The substantiation of the quantum approach to the problem of the existence of consciousness and the corresponding extrapolation of the principles of quantum ontology to the sphere of mental phenomena can have a regional-ontological or universally ontological character.

The regional-ontological nature of the substantiation of the quantum approach is inherent in physicalist concepts of consciousness. In accordance with this point of view, two main levels of the world's being in relation to the cognizing subject can be distinguished: the world, as it exists in itself, and the world, as it exists for the cognizing subject The world, as it exists in itself, has an ontological unity that finds expression in principle of the ontological integrity of the material world.

According to this principle, the laws of high-level phenomena are deductively derived from the laws of the corresponding processes of a low-level order within the same type of existence of the material system under consideration. The world, as it exists for the cognizing subject, is divided into many ontological regions that have incompatible properties.

If we believe that different ontological regions are fundamentally not integrable into a single existential whole, then we come to substantial pluralism, which leads us away from the materialistic picture of the world. If we believe that different ontological regions are fundamentally integrable into a single existential whole, then this means that they are different epistemological projections of a single material universe.

This view, in turn, means that how the world exists for the knowing subject is ontologically rooted in how the world exists in itself. How the world exists by itself is the science. Consequently, all epistemological projections of a single material whole must take root in the scientific-materialistic ontology. Therefore, the basic ontological principles that underlie the ontology of a being that belongs to one of the epistemological projections of a single material whole should not contradict the basic ontological principles of the scientific-materialistic worldview.

The American philosopher of German origin K. Hempel in his article "The Logical Analysis of Psychology" states that "all branches of science are basically of the same nature, they are branches of a single science, physics."

Since the behavior of subatomic particles and physical fields, which lie at the ontological basis of any physical system, is determined by the laws of quantum mechanics, then the laws of other (non-subatomic) regions of physical existence should be reduced to the latter.

his article “Why can't cognitive scientists ignore quantum mechanics ? ” notes that all properties of the surrounding world are ontologically rooted in the properties of the quantum order, “since all types and properties at any level of the hierarchy of sciences are types of quantum mechanical properties, regardless of whether whether the field is physics, biology, or psychology .

Further, K. Smith writes: “According to quantum mechanics, not only electrons, protons and similar objects, but any and every existing object obeys the laws of quantum mechanics. Each type of property of a particular area is a subspecies of a type of general property - the Quantum Mechanical Property. R. Penrose also adheres to the principle of the ontological unity of the

material world, emphasizing that “sometimes I absolutely cannot imagine what biology (as well as chemistry, by the way) can be if it does not naturally follow from physics.”

Carrying out, within the framework of physicalist theories, the extrapolation of principles quantum ontology on the sphere of being of consciousness, we come to the conclusion that mental phenomena, in principle, can be fully described with all high-level properties in quantum mechanical terminology, although such a description will be so complicated and cumbersome that for its implementation powerful quantum computers of the future will be required.

Thus, as the supporters of the quantum approach believe, the theory of consciousness, if we do not want to come into conflict with the scientific worldview, must ultimately be built on the ontological and conceptual basis of quantum mechanics. In other words, using the concepts of quantum mechanics and quantum physical effects, you can try to fit non-physical consciousness into the material world, without violating the epistemological completeness of physics.

However, as has been shown above, physicalist theories lose the phenomenal content of the mental experience, because no interactions of objectively existing particles and fields, given to the knowing subject from the outside, are unable to explain the emergence of subjective reality given to the knowing subject from within.

The universal-ontological nature of the justification of the quantum approach is inherent in non-reductive concepts of consciousness. Since quantum mechanics describes the behavior of subatomic structures that underlie the fundamental basis of complex physical systems, its ontological principles, i.e. The principles according to which the existence of quantum objects is organized are related not only to the regional ontology of physical beings, but also to the universal ontology of beings in general.

Therefore, in reality, no extrapolation of the principles of quantum ontology to the ontology of consciousness occurs, but there are universal-ontological principles that are related both to the ontology of the physical being at the fundamental level of organization of physical structures, and to the ontology of the mental being, which is not reducible either to being or to essence to being of a physical order.

Therefore, within the framework of the quantum approach, two main tasks of the ontological study of consciousness are realized: firstly, the physical basis of mental phenomena is traced, i.e. the physical processes accompanying the processes of the mental type are discovered, and, secondly, the mental being itself is understood on the basis of the universal ontological principles inherent in the regional ontology of the physical being.

However, the quantum approach is unable to explain why certain physical processes are accompanied by processes of the mental type, because no quantum-mechanical descriptions can reveal the phenomenal internally accustomed content of mental experience.

In order to explain the existence of consciousness in the physical world, the quantum approach needs a significant addition, which, within the framework of the quantum-information model, as shown above, is reduced to the energy-information principle, which states that matter is an ontological unity of energy and information, i.e. there are no changes in energy states without

changing the states of the information order, and there are no changes in information states without changing the states of the physical order.

The quantum information theory of consciousness borrows four main principles from the ontology of quantum reality: 1) the principle of superposition, 2) the principle of decoherence, 3) the principle of collapse and 4) the principle of integrity.

The principle of superposition lies in the fact that the existence of a quantum object is of a potential nature and represents the distribution of possibilities to be in one or another material state; moreover, such a state of affairs, as already emphasized above, is not epistemological, but ontological in nature, i.e. is not due to a lack of information about the value of the parameters pits that determine the existence of the object under consideration (as happens, for example, in statistical thermodynamics), but by its very essential nature, which does not allow us to speak about the incompleteness of quantum theory and the existence of hidden parameters.

The existence of the quantum world has a non-substantial character, since it does not have certain classical properties before the act of empirical measurement. Therefore, in the modern quantum-mechanical picture of the world, there is a tendency to shift in the understanding of matter from the Cartesian substance to the Aristotelian possibility (dynamis and potentia).

The principle of decoherence is due to the fact that when interacting with the external environment, a quantum system from a pure state passes into a mixture state, characterized by the product of individual members of the superposition of interacting objects. A mixed state can be interpreted as an incoherent mixture of pure states of interacting quantum systems resulting from decoherence.

In the process of decoherence, the system under consideration becomes quasi-classical, since it acquires classical features due to the information contained in the external environment. The collapse principle boils down to the fact that as a result of observing the behavior of a quantum system, i.e. its interaction with some other physical systems of the surrounding world, the package of possible states is destroyed and only one state remains, while all the others disappear without a trace.

As a result of the collapse of the superposition of possible states, the quantum object becomes classical, i.e. begins to show physical properties that do not contradict each other within the framework of formal logic.

