, nod towards the non-psychological, the source of which this life world cannot be. could. Through these phenomena, something transcendent to it, something "from there" peers into the psychological world, but it peers already in the mask of something psychological, already, so to speak, having accepted psychological citizenship, in the rank of a life fact.

And only with their backside these phenomena persistently hint at the existence of some kind of independent, alien being, not subject to the laws of this life world.

In other words, the composition of the life world includes a variety of intersubjective representations, fixed in the total social experience of mankind in adapting to the life world and its transformation. In essence, life is a social world with all its features.

However, the social world is not only intersubjective, that is, it is the embodiment of the intersubjective interaction of people in the experience of their daily life. The social world is the everyday world, experienced and interpreted by people acting in it as a structured world of meanings, acting in the form of typical ideas about the objects of this world.

These typical representations take the form of everyday interpretations that constitute the knowledge at hand, which, together with the personal experience of the acting individual, is a set of means of orientation in this world taken for granted. We believe that it was this world of intersubjective entities, and not of physical and chemical laws, that interested the authors of antiquity.

Thus, the understood life world of a person consists of images of the external world and images of one's "I" (inner world). It can be assumed that both of these worlds are structured into certain spaces and fields within which the individual manifests his activity. These spaces and fields can change their outlines and boundaries depending on many factors.

It is important to understand that the external social world is external only for a particular individual. For humanity as a whole, this world is a product of human activity, that is, it has only the appearance of objectivity, quasi-objectivity, imaginary empirical factuality and objectivity.

It is now generally accepted that consciousness is the product of electrochemical reactions in brain cells, with mental experiences performing an important data processing function. However, no one has a clue how the mass of biochemical reactions and electrical currents in the brain creates a subjective sensation of pain, anger or love.

On July 7, 2012, leading experts in the field of neuroscience and cognitive science gathered at the University of Cambridge and signed the Cambridge Declaration on Consciousness, which states the following: “Multiple evidence indicates that non-human animals have neuroanatomical , neurochemical and neurophysiological substrates of the conscious state along with the inclination towards rational behavior. The totality of evidence suggests that humans are not unique possessors of the neurological substrates that generate consciousness.

Non-human animals, including all mammals and birds, and many other creatures, including octopuses, also have similar neurological substrates.”

Responding to the changing winds in the scientific community, in May 2015 New Zealand became the first country in the world to legally recognize animals as sentient beings when the New Zealand Parliament passed an amendment to the Animal Welfare Bill. The bill obliges to proceed from the fact that animals are intelligent and, accordingly, it is necessary to create good living conditions for them in areas such as animal husbandry.

In a country where there are more sheep (30 million) than people (4.5 million), this is a very serious step. Later, a similar law was passed in the Canadian province of Quebec, and a chain reaction seems to be inevitable.

That is why it seems to us that the concept of "consciousness" in relation to a person has exhausted its heuristic potential, which is why there is a need to look for other categories.

So, for example, the famous Russian scientist D. A. Leontiev, giving a definition of personality, formulated very important postulates:

- personality is inherent in every person;
- personality is what distinguishes a person from animals that do not have a personality;
- personality is a product of historical development, that is, it arises at a certain stage in the evolution of human society;
- Personality is an individual distinctive characteristic of a person, that is, what distinguishes one person from another.

Developing his approach to understanding the personality, D. A. Leontiev proposed a model according to which the personality has an “Outer Shell”, which includes character, abilities, roles; and the "Inner World", in which meanings (needs and values), relationships and constructs are combined.

Considering this approach to be quite promising, however, we use a different model, according to which the central category of the inner world is identity. This concept refers to the totality of answers to the questions “Who am I?”, “What am I?”, “What is mine in this world?”, “Who am I in myself, and not in the eyes of others?”, “In what my destiny and where are my roots? etc.

Other important components of the inner world are incentive, regulatory-semantic and performing spheres.

With this approach, the inner world of a person appears as a multidimensional, complexly organized system that: 1) implements the function of stimulating activity, aiming it at certain objects of reality; 2) ensures the direction, meaningfulness of the activities carried out, sets her personal and at the same time socio-historical dimensions; 3) contains components that ensure the successful implementation of activities.

As for the concepts of "consciousness" and "self-consciousness", it seems appropriate to assign them to the functions of the inner world of the individual (from this point of view, consciousness acts as a function aimed at the active and selective development of the external world: things, processes, phenomena, and self-consciousness is a function through which the individual masters himself, in the unity of biological, psychological and social dimensions).