In accordance with the principle of integrity, two interacting quantum systems, from the point of view of an external observer, go into a quantum-entangled state, determined by the density matrix, which includes superpositions of the states of both interacting systems, until one of them is observed, i.e. . does not enter into a new interaction leading to the collapse of the superposition of possible states.

In other words, a material system closed in itself exists as a single (non-separable) unmanifested whole, which is divided into its component parts (becomes separable, manifested) only as a result of interaction with surrounding objects, and the properties of these parts at the moment of decoherence are determined by the material whole, regardless of their spatial location.

In order to understand these ontological principles from a philosophical point of view, let us, following Aristotle, separate the concepts of actual (real) and possible (potential) existence of material systems. Actual being (or being-in-reality) is determined by the existence of some material event, the presence of which does not conflict with the presence of another material event.

Possible being (or being-in-possibility) is determined by the existence of some material event, the presence of which conflicts with the presence of another material event. At the same time, it should be understood that the mode of possible existence is not related to our knowledge of the surrounding world, but to its objective essence, because, according to quantum mechanical concepts, possibilities can interfere, determining the properties and characteristics of real objects.

Even B. Spinoza drew attention to the fact that the reality of the physical cause, i.e. the number of physical features potentially inherent in it) cannot be less than the reality of the physical effect, because otherwise the physical effect contains a moment that is absent in the physical cause, and despite the causal closeness of the physical world, something physical arises from emptiness, nothing, non-existence (i.e., does not have actual physical cause).

Therefore, the formation of a closed physical system is a process of curtailment (degradation) of its ontological possibilities. New possibilities do not arise over time, because all the possibilities of the future are present in the past. The less physical possibilities remain, the more the entropy of the considered physical system increases. If only one possibility remains, then the entropy reaches its maximum (for example, in a situation where all elements of a closed physical system have the same temperature).

Thus, the second law of thermodynamics turns out to be a consequence of the transition of possible being into actual.

Within the framework of the universal-ontological justification of the quantum approach to the problem of the existence of consciousness, the four principles of quantum ontology (the principle of superposition, the principle of decoherence, the principle of collapse and the principle of integrity) are not regionally, but universally ontological principles in the sense that they can be used not only for building a physical ontology, but also any other ontology, since they concern not the specifics of physical being, but the specifics of being in general.

They argue that the entity, firstly, is in the mode of possible (unmanifested) or actual (manifested) being, secondly, it passes under certain conditions from one ontological mode to another, and, thirdly, it is integral and inseparable into separate structural units, when it is in the mode of possible (unmanifested) being.

It is correct to say not that the principles of quantum ontology are isolated from quantum physics and then extrapolated to the sphere of mental being, but that the events of quantum reality find their adequate interpretation within the framework of the universal principles of being. Even the ancient Greek philosopher Aristotle (who knew nothing about quantum physics) introduced a division into being in possibilities and being in reality, with the help of which the effects of the quantum world were then comprehended and interpreted (for example, in the works of W. Pauli, W. Heisenberg, V .A. Fock).

Within the framework of quantum ontology, a material system before its observation (i.e., before its interaction with other material systems) is in a superposition of possible states described by the wave function, while after observation (i.e., after its interaction with other material systems, in as a result of which new information arises, which is absent in the pure states of the material systems under consideration), the wave function collapses, as a result of which one of the possible states is realized (becomes valid), and all the others disappear without a trace.

The central idea here is the Aristotelian division into being-in-possibility and being-in-actuality, since "in possibility, the same thing can be together with both opposites, but in reality it is not." If a material object exists in reality, then it has properties that do not contradict each other. If a material object exists in a possibility, then it has properties that contradict each other (for example, it can be in several places at the same time), which is allowed precisely because these properties exist potentially, and not really.

Many well-known thinkers resorted to this idea in constructing the ontology of quantum reality. For example, W. Heisenberg states: “The mathematical laws of quantum theory can be considered a quantitative formulation of the Aristotelian concept of “dunamis” or “potency”.

A being exists in possibility insofar as it does not interact with other beings and remains closed in itself. A being exists in reality insofar as it interacts with other beings and does not remain closed in itself.

A self-contained being that exists in a possibility is not divisible into separate elements and exists as a single (inseparable) material whole. In the process of decoherence, which is caused by interaction with the environment, the material system passes from a pure state to a mixed one, where it already acquires an internal quasi-classical (not devoid of a superposed character) structure and disintegrates into constituent elements, and then, as a result of the collapse of the superposition of possible states, changes its potential being into real, due to which it is fully manifested in the form of a classical object.

If the reverse process of recoherence occurs, due to the rupture of causal connections with the environment, then the material system passes from actual existence to the possible, due to which it acquires integrity and loses its internal structure, which allows separating it into separate parts.

Mathematically, the transition from a quantum state to a classical state is expressed by the collapse (reduction) of the wave function, when in reality one state out of the many possible states of the material system is realized, and the rest disappear without a trace. In this regard, two natural questions arise: firstly, what exactly is the necessary and sufficient condition for the collapse of the wave function, and, secondly, what exactly is the physical process that corresponds to the mathematical operation of collapse?

Take a quantum system that is in a superposition of possible states. Such a closed (not interacting with the environment) system is said to be in a pure state, which is described by the wave function vector. If the system under consideration interacts with another system (decoheres), then both go into a quantum-entangled (mixed) state, which is a product of two quantum superpositions (which is mathematically described not by a state vector, but by a density matrix).

If now we make a measurement on one quantum system, then the collapse of the wave functions occurs, which describe the pure states of the interacting systems, after which the mixed state is destroyed and the existence of the systems under consideration passes from the quantum (indefinite) mode to the classical (definite). And here again a natural question arises: how, in fact, does the measurement that leads to the collapse of the wave function differ from the interaction of systems, which does not lead to collapse?

Indeed, in the process of measurement, i.e. in the process of interaction of the measured object with the measuring device, both systems (the measured object and the measuring device) pass into a mixed state without wave function collapse. Only with the advent of an observer who fixes the readings of a measuring device, the observed system changes the quantum mode of being to the classical one.

If further we consider the observer's brain as a physical system interacting with the measuring device, then again no collapse of the wave function occurs, and now three physical systems - the object being measured, the measuring device and the observer's brain - turn into a quantum-entangled state.

Thus, strictly logically speaking, reduction is impossible. Instead, the state of the entire complex, consisting of the system being measured, the device and the observer, not only before the measurement, but also after it, should be described as a superposition (sum) of states corresponding to various alternative measurement results. In other words, “the phenomenon, which is described as the reduction of the state vector, is only apparent, i.e. associated with the mind of the observer.

If the device consists of quantum particles, then the Schrödinger equation, which describes the interaction between the device and the system, is applicable to it, as well as to the system under study, and no reduction of the wave packet (which is a non-unitary operation, in contrast to the unitary evolution according to the Schrödinger equation) will be possible.

One of the creators of the mathematical apparatus of quantum mechanics, the Hungarian-American mathematician I. von Neumann, concluded from this that the collapse of the wave function is determined by the consciousness of the observer.

It is possible to include the used device (for example, a spark chamber) into the object under study together with the microparticle, but then the eye of the observer and his brain will become the device. The result of the observation should be the same as in the case of drawing this boundary between the camera and the particle. However, the eye and the brain also consist of quantum particles, so the observer-object boundary can be drawn further inside the observer, but the subject cannot be eliminated.

This subject differs from the object in that it is not objectified and is not described by anything (by any equation, etc.). It is this absolute Self of the observer, which carries out cognition with the help of the brain, eye, spark chamber, and is responsible for the reduction of the wave packet and the assignment of “true-false” values to the properties of quantum objects… Consciousness does not simply fix the objectively inherent “this is true and that is false”, but it also creates these “true” and “false”.

Consequently, only the presence of the non-physical consciousness of the observing subject destroys the superposition of states and singles out one specific physical value, to which some probability is attributed before the act of conscious observation.

Considering experiments with quantum entangled photons and particles, Lanza comes to the conclusion that "the mind, as well as the presence or absence of certain knowledge in it, is the only factor that determines how light quanta or matter particles behave." The German physicist F. London and the French physicist E. Bauer in their article “The Theory of Observation in Quantum Mechanics” come to a similar conclusion: “Measurement occurs only when the position of the pointer is observed.

It is this increment of knowledge gained from observation that gives the observer the right to choose between the various components of the mixture predicted by the theory, discarding the unobserved components, and then assigning to the object a new wave function corresponding to the pure state that has been discovered.

We note the essential role played by the consciousness of the observer in this transition from the mixture to the pure state. Without his effective intervention, the new function would never have been achieved."

It follows that, by its ontological nature, consciousness acts as the cause of the collapse of the wave function. Then we must admit (unless, of course, we are supporters of panpsychism, according to which the mental component of being is attributively dissolved in matter as such) that any material system that is not observed by consciousness is in a superposition of states that are entangled with the possible states of another system entering with the first in physical interaction.

This means that before the appearance of the observing consciousness, the Universe as a whole was a single quantum object, the elements of which were in an entangled state. And only at a certain stage of biological evolution, when material systems reached a high level of structural and functional organization, thereby giving rise to the phenomenon of consciousness, the collapse of the wave function of the Universe occurred for the first time, as a result of which its elements unraveled and events of the classical type arose.

Such a radical point of view is not recognized by most of the leading physicists of our time. Nobel Prize Laureate in Physics V.L. Ginzburg in the preface to the article by M.B. Mensky “The Concept of Consciousness in the Context of Quantum Mechanics” writes: “In a concrete sense, I don’t understand why the so-called reduction of the wave function is somehow connected with the consciousness of the observer. For example, in a well-known diffraction experiment, an electron passes through the slits and then a “point” appears on the screen (photographic plate), i.e. it becomes known where the electron has landed.

The appearance of a “point” is obviously the result of the interaction of the incident electron with the material of the photographic plate... If we describe the state of the electron after its interaction with the atoms in the photographic plate using the wave function, then this function will obviously differ from the initial one and, say, be localized at the “point " on the screen. This is usually called the reduction of the wave function. Of course, the observer will see the “dots”

on the screen the next day after the experiment, and I don't understand what the special role of his consciousness has to do with it."

Soviet physicists, academicians of the Academy of Sciences of the USSR L.D. Landau and E.M. Lifshitz confirm this point of view with the following words: "Measurement in quantum mechanics means any process of interaction between classical and quantum objects that occurs apart from and independently of any observer."

D. Chalmers at the aforementioned international conference in Helsinki in 2015 considers two logically possible options. In accordance with the first option, measurement is a psychophysical process associated with the observing consciousness, the presence of which is a necessary condition for the collapse of the wave function. According to the second option, measurement is a physical process that is not associated with the observing consciousness, the presence of which is not a necessary condition for the collapse of the wave function.

As a result of reflections, D. Chalmers tends to the second option (although he does not exclude the possibility that the collapse of the wave function can be caused by special fundamental protoconscious internal properties of physical systems), which is consistent with his earlier position, because the recognition of mental experience as a necessary condition for collapse wave function "does not fit with the physical data suggesting that low-level superpositions often exist for a long time in an uncollapsed state."

A number of quantum physical experiments confirm the point of view of D. Chalmers. In particular, an experiment conducted by a group of scientists from the University of Vienna (L. Haskermüller, K. Hornberger, B. Brezger and A. Zeilinger) and described in their joint article "Decoherence of material waves by thermal emission of radiation", demonstrates that the interference pattern that arises as a result of the scattering of a beam of fullerenes (molecules containing 70 carbon atoms) on a diffraction grating, depends on the controlled heating of molecules flying in the beam by means of a laser beam (with increasing temperature, the interference pattern weakens and then disappears completely).

This means that the collapse of the wave function (the transition from a quantum-entangled state to a classical one) can be carried out without the participation of the observing consciousness, but only in the process of information exchange between the system under study and the environment.

Such information exchange in the framework of the experiment under consideration occurs due to laser heating and, as a result, the emission of light quanta by fullerene molecules, the wavelength of which carries information about the probability of which of the diffraction grating slits a particular molecule was scattered.

At a certain wavelength (which corresponds to a certain degree of heating of the fullerene beam), this information is sufficient to accurately localize the selected beam within some diffraction gap, after which the interference pattern disappears (i.e., the beams begin to behave no longer like de Broglie waves , but as particles moving along given trajectories).

Shang Yu and Danko Nikolic come to similar conclusions in their article "Quantum Mechanics Doesn't Need Consciousness", who, relying on physical experiments, prove that the collapse of

the wave function is due not to the presence of consciousness, but to the very possibility of obtaining by a potential observer the necessary knowledge for destruction superpositions of states of the considered quantum objects.

Thus, the collapse of the wave function is caused not by the observing consciousness as such, which would lead us to a subjective-idealistic picture of the world, in which the ontological certainty of the Universe turns out to be impossible without its subjective representation, but by the natural presence or artificial production of the necessary amount of information in an experimental situation. , which ensures the transition from possible to actual existence due to the redistribution of probabilities associated with one or another state of the physical system.