Information and communication universe as a medium between the outer and inner worlds of a person. The earlier analysis of the external and internal worlds of a person raises the question of the connection between these worlds, that is, the problems of text and communication. And here the experience of our ancestors will come in handy, who, when creating and transmitting their texts, were convinced that they were nothing more than translators of divine truth.

In a sense, this is true. A talented author somehow - yet unknown to us - penetrates into the depths of the outer world and finds signs, words, images that help other people to master (appropriate?) This outer world, turning it into their inner world

To explain this process, which seemed inexplicable to ancient authors, the concept of the information and communication universe can be used. This concept denotes a self-developing system hidden both from direct perception and from rational research, which ensures the implementation of the whole variety of communication relations in society.

At one time, Yu. M. Lotman introduced the concept of "semiotic universe" into science. He believed that the semiotic space can be considered as a single mechanism (if not an organism). Then it will not be this or that brick that will be primary, but the "big system" called the semiosphere. The semiosphere is that semiotic space outside of which the very existence of semiosis is impossible. Just as by gluing individual steaks we do not get a calf, but by cutting a calf we can get steaks, summing up partial semiotic acts, we will not get a semiotic universe.

On the contrary, only the existence of such a universe - the semiosphere - makes a certain sign act a reality. It can be assumed that, in formulating this position, Yu. M. Lotman relied on the popular idea of the noosphere in those years. This term was introduced by the French philosopher E. Leroy in 1927, and then developed by P. Teilhard de Chardin and V. I. Vernadsky

Later, the concept of "communicative (communication) universe" arose, which began to appear in the titles (and sometimes in the content) of some books and dissertations. However, in all these works, the word "universe" is used more as a metaphor than as a scientific concept. There is reason to believe that the accumulated knowledge already allows us to give this concept a more or less rigorous interpretation.

Moreover, there is an opportunity to rely on the works of Pierre Teilhard de Chardin, revealing the cosmic essence of the human phenomenon, on the intuitionism of Nikolai Lossky with his key thesis, according to which the cognizing subject has the ability to directly (intuitively) perceive transsubjective reality, on the ideas of synergetics.

The concept of the information and communication universe sets the understanding of the duality of this system, which, on the one hand, exists in conscious and unconscious forms of activity of living beings, including humans, on the other hand, does not depend on anyone, on the contrary, determines the communicative behavior of all beings known to us, starting from the genetic codes of viruses, bacteria and plants, the language of animals and ending with the highest manifestations of artistic creativity.

In other words, a person acts in relation to the information and communication universe as a resource for its reproduction and self-development. In connection with this thesis, it is worth recalling several aphorisms that are attributed to A. Einstein (regardless of whether they really belong to him): "I have never attributed to Nature any purpose, deliberate aspiration, or anything that can be given an anthropomorphic interpretation.

Nature is a majestic edifice, which we are only able to comprehend very incompletely, and which arouses in the soul of a thinking person a feeling of humble humility. This truly reverent feeling has nothing to do with mysticism"; "God (in other versions - Nature) is sophisticated, but not malicious."

With regard to the problem of the information and communication universe, we are talking about the fact that this object (aka subject) that is difficult to comprehend by the mind does not have any separate independent will. It doesn't matter if it's evil or good. The information and communication universe does not control us in the primitive sense of the word (although it actually controls how our behavior is "controlled" by viruses and bacteria that have settled in our body).

We are talking about the fact that this complexly organized system is very sensitive to external influences and any intervention in the process of its functioning (even for purely scientific purposes) leads to its changes. As soon as we have studied a certain process, we have received some, from our point of view, data that is significant for understanding the system and promising for further research, the system under study has radically changed, and all research results can be discarded. The information and communication universe is sophisticated, but not insidious.

Thus, at present it is impossible to comprehend the information and communication universe in all its multidimensionality: there is neither a conceptual nor a conceptual apparatus. We can state that "communication is increasingly ceasing to be the prerogative of human control and participation. The process of breaking the communicative and communicative deforms both the socio-cultural space of a person's life and the person himself, but so far we can neither explain why this happens, nor offer any intelligible program of action."

All this is not said in order to deny the possibility and necessity of research into the information and communication universe. Of course, both particular and general theories are needed. But they are needed not so much for the actual mastery of the information and communication

universe - it is impossible to master it, but in order to formulate the achievements of the past and pass them on to the next generations.

And what is also very important: no matter how beautiful and convincing the theories created may be, they should not acquire the status of privileged and only correct ones, as happened at the present time in the field of communication science, where the names of M. McLuhan, N. Luhmann, J. Habermas and some other researchers of communicative processes correlate almost with the Holy Grail, which keeps in itself the light of eternal truth. One must constantly bear in mind that this light does not belong to any mortal.

Thank you. To be continued...