As long as the “observing” system, of which the observer is a part, does not interact with the observed system, the latter is in the mode of possible existence for the observer as an integral, undifferentiated object described by a superposition of potential states. After the interaction, the observed system becomes classical in the sense that it acquires an internal structure and certain physical parameters.

At the same time, the “observing” system may not include the observer as a conscious subject, since for the collapse of the wave function and the transition of the observed system from an integral state to a differentiated one, it is enough information processes that violate the superposition of states and lead to the realization of the only possibility of being an observable terial system.

Thus, the collapse of the wave function occurs when and only when the information data packed in physical processes becomes sufficient to localize a material element that is in a quantum-entangled state with other elements that form a single ontological whole.

Moreover, this state of affairs refers not only to the physical, but also to the informational level of being, i.e. both physical and informational states of a material system exist in the possibility and are realized in a real mode of being, if a sufficient amount of information is accumulated that does not allow all components of the superposition to be simultaneously within the framework of the existing being of the material system under consideration.

This point of view is consistent with the theory of objective reduction (Objective Reduction) by R. Penrose, according to which the wave function of a physical system spontaneously collapses due to quantum gravitational effects rooted in the fundamental geometry of space-time. The larger and more complex the physical system, the faster the objective reduction occurs, which is explained by the greater number of interconnections between the individual elements of the system under consideration, separated by spatial localization, and, therefore, the greater amount of quantum and classical information contained in it.

Thus, we can talk about the objective Penrose threshold, when the information accumulated in the physical system is enough for the superposition of potential states to collapse due to information data pointing to one single selected state, which becomes the result of the collapse of the wave function.

However, R. Penrose believes that an objective reduction can occur without the influence of the environment, i.e. in this case, the choice of one of the superposed possibilities occurs internally

and is in no way determined by interaction with external systems. This means that not only the accumulation from the outside, but also the internal transformation of information can be the main factor preventing the simultaneous existence of all members of the quantum superposition.

Quantum ontology is applicable not only to the microscopic, but also to the macroscopic level of the existence of material systems. For a visual illustration, let us turn to the well-known Schrödinger paradox. The Austrian theoretical physicist E. Schrödinger proposed a thought experiment, which, in his opinion, strikes at the Copenhagen interpretation of quantum mechanics and shows its incompleteness in relation to the rule that sets clear observation criteria as a necessary condition for the collapse of the wave function describing the state of the material system.

The essence of this thought experiment is that if we have a quantum object (for example, an atom subject to radioactive decay), which is in a superposition of possible states, then the macro object associated with it (for example, a cat) will also be in a superposition of possible states . Imagine that when a radioactive atom decays, a machine is started that kills a cat.

Then, after a certain period of time, the cat in the closed box will be both alive and dead at the same time, since after this period the atom will decay with a probability different from zero, but not equal to one. Consequently, within the framework of a thought experiment, the cat will be in a superposition of two states - the state of a corpse and the state of a living organism, which makes it a quantum macroobject.

According to the Copenhagen interpretation of quantum mechanics (which currently dominates the scientific community), such a statement is false, and the cat is not in a superposition of two states before opening the box, since macroscopic objects themselves appear only at the level of decoherence (violation of the superposition) of the quantum states of the considered material system.

However, a closer look at Schrödinger's thought experiment raises a non-trivial problem if, instead of a cat, we put some desperate subject capable of conscious self-observation in the death box.

Then, from the point of view of an external observer standing in front of a closed box, for some period of time the subject, like the unfortunate Schrodinger's cat, will be in a superposition of two states - the state of a corpse and the state of a living organism, but from his own point of view, unless, of course, he dies as a result of the decay of a radioactive atom and the launch of a deadly machine, he will be in only one of these states, namely, in the state of a living organism.

This version of Schrödinger's thought experiment can be complicated by placing another conscious subject in an impenetrable box, who, observing the subject, will know for sure whether he died after a certain time, or remained alive. Then, for an external observer, the test subject connected to the death machine will be in a superposition of two states, and for the internal observer, the same test subject will already be a classical object in a well-defined physical state.

To illustrate the paradox that arises as a result of the dependence of individual parameters of macroscopic systems on the microscopic processes occurring in them, we can turn to another complicated version Schrödinger's thought experiment, which was proposed in his article "Remarks on the Psychophysical Problem" by the American physicist and mathematician of Hungarian origin J. Wigner.

He introduced into Schrödinger's thought experiment the experimenter's friends, who can learn about the state of the cat after opening the box only from the experimenter himself, and therefore, before receiving the relevant information in In their frame of reference, the state of the cat will still be quantum-uncertain.

As a result, we come to the conclusion that the collapse of the wave function as a process caused by the interaction of the object under study with the experimental setup, an integral part of which is observing experimenter, is local in nature within the selected reference systems, while in other reference systems the object under study can be in a superposition of quantum states.

Based on these arguments, Yu. Wigner states that until all potential observers learn from the experimenter about the state of the experimental cat, the latter remains both alive and dead at the same time in a variety of reference systems.

It can be assumed that, in fact, the physical parameters of a quantum object have a certain value, while the superposition of possible states occurs only at the level of describing the physical world due to the lack of information the experimenter has about the object under study. However, such a point of view, which, in particular, was held by A. Einstein in the famous dispute with N. Bohr, was refuted in a number of experiments that showed the violation of Bell's inequalities, which set the framework for experimental data indicating the presence of hidden parameters and, accordingly, the incompleteness of the quantum theories.

This means that before the opening of the box, the physical description of the radioactive atom and the experimental cat by an external observer in the form of a superposition of states is not the result of a lack of information, but is an ontological fact. As a result, we come to a contradiction, because from the position of an internal observer, a radioactive atom and an experimental cat exist as classical objects, but from the position of an external observer, they exist as quantum objects that are in a superposition of two states, respectively, an atom - as a "decayed atom" and “undecayed atom”, and the cat is like a “dead cat” and a “living cat”.

The Schrödinger's cat paradox is a variation of the problem of quantum mechanical measurement. M.B. Mensky in his article “Quantum Mechanics, Consciousness and the Bridge between Two Cultures” describes this problem as follows: “On the one hand, in quantum mechanics, no interactions can lead to a reduction in which from a superposition of a vectors, all components disappear except for one.

On the other hand, in the mind observer, after the measurement there always remains only one component corresponding to some specific result of the measurement, i.e. there is a choice alternatives" .

A radical way to solve the problem of quantum mechanical measurement is Everett's many-world theory, which refuses the collapse of the wave function and states that each of the superposed states occurs in a separate classical world.

Such an interpretation of quantum mechanics, proposed by the American physicist H. Everett and supported by two other American physicists D. Wheeler and B. DeWitt, is very attractive, since it allows you to get rid of many quantum paradoxes, and, in particular, from the Schrödinger paradox due to the fact that the cat in In the experiment described above, it is recognized as alive in one classical world and dead in another, and is not both alive and dead in the same classical world.

The quantum theory of consciousness within the framework of such an interpretation assumes the splitting of the subject at each point of the trajectory, which is formed in Everett's many-world space, into a set of alternative options. Illustrating this point of view on the example of Schrödinger's cat, M.V. Mensky notes that “an observer can see a live cat, but then he does not see a dead one, and vice versa. Both alternatives objectively coexist, but are (subjectively) separated by consciousness.

Positive statements about Everett's interpretation are contained in the works of D. Chalmers, who points out that among other interpretations of quantum mechanics, it is in the best harmony with the basic psychophysical principles of his naturalistic dualism. The main argument in favor of Everett's interpretation is the linearity of the equations of quantum mechanics, in relation to which the collapse of the wave function is an artificial, invented procedure.

On this occasion, M.B. Mensky in his article “The Concept of Consciousness in the Context of Quantum Mechanics” writes: “The reduction postulate seems alien in quantum mechanics, it makes it eclectic. Why should a system evolve differently when it is being measured ?

After all, measurement is nothing more than interaction with some other system, conditionally called a device, and nothing more. This means that the evolution of the complete system during this interaction (i.e., during the measurement) must be linear. The superposition will not disappear during such an evolution, all the members of the superposition, that were before the measurement will remain after it .

If Everett's interpretation is understood in the Devittian sense (as B. Devitt understood it), recognizing the existence of many parallel worlds of the classical type, which are constantly multiplying, then the problem of conservation of physical energy arises, because every moment instead of one world we get a large number of new worlds.

The way out of this non-trivial situation may lie in the fact that there is not a set of parallel worlds of the classical type that are constantly multiplying, but a set of superposed ontological projections of the same single quantum world. M.B. Mensky, in his article “Quantum Mechanics, Consciousness, and the Bridge between Two Cultures,” notes that the formulation that there are many parallel Everettian worlds “can be misleading, and it needs to be verified by a formulation that uses more precise terms: the state vector in the form of a superposition and the summand vectors that make up this superposition.”

In his other article, “Secrets of Consciousness – from Quantum Mechanics,” he emphasizes that “the quantum world is one, and only its state can have a complex structure, be a superposition of many classical states.” But then the many-worlds interpretation of quantum mechanics, in fact, is no different from the Copenhagen one, since both versions recognize the existence of a single material world, split into many ontological possibilities, with the only essential difference that Everett's possibilities do not disappear after measurement, but continue to exist in parallel classical projections.

However, from the point of view of an individual observer, the situation turns out to be identical, because both in the Everett and Copenhagen interpretations of quantum mechanics, firstly, there is a single quantum world, which is in a superposition of states, and, secondly, those possessing Conscious observers do not have access to information.

Pure states turn into mixed ones as a result of the interaction of individual objects, and the collapse of the wave function is identified with the consciousness of the observer in one of the classical projections of a single quantum world. If we look from the outside, then no collapse occurs, and if we look from the inside, then it seems to us that all the members of the superposition, except for one, disappear without a trace.

However, Everett's interpretation looks more preferable, since within its framework, individual objects exist as elements of classical worlds, while within the framework of the Copenhagen interpretation, it remains unclear where the individual objects come from, the interaction of which leads to decoherence, if before decoherence the Universe is a single material whole, in a pure quantum state.

The need for a multitude of parallel worlds disappears, and we retain the position of the Copenhagen interpretation of quantum mechanics, if we agree that any specific physical or informational state of a material system exists only in interaction with other material systems, and outside of such interaction we can talk about some specific physical or informational state material system is meaningless.

Therefore, it should be recognized that any physical system inside itself is quantum, and outside itself, i.e. in interaction with the means of observation and the observing subject - classical.

In the second case, the system under consideration can be semiclassical after decoherence and transition from a pure state to a mixed one, when individual members of the superposition of interacting systems are multiplied, or proper classical after the collapse of the superposition and the realization of one of the superposed possibilities, when all other possibilities disappear without a trace.

Thus, we admit the existence of two ontological levels of reality - external (exophenomenal) and internal (endophenomenal) - in relation to a material object.

In other words, a material being exists as an energy-information system of a classical or quasi-classical type at an exophenomenal level of being in interaction with another material being and as an energy-information system of a quantum type outside of interaction with another material being. At the same time, energy is the outer side of material existence, and information (in its phenomenal aspect) is the inner side of material existence.

Within the framework of the quantum-information model of consciousness, the division into the outer and inner sides of the existence of a material system becomes isomorphic to the division into objective-physical and subjective-mental existence.

Indeed, in the extended Schrödinger experiment, the external observer fixes the superposition of states as a distribution of possibilities of what is happening at a given moment in time in a closed system consisting of an internal observer, a cat and a radioactive atom, while an internal observer testifies to a certain present, directly perceived state of affairs due to the certainty of the state of the radioactive atom, fixed indirectly by the state of the cat.

At the same time, a symmetrical situation can be created for both observers by placing them in two isolated boxes with a cat and a radioactive atom, after which the above reasoning will take place both for one observer and for the other in relation to the observed quantum system. Similarly, subjective-mental phenomena are revealed in their immanent content directly for the internal subject, but are themselves objectified in the form of behavioral reactions for the external subject, which can only predict with a certain probability what is in reality the content of subjective experience alien to it.

Thus, the state of a radioactive atom becomes classical when it is indirectly revealed to an internal observer through the state of a cat, but for an external observer it retains its quantum character in the form of a superposition of events occurring within the observed system.

The same can be said about the conscious and unconscious psyche: the state of the unconscious psyche is quantum in nature, but becomes classical when it falls into the sphere of awareness of the internal subject, while for the external subject both the conscious and unconscious psyche remain the subject of conjectures and interpretations . conditioned by the observation of objectively manifested behavioral reactions of the internal subject.

From this we can conclude that there are two types of observer access to the observed entity - dissociative and associative. Dissociative access implies separation (dissociation) of the observer and the observed being at the energy-informational level of being. Associative access presupposes the unity (association) of the observer and the observed entity at the energy-informational level of being.

If we understand consciousness as a high-level property of neural processes and at the same time recognize its unique ontology, not reducible to the ontology of physical events, then mental experiences acquire an epiphenomenal character that does not allow them to influence human behavior.

The solution is that mental states and neural processes are ontologically identical, but epistemologically different, due to the fact that people have dual access to these neural processes - from the outside and from the inside. Therefore, there is a feeling of a dual reality; in fact, this duality does not exist. Dissociative access promotes external cognition, i.e. knowledge from the outside, while associative access contributes to internal knowledge, i.e. knowledge from within.

Thus, three types of observers can be distinguished depending on their ontological status: 1) transcendental observer, 2) immanent observer, and 3) transcendental observer. The transcendental observer is not a part of the observed system and does not interact with it at the

physical level of being, i.e. has neither dissociative nor associative access to it (like an experimenter who is outside the box in which Schrödinger's cat is placed).

An immanent observer is a part of the observed system and interacts with it at the physical level of being, i.e. has dissociative access to it (like the experimenter inside the box in which Schrödinger's cat is placed). The transcendental observer is the entire observed system as a whole, i.e. has associative access to it (similar to the subject taking the place of the cat in the Schrödinger box).

A material system for a transcendental observer 1) at the exophenomenal level (as a physical system) has an unmanifested being and is in a superposition of possible states, 2) at an endophenomenal level (as an information system) also has an unmanifested being and is in a superposition of possible states.

The material system for an immanent observer 1) at the exophenomenal level (as a physical system) has a manifested being and is in a classical state, 2) at the endophenomenal level (as an information system) has an unmanifested being and is in a superposition of possible states.

A material system for a transcendental observer 1) at the exophenomenal level (as a physical system) has a manifested being and is in a classical state, 2) at an endophenomenal level (as an information system) also has a manifested being and is in a classical state.

Therefore, taking into account the position of the transcendent observer, from which the world opens in its objective existence, we can agree with the point of view of M.B. Mensky, who states in his article “The Concept of Consciousness in the Context of Quantum Mechanics” that “the classical world does not objectively exist at all, and the illusion of the classical world arises only in the consciousness of a living being.”

When I communicate with another subject, I act in relation to him as an immanent observer, and therefore his behavioral reactions (having an exophenomenal status) exist for me in a classical form as manifested, really existing phenomena. At the same time, his internal subjective experiences (having an endophenomenal status) exist for me in a quantum form as unmanifested, potentially existing phenomena.

If I pay attention to myself, then I already act as a transcendental observer, and therefore my behavioral reactions (having an exophenomenal status) exist for me in a classical form as manifested, really existing phenomena. At the same time, my internal subjective experiences (having an endophenomenal status) also exist for me in a classical form as manifested, really existing phenomena.

And just as I ascribe to another subject, by analogy with myself, the presence of manifested (existing in a classically realized form) mental phenomena that form the sphere of conscious being, in the same way I ascribe to myself, by analogy with other subjects, the presence of unmanifested (existing in a superposition of possible states) of mental phenomena that form the sphere of unconscious existence.

From the position of a transcendental observer, the surrounding world is actually classical, exists in a single state and does not contain ontological contradictions. This is the sensually perceived world as it is revealed to the cognizing subject in his direct experience. From the position of an

immanent observer, the surrounding world is quasi-classical, exists in a variety of superposed states, each of which corresponds to a classical set of characteristics of interacting objects.

This is the sensually perceived world as it exists by itself in interaction with the cognizing subject and is revealed to him in mediated experience through the phenomena of the classical order. Finally, from the position of a transcendent observer, the surrounding world is quantum, exists in many superposed states, but is a single whole and is not divided into interacting objects.

This is a sensually non-perceivable world, as it exists by itself outside of interaction with the cognizing subject and is revealed to him in mediated experience through the phenomena of a quasi-classical order.

The conscious psyche opens from the position of a transcendental observer as a result of the decoherence of a multitude of mental experiences of an unconscious nature, and the unconscious psyche opens from the position of an immanent observer as a result of the regeneration of a multitude of mental experiences of a conscious nature. The unconscious psyche exists in possibility as a superposition of psychic experiences, while the conscious psyche exists in reality as a realized mental state from among the many possible states of the unconscious order.

Soviet philosopher M.K. Mamardashvili in his article “Consciousness as a Philosophical Problem” notes that “I love” and “I feel that I love” are two states that are “fundamentally different, and no transformation, no assumption, no reasoning can eliminate this difference. ".

In this case, being in the “I love” state is filled with many indefinite, unreflexed moments, collected in a single superposition of mental experiences, while being in the “I feel that I love” state already implies the collapse of such an unconscious superposition and the certainty of mental experiences expressing actually the way I love it.

Therefore, the unconscious psyche is not a "dark" receptacle of unconscious experiences that, under certain conditions, are brought into the "light" and become conscious, just as things are taken from a closed chest. The unconscious psyche is analogous to the quantum box from the thought experiment with Schrödinger's cat, since mental experiences belonging to the unconscious realm of being are in a superposed state.

This explains the fact that in psychological science there are many incompatible theories (such as psychoanalysis by Z. Freud, analytical psychology by C. Jung, logopsychology by V. Frankl, psychosynthesis by R. Assagioli, humanistic psychology by A. Maslow, Gestalt psychology by F. Perls , existential psychology of I. Yalom, Dasein-analysis of M. Boss, transpersonal psychology of S. Grof or transactional analysis of E. Bern), which allow achieving effective results in psychotherapeutic practice, because each of them corresponds to an ontological possibility, packed in a superposition of unconscious experience.

This implies the conclusion that the unconscious psyche is determined only in the space of conscious interpretation, existing before the ontological collapse in the form of a distribution of the possibilities of mental experience, just as a quantum system exists in the form of a superposition of possible states before the act of empirical measurement.

It can be said that the unconscious psyche has a quantum being in the sense that any mental ontology, taken in its unique essence, is the realization of one of the unmanifested possibilities of

the personality's mental being, just as the classical world is the realization of one of the unmanifested possibilities of the quantum being of the system. up to the act of its interaction with the measuring devices (i.e., until the moment when a sufficient amount of information data is formed that makes it possible to reduce the quantum superposition of states).

Understanding the unconscious as the sum of potential states of the psyche, collapsing at the conscious level of being into a single (classical) conscious state, allows an explanation of semantic reference within the framework of a representative act.

Indeed, let us ask ourselves the question: thanks to what mental mechanism do we know the meaning of a single word? If it denotes a really existing thing, then we can imagine it, thereby fixing the causal connection between the word and the sensory image (that is, in fact between two sensory patterns, which can be homogeneous or heterogeneous with respect to their inherent sensory modality).

For example, we understand the meaning of the word "table" by imagining (even vaguely and indistinctly) what a real table looks like based on our memory (in this case, a causal connection is fixed between two sensory patterns that belong to the same sensory modality - visual, if we see the word "table", or different sensory modalities - auditory and visual, if we hear the word "table").

But how do we grasp the meaning of such abstract words as "freedom" or "relevance"? Here, semantic understanding is not reduced to fixing a causal connection between a word and a sensory image, since for some words there are no adequate sensory images at all. We know the meaning of a word if we can define it, i.e. fix a causal connection between the word in question and a set of other words.

However, we are confident that we understand the meaning of a word simply by hearing it or by reading it without reproducing a logical definition. This state of affairs is made possible by the fact that we are potentially able to define the word in question. Such a psychological disposition (willingness to give a definition) is an unconscious superposition of meanings, because, generally speaking, it contains many possible definitions, one of which is carried out at the conscious level of being at the moment of verbalization of the understanding of the word in question.

The Belgian theoretical physicist D. Aerts and the Canadian psychologist L. Gabora in their article “Contextualization of concepts using the mathematical generalization of quantum formalism”, analyzing the process of meaning formation in the mental experience of communicating subjects, come to the conclusion that concepts should be considered “not as fixed representations, but as entities that are in states of potentiality that require interaction with the context - an external stimulus or another concept, namely, “convolutions” to an exemplified form.

The stimulus plays the role of measurement in physics, acting as a context that causes the transition of the cognitive state from a state of superposition to a folded state. The folded state should most likely be a conjunction of concepts more suitable for associative than analytical thinking, because a large number of stimuli or concepts are involved in the reduction of the wave function.

Professor of the Queensland University of Technology in Australia P. Bruza and Professor of Indiana University Bloomington D. Busemeyer in their article "Introduction to the problem of quantum knowledge" also describe the process of meaning formation, using quantum mechanical terminology and, above all, the concepts of quantum superposition and quantum entanglement.

About the semantic superposition that affects the conscious decision in a particular situation, German physicists H. Atmanspacher and H. Roemer write in their article “Order effects in successive dimensions of non-commuting psychological observables”.

Quantum-information understanding of the unconscious sphere of being has something in common with the hermeneutic model of the psyche, according to which mental experiences exist only in the space of mental interpretation. According to the French philosopher, representative of philosophical hermeneutics, Paul P. Ricoeur, any mental object immersed in the unconscious sphere of being, in its essence, can be represented in consciousness in different ways, and therefore the reality of the unconscious psyche is constituted through the procedure of symbolic interpretation.

The unconscious acquires its subject-specific existence only thanks to the mental acts that reveal it, while outside of its understanding (awareness) it does not exist at all in any subject-specific form (i.e., in other words, it exists in a subject-indefinite form superposition of many possible mental states).

It is possible to draw reasonable parallels between the quantum information theory of the unconscious and the probabilistic model of the psyche, according to which consciousness acts as a semantic filter that selects elements of the unconscious, and the unconscious, in turn, is reduced to a probability distribution on a semantic continuum of values potentially inherent in the considered mental event.

Accordingly, the interaction of the semantic filter functioning in the field of consciousness, with the probabilistic distribution of values, packed at the unconscious level of being, forms the mental experience of a person. Such a model of mental experience, developed by the mathematician and philosopher V.V. Nalimov, argues that at the unconscious level of being, deep processes of consciousness are realized, which are not fundamentally computerized and do not obey the laws of formal logic.

According to this point of view, the unconscious, being an irrational layer of consciousness, is ordered with the help of continual logic, within which the truth of statements is blurred and probabilistic (i.e., any unconscious event before the act of its awareness is in a quantum-entangled state with other which are assigned a certain probability).

The endophenomenal content of the unconscious psyche differs from the endophenomenal content of mental experience, first of all, in that the former exists in the possibility as a superposition of mental experiences, while the latter actually exists as a collapse of the superposition of mental experiences that reside at the unconscious level of the psyche.

In other words, the elements of the inner phenomenal content of unconscious psychic experiences become entangled into a single quantum-informational whole, which, in the process

of awareness, is realized in the form of a single psychic experience that has passed from potential to actual existence.

Therefore, direct interaction between two different consciousnesses turns out to be impossible, because one consciousness exists for the other only in the form of a distribution of unconscious possibilities, just as Schrödinger's cat, as long as the box remains closed, exists for an external observer only as a superposition of the states of "alive" and "dead" cat.

According to the principle of ontological inseparability, every mental phenomenon relies in its being on a physical (neurophysiological, biochemical and bioelectrical) substrate, i.e. any sensations, perceptions and thoughts are necessarily accompanied by bodily processes occurring in the human body.

At the same time, unconscious mental events within the framework of information being correlate with events of a physical (neurophysiological, biochemical and bioelectric) order, which are localized in the cerebral cortex, and conscious mental events correlate with unconscious mental events that are not localized in the cerebral cortex and exist in the form superpositions of mental states.

By themselves, mental states in their phenomenal content are not reduced to bodily processes, just as the figurative and semantic content of a film is not reduced to a digital sequence that encodes it on a DVD.

Due to the transverse information causality, the interdependence of physical codes and mental experience has two oppositely directed vectors: firstly, from the physical sphere of being to the mental one, when, for example, a set of light signals is transformed into a visual image of the observed scene, and, secondly, vice versa, from the mental sphere being into the physical, when, for example, a suggestive suggestion that a pencil brought to the hand is a red-hot iron stick leads to the formation of a real burn of the skin.

The unconscious, just like the conscious, having a psychic existence, is not reduced to bodily processes occurring in the human body, and has an internal phenomenology, thanks to which one can speak of unconscious experiences, because otherwise the unconscious psyche is identified with neural processes and loses its own psychic entity.

The unconscious exists potentially, representing a distribution of psychic possibilities, which with a certain probability are built on top of the processes of the neural order, while the conscious exists actually, representing the only realized possibility from the superposition of unconscious states.

In other words, structures formed by a combination of physical (neurophysiological, biochemical and bioelectrical) codes pack the potentialities of mental experiences that decohere at the mental level of being as a result of energy-informational interaction with the environment.

Thus, unconscious mental experiences in their information essence acquire the status of an intermediate link between physical and mental processes.

As the mental functions of consciousness, in which it differs from the unconscious psyche, we can distinguish: 1) amplification, 2) filtration and 3) reduction.

First, consciousness carries out amplification, which supplements the totality of elements of the mental field to an emergent whole. At the level of the unconscious psyche, there are no strictly defined emergents, since unconscious experience is a distribution of many unmanifested mental experiences that have potential existence.

And only at the level of consciousness, when a multitude of unmanifested psychic experiences collapses into a single, truly manifested state, strictly defined emergents of psychic experience are formed as integral structures that cannot be reduced to a simple sum of constituent elements, whether they are sensual emergents (images and representations that are not reducible to a simple the sum of sensations) or intellectual emergents (ideas and concepts that are not reducible to a simple sum of the semantic content of the symbols through which these ideas and concepts are expressed).

Secondly, consciousness performs filtering, due to which only an insignificant part of the information that exists at the unconscious level of being gets into the mental sphere of the psyche. Consciousness filters the repressed (resisting the forces of the mental field) unconscious, selecting from the entire distribution of potentially existing experiences mainly those that do not enter into a destructive (painful) contradiction with the conscious mental material.

As a result, the repressed unconscious is transformed into the preconscious (which does not resist the forces of the mental field and is open to the mental subject by the action of transverse informational causality), which can be amplified into conscious mental phenomena.

Thirdly, consciousness carries out reduction, due to which the potential existence of the unconscious psyche is realized in the form of the actual existence of mental phenomena. In this case, there is an analogy with the reduction (collapse) of the wave function in quantum mechanics, when, as a result of a measurement carried out on a quantum object , the superposition of ontological possibilities is reduced to a single realized state.

In accordance with quantum information theory, the reducing function of consciousness implements one of the ontological possibilities that correlates with the neural code in the human brain (which, in particular, determines the multiplicity of mental ontologies). Reduction allows you to build a strategy of behavior in a classically defined world, which would be fundamentally impossible if a living being found itself in a quantum-uncertain reality.

On this occasion, M.B. Mensky in his article “The Concept of Consciousness in the Context of Quantum Mechanics” writes: “A living being, unlike inanimate matter, has the ability to perceive the quantum world in a special way. This world, with its characteristic quantum non-locality, is perceived by a living being not as a whole, but as separate classical projections. Each of these projections is "locally predictable".

In each of them, a living being implements a scenario called life, while without this stratification, the very concept of life seems impossible. At the mental level of being, reduction is an intermediate stage between filtering and amplification, since it uses the filtered possibilities to select a realized state, after which the amplifying forces complete the construction of mental elements to a holistic mental phenomenon.

First, filtration is carried out (during which some mental states that come into conflict with the conscious material are blocked at the level of the unconscious psyche, while others become preconscious, i.e., available for the transition from possible existence to reality), then reduction (in the process in which one of the possible preconscious states is realized at the mental level of being) and, finally, amplification (during which mental emergents are formed from disparate elements of mental experience).

The interaction of mental emergents, manifested in the dynamics of the figure and the background, contributes to a change in filtering factors, due to which the preconscious material is filled with new potential phenomena, and the reduction leads to new mental states that generate new mental emergents. As a result, the three main mechanisms of mental existence - filtration, reduction and amplification - ensure the diversity and richness of the subject's inner life, building on the dynamics of mental phenomena over the unconscious psyche.

In relation to his own mental life, the subject is in the position of a transcendental observer, which allows him to experience the phenomena of consciousness from within. In relation to his unconscious psyche, the subject is in the position of an immanent observer, due to which, in the field of his mental experience, the superposition of unconscious experiences is realized in the form of a single conscious experience, but at the same time, information about the superposed set of possible experiences is not erased, but continues to exist as an ontological boundary of consciousness at the level of the preconscious mind.

In relation to the objectively fixed behavioral reactions of another subject, the subject in question is also in the position of an immanent observer, while in relation to the subjectively experienced inner life of another subject, the subject in question is in the position of a transcendent observer, because no interaction at the level of physical being provides interaction at the level mental information, which makes it impossible to decogrenize the set of possible states of someone else's psyche in the frame of reference of the observing consciousness.

In other words, one subject cannot directly (from within) experience the mental states in which another subject resides, but can only conclude with a certain probability about their mental content.

The collapse of the potential existence of physical systems is similar to the collapse of the potential existence of mental phenomena with the only essential difference that both of these collapses occur at different information levels of being, since in the first case the only physical state is realized in reality due to the interaction of physical systems, while in the second case the only the mental state is realized in reality due to the formation of meta-information emergents.

Physical (neurophysiological, biochemical and bioelectrical) codes that exist in the neural networks of the brain correlate with information of a functional type, which generates a qualitatively new level of informational phenomena.

It can be said that in this case the Hegelian law of the transition of quantitative changes into qualitative ones works, but not at the physical level of being, but at the informational level, due to which information is converted into information and there is no violation of the principle of causal closure of the physical world (which would be observed if we believed that at a certain stage in the development of material systems, energy is converted into information).

A closed material system in itself is a single ontological whole, in which there are not only individual elements (objects), but also a directed flow of events. Such a system is in a pure quantum state, where each individual event and each temporally determined causal chain of events forms a quantum superposition described by the wave function of the system under consideration. If a system interacts with another system, then decoherence occurs, quasi-classical objects stand out, and the pure state is transformed into a mixed one.

Now we are dealing with a set of cause-and-effect chains, each of which is an ontological projection of interacting systems. And, finally, internal access to a certain alternative, which is included in the superposition of possible states of the observing (conscious) subject itself, ensures the collapse of the superposition and the manifestation of the only classical world (the only ontological projection of the transcendentally existing reality).

Before the advent of conscious beings, the surrounding world had a semiclassical existence, since the interaction of material systems was limited by decoherence processes, which, as M.B. Mensky, do not eliminate superposed possibilities in a mixed state. Roger Penrose also emphasizes that “as long as quantum entanglement does not break down, we, strictly speaking, cannot consider any object in the Universe to be separate and independent.

The resulting state of affairs in physical theory seems to me very far from satisfactory. No one can really explain without going beyond the standard theory…why we don’t have to imagine the Universe as a single whole, this incredibly complex tangled tangle that has nothing to do with the classical-looking world that we actually observe” .

Therefore, only thanks to consciousness, which arises as a result of energy-informational evolution (suggesting the complication of material systems at the physical and informational levels of being), the world becomes classical.

In this sense, consciousness can be identified with the collapse of the wave function, if collapse is understood not as the physical process of the disappearance of superposed ontological possibilities (because they continue to exist as members of the superposition accessible to the transcendental observer), but as an informational process that separates alternative ontological projections and ensures their information isolation.

Two physical bodies can interact, but two consciousnesses cannot interact. They remain informationally closed, since one conscious subject cannot access the consciousness of another, but only externally observable behavioral reactions are available.

The informational isolation of various conscious subjects is similar to the informational isolation of various superposed events, the exchange of information between which is incompatible with the initially existing quantum superposition.

Thank you. To be continued...